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Toledo, Ohio 43604  
419.243.2400  
ThomasPorterArchitects.com



## Specifications

**Sandusky Co. Parks District  
River Cliff Lodge  
Office Renovation**

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**1329 Tiffin Street  
Fremont, Ohio 43420**

**Commission No. 18051**  
November, 2020

**Prepared for:**

**Sandusky County Park District**  
1970 Countryside Place  
Fremont, OH 43420



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**PROJECT DIRECTORY**

Owner: Sandusky Co. Park District  
1970 Countryside Drive  
Fremont, Ohio 43420  
Phone: 419.334.4495  
Email: [abrown@sanduskycountyparks.com](mailto:abrown@sanduskycountyparks.com)  
Contact: Andy Brown, Director

Park Maintenance: Sandusky Co. Park District  
1970 Countryside Drive  
Fremont, Ohio 43420  
Phone: 419.341.5601  
Email: [jmiller@sanduskycountyparks.com](mailto:jmiller@sanduskycountyparks.com)  
Contact: Jeff Miller, Director

Architect: Thomas Porter Architects  
8 N. St. Clair Street  
Toledo, Ohio 43604  
Phone: 419.243.2400 x 308  
Email: [daniel.ebert@porterarch.com](mailto:daniel.ebert@porterarch.com)  
Contact: Daniel Ebert



### NOTICE TO BIDDERS

Sealed proposals will be received for the River Cliff Park Lodge Office Renovation Project, River Cliff Park, 1329 Tiffin Street, Fremont, Ohio 43420 by the Sandusky County Park District. Proposals must be delivered to the Main Office, Sandusky County Park District, 1970 Countryside Place, Fremont, Ohio 43420 no later than **5:00 pm, EST on November 19, 2020 or on November 20, 2020.** delivered to the project site, 1329 Tiffin Street, Fremont Ohio 43420 no later than **10:00 am, EST.** Proposals will be read publicly immediately following in the Main Lodge. Proposals received after the date and time shall be considered late and will be returned to the submitting party unopened.

The overall work scope will consist of the complete tear down to the studs of an existing portion of the building. Replacement of the existing wall insulation and exterior siding. New windows as well as a new entry vestibule. A new office suite within the existing building envelope including a restroom and mechanical systems.

#### **Project Estimates:**

Office Renovation: **\$ 380,900**

A single contract will be issued for all work within project documents.

In accordance with the Plans and Specifications Prepared by:

Thomas Porter Architects  
8 N. St. Clair Street  
Toledo, Ohio 43604-1028  
Phone: (419) 243-2400  
Website: ThomasPorterArchitects.com  
**Email:** **daniel.ebert@porterarch.com**  
**Contact:** **Daniel Ebert**

CONTRACTORS may obtain Electronic (PDF) format and/or Hardcopy sets of the Bid Documents directly from Newfax Corporation, 333 W. Woodruff Avenue, Toledo, Ohio 43604, Phone 419-241-5157, FAX 419-241-2018 <http://www.newfaxcorp.com/>. A non-refundable fee will be required for each set of Bidding Documents and Contract Documents provided by Newfax Corporation. Checks shall be made payable to Newfax Corporation.

Neither Owner nor Architect has any responsibility for the accuracy, completeness or sufficiency of any bid documents obtained from any source other than the source indicated in these documents. Obtaining these documents from any other source(s) may result in obtaining incomplete and inaccurate information. Obtaining these documents from any source other than directly from the source listed herein may also result in failure to receive any addenda, corrections, or other revisions to these documents that may be issued.

A Pre-Bid meeting will be held on Tues. **November 17, 2020 at 9:00 am**, at the River Cliff Park Lodge, 1329 Tiffin Street, Fremont, Ohio 43420. Interested bidders will have the opportunity to review the project site immediately following the pre-bid meeting.

Bids shall be received on the Form of Bid Proposal furnished and accompanied by the required supporting documents listed within the Instruction to Bidders. No other form(s) will be accepted.

Sandusky County Park District reserves the right to waive irregularities in the bids and to reject any or all proposals or parts of any or all proposals.

No bidder may withdraw their bid within ninety (90) days after bid opening.

Sandusky County Park District  
Andrew Brown, Director

END OF NOTICE TO BIDDERS





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**INSTRUCTIONS TO BIDDERS**

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**A. EXAMINATION OF DOCUMENTS AND SITE CONDITIONS**

1. Bidders are cautioned to review carefully the existing conditions and all parts of the Contract Documents included in or referenced in the Project Manual, including, but not limited to, the Instructions to Bidders, Bid Form, Owner-Contractor Agreement, General Conditions of the Contract for the Project, Special Conditions (if any), Project Schedule, Drawings, and Specifications. For access to the site, the Bidder should contact Jeff Miller, Sandusky Co. Park District, 419.341.5601 to make arrangements to visit the site at an acceptable time. These Contract Documents shall become the basis for the contract between the Owner and the successful Bidder, as defined in the Owner-Contractor Agreement, and govern the relationship between the successful Bidder and the Owner when the Owner-Contractor Agreement is executed.

2. No allowance will be made subsequently for any omission, error or negligence of the Bidder.

**B. OWNER, ARCHITECT**

- |    |                   |  |
|----|-------------------|--|
| 1. | The Owner is:     | Sandusky Co. Park District<br>1970 Countryside Drive<br>Fremont, Ohio 43420<br>Phone: 419.334.4495<br>Email: <a href="mailto:abrown@sanduskycountyparks.com">abrown@sanduskycountyparks.com</a><br>Contact: Andy Brown, Director |
| 2. | The Architect is: | Thomas Porter Architects<br>8 N. St. Clair Street<br>Toledo, Ohio 43604<br>Phone: 419.243.2400<br>Email: <a href="mailto:daniel.ebert@porterarch.com">daniel.ebert@porterarch.com</a><br>Contact: Daniel Ebert                   |

**C. PROJECT**

1. The Project consists of all labor, materials, and services necessary for the timely and proper completion of the River Cliff Lodge Roof Replacement Project at River Cliff Park, 1329 Tiffin Street, Fremont, Ohio 43420 for the Owner (Sandusky Co. Park District), all in accordance with the Contract Documents.

**D. WORK**

The overall work scope will consist of the complete tear off of the existing asphalt shingle roof system including gutters and downpipes in its entirety down to the existing roof deck, and the construction of a new metal roof system including new gutters and downpipes over the entire roof of the River Cliff Park Lodge Building.

A single contract will be issued for all work.

The bid documents request costs for the following scopes of work:

**F. ESTIMATE OF CONSTRUCTION COST**

The Project estimate is:

Base Bid (Roof Replacement)	<b>\$ 380,900</b>
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**G. DOCUMENTS INCLUDE**

1. Instructions to Bidders
2. Bid Form
3. Substitution Request Form
4. Form of Bid Guaranty and Contract Bond
5. Form of Contract Bond
6. Contractor's Personal Property Tax Affidavit (R.C. § 5719.042)
7. Owner's Tax Exemption Certificate
8. Construction Tax Exempt Form
9. General Conditions of the Contract available upon request from Thomas Porter Architects
10. Project Specifications
11. Drawings (see drawing cover sheet for list)

**Availability of Documents.** CONTRACTORS may obtain Electronic (PDF) format and/or Hardcopy sets of the Bid Documents directly from Newfax Corporation, 333 W. Woodruff Avenue, Toledo, Ohio 43604, Phone 419-241-5157, FAX 419-241-2018 <http://www.newfaxcorp.com/>. A non-refundable fee will be required for each set of Bidding Documents and Contract Documents provided by Newfax Corporation. Checks shall be made payable to Newfax Corporation.

**H. PRE-BID MEETING**

A pre-bid meeting is scheduled for Tuesday **November 17<sup>th</sup>, 2020 at 9:00 am**, at the River Cliff Park Lodge, 1329 Tiffin Street, Fremont, Ohio 43420. Interested bidders will have the opportunity to review the project site immediately following the pre-bid meeting.

For all other site visits bidders must make arrangements with the County Park District, Jeff Miller, 419.341.5601 or Adam Saylor, 419.202.3949 prior to visiting the site.

**I. PREPARATION OF BIDS**

1. All bids must be submitted on the "Bid Form" furnished in the Project Manual.
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.

3. Bidders shall note receipt of Addenda on the Bid Form.
4. Each Bidder shall submit two (2) identical copies of its bid to the Owner. Bids shall be signed with the name typed or printed in ink below the signature. Bids shall not be submitted by facsimile transmission. 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, the name of the Bid Package, and title of Project printed in the upper left hand corner, and addressed as follows:

Andy Brown, Director  
Sandusky Co. Park District  
1970 Countryside Drive  
Fremont, Ohio 43420

Instructions for delivery of bids and information on the bid opening are contained in Paragraph I (12).

6. The completed Bid Form shall be accompanied by the Bidder's Bid Guaranty (see Paragraph I (8) below).
7. The Bidder shall take the following precautions in preparing its Bid:
  - a. Sign the Bid Form and check to insure all blank spaces are filled in with requested information and that the Bid Guaranty is included in a sealed opaque envelope addressed as provided in Paragraph 5 above.
  - b. Where 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.
  - c. Where the Bid Form provides for quoting a unit price, the Bidder should quote the unit price.
  - 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 is for a specific sum in an amount as instructed in Paragraph I(8)(a) below or the amount is left blank.
8. Bonds and Guarantees
  - a. Bid Guaranty: Bidder shall furnish a Bid Guaranty, as prescribed in Section 153.54 of the Ohio Revised Code, in the form of either: (1) a bond for the full amount of the bid (including add alternates) 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 an amount equal to 10% of the amount of the bid (including add alternates).

- 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 amount of the bid, shall furnish to the Architect a Contract Bond in the form included in the Contract Documents in an amount equal to 100% of the Contract Sum within three (3) days of being notified of the Owner's intent to award the contract to the successful Bidder.
  - c. All bonds must be issued by a surety company authorized by the Ohio Department of Insurance to transact business in the State of Ohio. 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 determined acceptable by the Owner.
  - d. All bonds shall be signed by an authorized agent of an acceptable Surety Bonding Company and by the Bidder. (Affix Corporate Seals to all copies.)
  - e. Surety Bonding Company bonds shall be supported by credentials showing the Power of Attorney of the agent, a certificate showing the legal right of the Bonding 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 must be typed or printed on each bond.
9. Bidder's Examination and Representation.
- a. Before submitting a bid, each Bidder should carefully examine the documents and the construction site and inform itself of the limitations and conditions related to the Work covered by the bid and shall include in its bid a sum to cover the cost of such items. Bidders awarded contracts will not be given extra payments for conditions that could have been determined by examining the site and documents.
  - b. It is the purpose and intent of the Contract Documents that a complete job be accomplished. It shall be each Bidder's responsibility to include costs necessary to provide labor and materials for that portion of the Work bid upon, including incidentals, whether or not specifically called for in the Specifications and Drawings.
10. Clarification of Bidders' Questions.
- a. Questions for this Project shall be directed to the Architect in writing.
  - b. Each Bidder is responsible for calling to the attention of the Architect any ambiguities, inconsistencies, errors, or omissions which occur in the Contract Documents for its part of the Work. If the Bidder fails to

request clarification, the Bidder will be expected to overcome such conditions without additions to the bid price.

- c. Prospective Bidders with questions as to the true meaning of any part of the Drawings, Specifications, or other Contract Documents shall submit to the Architect, not less than ten (10) days prior to the closing time for acceptance of bids, a written request for interpretation and clarification.
  - d. Bidders are instructed to request interpretations and the issuing of addenda if the Contract Documents call for materials, equipment, or methods that adversely affect the cost or quality of the Project or are unavailable.
11. Combined Bids. The Owner may provide the option of submitting a combined bid on the Bid Form
- a. When there is an option for submitting a combined bid on the Bid Form, a bidder desiring to submit a combined bid for two or more base bid Areas of Work shall indicate both its combined bid amount and separate base bids for the separate Areas of Work in the places provided on the Bid Form.
  - b. The individual cost amounts of each base bid (including alternatives) shall be indicated in the appropriate spaces for each and every base bid included under the combined bid.

12. Bid Opening. Bids will be accepted until 5:00 p.m., local time, on November 19, 2020, at the Main Offices, Sandusky County Park District, 1970 Countryside Drive, Fremont, Ohio 43420, or on November 20, 2020, delivered to the project site, 1329 Tiffin Street, Fremont Ohio 43420 no later than 10:00 am, and will be opened publicly and read immediately thereafter in the Main Lodge.

**J. METHOD OF AWARD**

1. The Owner will receive bids for the Bid Package identified in these Instructions to Bidders.

Subject to the right of the Owner to reject any and all bids and as provided below, the Owner will award a single contract for the Project identified in these Instructions to Bidders. Bidders must furnish all information requested on or accompanying the Bid Form. Failure to do so may result in disqualification of the bid.

2. Determination of 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 and responsive bid, taking into consideration accepted alternates. The Owner, in its sole discretion, will determine whether a bid is responsive to the specifications or whether bidder is responsible. The Owner reserves the right to conduct such investigations as it deems necessary to assist in the evaluation of any bid and to establish the responsibility, qualifications and financial ability of the Bidders or

any proposed subcontractors. In determining whether a bid is responsive or a bidder is responsible, the Owner may consider the following criteria and such other criteria as it determines proper:

a. The Bidder's work history.

The Bidder should have a record of consistent customer satisfaction and of consistent completion of projects, including projects which are comparable to or larger and more complex than the Owner's Project, on time and in accordance with the respective contract documents. If the Bidder's management (*i.e.*, president, chairman of the board, or any director) operates or has operated another construction company, the Owner may consider the work history of that company in determining responsibility of the Bidder.

The Owner will consider the Bidder's prior experience on other projects of the Owner and/or Architect, including the Bidder's demonstrated ability to complete its work on these projects in accordance with the Contract Documents and on time and its ability to work with the Owner and/or Architect.

The Bidder authorizes the Owner and its representatives to contact the owners and design professionals on projects on which the Bidder has worked, and authorizes and requests such owners and design professionals 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 at its urging, directly or indirectly, brings an action against any of such owners or design professionals or their employees as a result of or related to such candidate evaluation and such action is not successful, the Bidder will reimburse such owners, design professionals and/or their employees for all legal fees and expenses incurred by them that are related to such legal action, including the cost of collection. This obligation is expressly intended for the benefit of such owners, design professionals and their employees.

- b. The Bidder's resources, including but not limited to the financial ability to complete the Contract successfully and on time without resort to its Surety and the experience, adequacy, and numbers of the Bidder's work force.
- c. The Bidder's compliance with federal, state, and local laws, rules, and regulations, including but not limited to the Occupational Safety and Health Act.
- d. The foregoing information with respect to each of the Subcontractors that the Contractor intends to use on the Project.
- e. Depending upon the type of the work, other essential factors, as the Owner may determine.

3. Within three (3) business days after receipt of the bids, the apparent low Bidder, and any other bidder requested by the Architect or Construction Consultant, will complete and submit to the Architect the following documents, as requested by the Architect:
  - a. AIA Document A305, Contractor Qualifications Statement, and the information required by the supplement to that document, and thereafter will provide the Architect with such additional information as the Architect may request. A Bidder will submit any requested information within three (3) business days of the request.
  - b. The list of all proposed Subcontractors, suppliers, and manufacturers.
  - c. The breakdown of Labor and Material for the Project, including the sum for each, on AIA Document G702, Schedule of Values.
  - d. Affidavit as to Property Taxes, in the form included with the Contract Documents. After approval by the Owner, Construction Consultant, and Architect of the list of proposed Subcontractors, suppliers, and manufacturers submitted by the successful Bidder, the list shall not be changed unless written approval of the change is authorized by the Owner, Construction Consultant, and Architect.
4. The failure to submit requested information on a timely basis may result in the determination that the Bidder is not responsible.
5. By submitting its bid, the Bidder agrees that the Owner's determination of responsiveness and responsibility shall be final and conclusive, and that if the Bidder, or any person at the Bidder's urging, directly or indirectly challenges such determination in any legal proceeding and such challenge is not successful, the Bidder will reimburse the Owner for all legal fees and expenses incurred by the Owner that are related to such challenge, including the cost of collection.
6. No Bidder may withdraw its bid within ninety (90) days after the date bids are opened.
7. The Owner further 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.

**K. EXECUTION OF CONTRACT**

1. Notice of Intent to Award Contract. The successful bidder will be notified of the award of the contract and provided with three (3) copies of the Owner-Contractor Agreement ("Agreement") in the form included in the Project Manual. The Owner reserves the right to rescind any Notice of Award if the Owner determines the Notice of Award was issued in error.
2. The successful Bidder will sign and return the original forms to the Owner, or as otherwise directed, for execution by the Owner. The contract will be submitted to the Owner at its next regularly scheduled Board meeting for approval by the Owner. The successful Bidder will be provided with a fully executed copy of the Agreement for its records.

3. If the successful Bidder does not return the executed contracts to the Owner within five (5) business days of its receipt of the contracts from the Owner, the Owner reserves the right to reject the bid and award the contract to the next low responsible bidder.

**L. SUBSTITUTIONS**

1. Certain brands of material or apparatus are specified. These specified brands may be referred to in the Contract Documents as Standards. Each bid will be based on these brands. The use of another brand may be requested as provided herein.

2. No substitution for a specified brand ("Substitution") will be considered prior to receipt of bids unless written request for approval has been received by the Architect at least ten (10) days prior to the date for receipt of bids. Such requests 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 drawings, performance and test data, and other information necessary for an evaluation. A statement setting forth changes in other materials, equipment, or other portions of the Work, including changes in the work of other contracts that incorporation of the proposed Substitution would require, shall be included. The burden of proof of the merit of the proposed Substitution is upon the Bidder proposing the Substitution. The Architect's decision of approval or disapproval of a proposed Substitution shall be final.

If the brand or product is acceptable, the Architect will approve it prior to bidding in an Addendum issued to all Bidders on record and the Substitution shall become a Standard.

3. In proposing a Substitution, the Bidder represents and warrants that each proposed Substitution 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 as a result of a Substitution which is accepted.

4. Following the award of the Contract, there shall be no Substitutions, except pursuant to a Change Order. The Owner in its sole discretion may decline to consider a Substitution for a Change Order.

**M. ALTERNATES**

1. The Owner may request bids on alternates. If the Owner request 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 in its Bid Form the cost of an alternate selected by the Owner and applicable to the Bidder's work may 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 has included alternates, which may include deduct alternates as well as add alternates, to give it the flexibility in building the Project with the funds that are 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 what 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 lowest responsible and responsive Bidder 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. The Bidder agrees to hold the prices stated for alternates on the Bid Form for a period of 90 days after the bid opening. If following that 90-day period, 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.

**N. UNIT PRICES**

1. Where unit prices are requested in the Bid Form for a Contract on which the Bidder submits a bid, 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 Architect or Construction Consultant determines that the use of such unit prices will cause substantial inequity to either the Contractor or the Owner.

**O. ADDENDA**

1. Any explanation, interpretation, correction or modification of the Bid 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.

2. Contractors should submit questions to the Architect in advance, to allow sufficient time for the Architect to respond. All Addenda will be issued except as hereafter provided, and mailed or otherwise furnished to persons who have obtained Contract Documents for the Project, at least forty-eight (48) hours prior to the published time for the opening of bids, excluding Saturdays, Sundays and legal holidays.

3. Copies of each Addendum will be sent only to the Contractors to whom Drawings and Specifications have been issued for refundable deposit. Receipt of Addenda shall be indicated by Bidders in the space provided on the Bid Form.
4. Each Bidder shall carefully read and review the Contract Documents and immediately bring to the attention of the Owner's Designated Representative any error, omission, inconsistency, or ambiguity therein.
5. If a Bidder fails to indicate receipt of all Addenda through the last Addenda issued by the Architect 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.

**P. Wage Rates**

1. The Bidder to whom the Contract is awarded will be required to pay as a minimum, the prevailing wage rates, current throughout the work, promulgated by the State.

**Q. STATE SALES AND USE TAXES**

1. The Owner is a political subdivision of the State of Ohio. 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 sales tax exemption certificate, executed by the successful Bidder and the Owner, to the vendors or suppliers when the materials are acquired. The Owner will execute properly completed certificates on request. A copy of the Construction Tax Exempt Form to be used in connection with the Project is included with the Project Manual

**R. PROJECT SCHEDULE AND SEQUENCE.**

1. The Contractor shall be prepared to start work within one week after award of Contract.
2. Construction Mile Stones will established with the winning bidder once the project is awarded.

NOTE: The awarded Contractor should endeavor complete this project as quickly as possible with appropriate precaution given to weather and Job Site Safety. The job site allows for the Contractor to work 7 days a week if the Contractor chooses to do so.

**S. BID RESPONSIVENESS; OWNER'S RIGHT TO WAIVE DEFECTS AND IRREGULARITIES**

1. The Bidder's bid shall be responsive to the Specifications for the Project in all material respects and shall contain no material irregularities or deviations from the Specifications that would affect the amount of the bid or otherwise give the Bidder a competitive advantage. The Owner reserves the right to reject any bid, in whole or in part, that it determines is not responsive.
2. The Owner reserves the right to waive any and all irregularities, informalities and technicalities in the bidding process.
3. By submitting its bid, the Bidder agrees that (i) the Owner's determination of whether a defect or irregularity affects the amount of the bid in any material respect or otherwise gives the Bidder a competitive advantage will be final and conclusive; and (ii) the Bidder will pay the Owner's attorney's and consultants' fees related to any challenge to the bid procedure or process, brought directly or indirectly by the Bidder and/or any of its affiliates, which is unsuccessful.

**T. MODIFICATION AND WITHDRAWAL OF BIDS**

1. Modification: A Bidder may modify its bid by written communication to the Owner addressed to the Director of Business Services, at the Owner's address at any time prior to the scheduled closing time for receipt of bids, provided such written communication is received by the Director of Business Services prior to the closing time. 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.
2. Withdrawal Prior to Bid Closing: A Bidder may withdraw its bid at any time for any reason prior to the bid closing time established in the Notice to Bidders. The request to withdraw shall be made in writing and submitted to the Director of Business Services, at the Owner's address.
3. Withdrawal after Bid Closing: A Bidder may withdraw its bid after the bid closing time when all of the following apply:
  - a. the price bid was substantially lower than the other bids;
  - b. 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;
  - c. the bid was submitted in good faith;
  - d. the Bidder provides written notice to the Owner, to the attention of the Treasurer, within two (2) business days after the bid opening for which the right to withdraw is claimed.

**U. EQUAL EMPLOYMENT OPPORTUNITY/NONDISCRIMINATION**

1. Minority, female, and disadvantaged businesses will be afforded full opportunity to submit bids, and bidders will not be discriminated against on the grounds of race, color, religion, sex, age, handicap, ancestry, or national origin in the consideration of an award. The successful Bidder(s) shall include a provision in any subcontract entered into for the Project that requires that each of its subcontractors not discriminate against any employee or applicant for employment on the basis of race, religion, color, sex, age, handicap, ancestry, or national origin in any actions that it takes. Such actions include, without limitation, employment, upgrading, demotion, transfer recruitment or recruiting advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeships.
2. The contract document to be executed by the successful Bidder contains nondiscrimination provisions as required by Ohio Revised Code Sections 153.59 and 153.60.

**END OF INSTRUCTIONS TO BIDDERS**

## **BID FORM**

**Project:** River Cliff Lodge – Roof Replacement  
River Cliff Park  
1329 Tiffin Street  
Fremont, Ohio 43420

**Bids Due:** November 20, 2020, 10:00 AM EST

**To:** Andy Brown, Director  
Sandusky County Park District  
1970 Countryside Drive  
Fremont, Ohio 43420

**Submitted By:** Bidder : \_\_\_\_\_  
Address : \_\_\_\_\_  
: \_\_\_\_\_  
Telephone : \_\_\_\_\_  
Fax : \_\_\_\_\_  
E-mail : \_\_\_\_\_

The undersigned acknowledges having received and carefully reviewed the Contract Documents prepared by: **Thomas Porter Architects, 8 N. St. Clair Street, Toledo, Ohio 43604-1028**

The undersigned also acknowledges receipt and inclusion of the following addenda in our Bid:

<b><u>ADDENDUM #</u></b>	<b><u>DATE</u></b>
_____	_____
_____	_____
_____	_____

In submitting this Bid, the Bidder agrees to the following:

1. To hold their bid open for 90 days after receipt of bids.
2. To provide a form of bid guaranty as described in the Instructions to Bidders.
3. To enter into and execute a Contract, if awarded on the basis of this Bid, and to furnish a Bid Guaranty and Contract Bond in accordance with the project manual.
4. To submit Certificates of Insurance for the coverage specified.

5. To accomplish the Work in accordance with the Contract Documents.
6. To complete the Work covered by this Bid within dates specified in the project manual.

**BASE BIDS**

The Bidder agrees to execute the work under each of the following Base Bid areas indicated for the lump sum amount(s) given therein. (See Section 01010 – Summary of Work, for work included under the Base Bid)

**ITEM 1.0 – Office Renovation**

Provide cost to provide all labor, materials and equipment for all demolition, construction and miscellaneous work identified as Base Bid on the contract drawings. Base bid to include allowance indicated in Section 01019 Contract Consideration.

All Labor and Materials, for the sum of \$\_\_\_\_\_

Sum in Words\_\_\_\_\_

**BIDDERS CERTIFICATION**

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

1. The Bidder has read and understands the Contract Documents and agrees to comply with all requirements of the Contract Documents, regardless of whether the Bidder has actual knowledge of the requirements and regardless of any statement or omission made by the Bidder which might indicate a contrary intention.
2. The Bidder represents that the bid is based upon the Standards specified by the Contract Documents.
3. The Bidder has visited the Project site, become familiar with local conditions and has correlated personal observations with the requirements of the Contract Documents. The Bidder has no outstanding questions regarding the interpretation or clarification of the Contract Documents.
4. The Bidder understands that the award of separate contracts for the Project will require sequential, coordinated and interrelated operations, which may involve interference, disruption, hindrance or delay in the progress of the Bidder's Work. The Bidder agrees that the Contract price, as amended from time to time by Change Order, shall cover all amounts due from the Owner resulting from interference, disruption, hindrance or delay caused by or between Contractors or their agents and employees.
5. The Bidder agrees that any such interference, disruption, hindrance or delay is within the contemplation of the Bidder and the Owner and that the Contractor's sole remedy for such interference, disruption, hindrance or delay shall be an extension of time in accordance with the Contract Documents. This provision is intended to be, and shall be construed as, consistent with and not in conflict with, Section 4113.62, ORC, to the fullest extent permitted.
6. The Bidder and each person signing on behalf of the Bidder certifies, and in the case of a joint or combined bid, each party thereto certifies as to such party's entity, under penalty or 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, for the purpose of restricting competition as to any matter relating to such 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 individual, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.
7. The Bidder will execute the Contract Form with the Sandusky County Park District Board, 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 School District Board as provided in Article 6 of the Instructions to Bidders.
8. The Bidder certifies that upon the execution of the Contract Form, the Contractor will make a good faith effort to ensure that all of the Contractor's employees, will work on the site of the Project, will not purchase, transfer, use or possess illegal drugs or alcohol or abuse prescription drugs in any way.

9. The Contractor acknowledges that all Work shall be completed within the time established in the Contract Documents, and that each applicable portion of the Work shall be completed upon the respective milestone completion dates, unless an extension of time is granted in accordance with the Contract Documents.
10. Bidder agrees to furnish any information requested by the School District Board to evaluate the responsibility of the Bidder.

**Each bid shall contain the name of every person interested therein. If the Bidder is a corporation, partnership, sole proprietorship, or limited liability corporation, an officer, partner or principal of the Bidder, as applicable, shall print or type the legal name of the Bidder on the line provided and sign the Bid Form. If the Bidder is a joint venture, an officer, partner or principal, as applicable, of each member of the joint venture shall print or type the legal name of the applicable member on the line provided and sign the Bid Form.**

**BIDDER'S NAME (PRINT)**

\_\_\_\_\_

Authorized Signature: \_\_\_\_\_

Title: \_\_\_\_\_

Company Name: \_\_\_\_\_

Mailing Address:

\_\_\_\_\_

\_\_\_\_\_

Telephone Number: (\_\_\_\_) \_\_\_\_\_

Facsimile Number: (\_\_\_\_) \_\_\_\_\_

Where Incorporated: \_\_\_\_\_

Type of Business (circle one):

Corporation   Partnership

Sole Proprietorship

Limited Liability Corporation

Federal Tax ID Number: \_\_\_\_\_

Contact Person for  
Contract processing:

\_\_\_\_\_

End of Section



# RIVER CLIFF LODGE – Office Renovation

## SUBSTITUTION REQUEST FORM

### SUBMITTED BY:

FIRM	DATE SUBMITTED
ADDRESS	PHONE NO.
	FAX NO.
CONTACT PERSON	

### SPECIFIED PRODUCT/MATERIAL/SYSTEM

PRODUCT NAME	SPECIFICATION SECTION	PARAGRAPH NUMBER	DRAWING NUMBER	DETAIL OR SECTION NUMBER
--------------	-----------------------	------------------	----------------	--------------------------

### PROPOSED SUBSTITUTION (insert names and circle Yes or No as relates to product data and samples)

PRODUCT/MATERIAL/SYSTEM		MANUFACTURER	
Yes	We have included product data with this request.	Yes	We have included material samples with this request
No	We have not included product data with this request	No	We have not included material samples with this request

### STATEMENT OF COMPLIANCE

#### WE hereby certify

1. We have investigated the proposed substitute and determined that it meets or exceeds, in all respects, the specified product.
2. The same warranty will be provided for the proposed substitution as for the specified product.
3. Installation will be coordinated and other changes made as necessary to ensure that work is complete in all respects, including costs both to others and us.
4. We waive claims for additional costs, which may subsequently become apparent due to use of the proposed substitute.
5. The proposed substitute is compatible with other materials.
6. The proposed substitute can be provided within the Contract Time and will not cause Work delay.
7. The proposed substitute complies with applicable requirements of governing authorities.
8. The proposed substitute will not affect indicated dimensions on drawings.
9. The proposed substitute will not affect other materials and systems.
10. The proposed substitute will not affect work of other trades.
11. The proposed substitute will not require redesign work by the Architect.
12. The person signing this form is legally authorized representative of our firm.

### EXCEPTIONS

	EXCEPTION STATEMENT
	We do not take exception to any item listed in the above Compliance Statement.
	We have attached documentation indicating items to which we take exception and why.

(Type Name)

(Signature)

(Date)

ACCEPTED	Accepted by	Date	REJECTED	Rejected by	Date
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**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 Sandusky County Park District, Sandusky County, Ohio, as obligee in  
the penal sum of the dollar amount of the bid submitted by the principal to the obligee on \_\_\_\_\_  
\_\_\_\_\_, 202\_\_\_\_, to undertake \_\_\_\_\_ for the Roof Replacement,  
River Cliff Lodge, Fremont, Ohio ("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.

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  
therefore 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 it 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 \_\_\_\_\_, 202\_\_.

\_\_\_\_\_  
(PRINCIPAL) (Seal)

By: \_\_\_\_\_

Printed Name & Title: \_\_\_\_\_

\_\_\_\_\_  
(SURETY) (Seal)

By: \_\_\_\_\_

Printed Name & Title: \_\_\_\_\_

\_\_\_\_\_  
NAME OF SURETY'S AGENT

Surety's Agent's Address: \_\_\_\_\_

\_\_\_\_\_  
Surety's Agent's Telephone Number: \_\_\_\_\_

Surety's Agent's Fax Number: \_\_\_\_\_

**CONTRACT BOND**  
(O.R.C. § 153.57)

KNOW ALL PERSONS BY THESE PRESENTS, that we, the undersigned ("Contractor") as principal and \_\_\_\_\_ as sureties, are hereby held and firmly bound unto the Sandusky County Park District, Sandusky County, Ohio, 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 \_\_\_\_\_, 202\_\_, enter into a contract with the Board for the Roof Replacement, River Cliff Lodge, Fremont, Ohio ("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 it 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 \_\_\_\_\_, 202\_\_.

\_\_\_\_\_  
(PRINCIPAL) (Seal)

By: \_\_\_\_\_

Printed Name & Title: \_\_\_\_\_

\_\_\_\_\_  
(SURETY) (Seal)

By: \_\_\_\_\_

Printed Name & Title: \_\_\_\_\_

\_\_\_\_\_  
NAME OF SURETY'S AGENT

Surety's Agent's Address: \_\_\_\_\_

Surety's Agent's Telephone Number: \_\_\_\_\_

Surety's Agent's Fax Number: \_\_\_\_\_

**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 it's duly  
(Address of Contractor)

authorized representative, states that effective this \_\_\_\_ day of \_\_\_\_\_, 202\_\_.

\_\_\_\_\_  
(Name of Contractor)

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

<u>County</u> thereon)	<u>Amount</u> (include total amount penalties and interest
---------------------------	--

Lucas 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 this \_\_\_\_ day of \_\_\_\_\_, 202\_\_.

\_\_\_\_\_  
(Notary Public)

My commission expires  
\_\_\_\_\_



**STATE OF OHIO  
DEPARTMENT OF TAXATION  
CONSTRUCTION CONTRACT EXEMPTION CERTIFICATE**

**Identification of Contract:**

Contractee's (Owner's) name: Sandusky County Park District, Fremont, Ohio

Exact location of job/project: River Cliff Park, 1329 Tiffin Street, Fremont, Ohio 43420

Name of job/project as it  
appears on contract documentation: River Cliff Park Lodge – Office Renovation

The undersigned hereby certifies that the tangible personal property purchased under this exemption certificate was purchased for incorporation into:

- ☐ Real property under a construction contract with the United States government, its agencies, the State of Ohio or an Ohio political subdivision.
- ☐ Real property which is owned, or will be accepted for ownership at the time of completion, by the United States government, its agencies, the State of Ohio or an Ohio political subdivision.
- ☐ A house of public worship or religious education.
- ☐ A building used exclusively for charitable purposes by a nonprofit organization operated exclusively for charitable purposes as defined in section 5739.02(B)(12) of the Revised Code.
- ☐ The original construction of a sports facility under section 307.696 of the Revised Code.
- ☐ A hospital facility entitled to exemption under section 140.08 of the Revised Code.

The original of this certificate must be signed by the owner/contractee and/or government official and must be retained by the prime contractor. Copies must be maintained by the owner/contractee and all subcontractors. When copies are issued to suppliers when purchasing materials, each copy must be signed by the contractor or subcontractor making the purchase.

**Prime Contractor**

Name \_\_\_\_\_  
Signed by \_\_\_\_\_  
Title \_\_\_\_\_  
Address \_\_\_\_\_  
City, State, Zip \_\_\_\_\_  
Date \_\_\_\_\_

**Subcontractor**

Name \_\_\_\_\_  
Signed by \_\_\_\_\_  
Title \_\_\_\_\_  
Address \_\_\_\_\_  
City, State, Zip \_\_\_\_\_  
Date \_\_\_\_\_

**Owner/Contractee**

Name Sandusky County Park District  
Signed by \_\_\_\_\_  
Title Andrew Brown, Director  
Address 1970 Countryside Place  
City, State, Zip Fremont, Ohio 43420  
Date \_\_\_\_\_

**Political Subdivision**

Name \_\_\_\_\_  
Signed by \_\_\_\_\_  
Title \_\_\_\_\_  
Address \_\_\_\_\_  
City, State, Zip \_\_\_\_\_  
Date \_\_\_\_\_





GENERAL CONDITIONS/SUPPLEMENTARY CONDITIONS

**GENERAL CONDITIONS**

The standard form of "General Conditions of the Contract for Construction", of the American Institute of Architects, A201 - 2017 edition, is hereby incorporated into and becomes a part of the Specifications for this work.

**SUPPLEMENTARY GENERAL CONDITIONS**

The following "Supplementary General Conditions" are subject to all requirements of the General Conditions of the Contract, except as stated above, and modify them as follows.

The following items refer to the General Conditions by Article and Sub-Article numbers:

**ARTICLE 2: OWNER**

2.2.2 Delete the first part of the subparagraph as follows "Except for permits....under the contract documents"

2.2.2.1 The Owner shall secure the required general building permit required by the State of Ohio.

Add the following paragraph 2.2.6 to 2.2.6.2.

2.2.6 Notice of Commencement

2.2.6.1 Pursuant to Section 1311.252, ORC, the Owner shall prepare a Notice of Commencement in affidavit from identifying the name and address of the public authority, the Project number, the name, address and trade of all Contractors, the date of execution of the Contracts, and the name and address of the Surety for each Contractor, in addition to the name and address of the Owner's representative upon whom a Claim Affidavit may be served.

2.2.6.2 The Notice of Commencement shall be made available upon request. The unavailability of a Notice of Commencement or incorrect information in the Notice of Commencement does not adversely affect the right of claimants, pursuant to Section 1311.252(C), ORC.

**ARTICLE 3: CONTRACTOR**

Add the following paragraphs 3.1.4 to 3.1.4.4, 3.1.5 to 3.1.5.1, 3.1.6 to 3.1.6.2 and 3.1.7 to 3.1.7.2.

3.1.4 Nondiscrimination

3.1.4.1 During the performance of the Contract, the Contractor agrees that in the hiring of employees for the performance of Work, including without limitation Work to be performed by a Subcontractor, no Contractor or Subcontractor, and no person acting on behalf of the Contractor or Subcontractor, shall, by reason of race, religion, national origin, age, sex, disability, Vietnam era Veteran status, or color, discriminate against any citizen in the employment of labor or workers who are qualified and available to perform the Work to which the employment relates.

3.1.4.2 The Contractor further agrees that no Contractor or Subcontractor, and no person acting on behalf of the Contractor or Subcontractor, shall, in any manner, discriminate against or intimidate any employee hired for the performance of Work on account of race, religion, national origin, age, sex, disability, Vietnam era Veteran status or color.

3.1.4.3 The Contractor agrees that the Contractor will fully cooperate with the State Equal Opportunity Coordinator, with any other official or agency of the State or federal government which seeks to eliminate unlawful employment discrimination, and with all other State and federal efforts to assure equal employment practices under the Contract.

3.1.4.4 In the event of the Contractor's noncompliance with the nondiscrimination clauses, the Contract may be terminated or suspended in whole or in part.

3.1.5 Affirmative Action

3.1.5.1 Each Contractor must fully comply with the State's Equal Employment in the Construction Industry rules set forth in Chapters 123:2-3 through 123:2-9, OAC.

3.1.6 Women in Construction

3.1.6.1 The utilization goal for women workers in the performance of the Work in each trade in all geographical areas is 6.9 percent of the work hours.

3.1.6.2 The Contractor's good faith effort to comply with this goal shall be reviewed and determined according to Chapters 123:2-1 through 123:2-9, OAC.

- 3.6.1 Delete subparagraph 3.6.1 and substitute the following:  
"The Project is tax exempt."
- 3.7.1 Delete the requirement that the contractor shall secure and pay for the building and plumbing permits. The Owner will secure and pay for these two permits. The Contractor will be responsible for all other permits.

**ARTICLE 9: PAYMENTS AND COMPLETION**

Add the following subparagraph 9.4.3.

- 9.4.3 Certified payroll reports for the period of time indicated shall be attached to one (1) copy of every Certificate for Payment.

- 9.6.1 Add the following subparagraphs to 9.6.1.

9.6.1.1 Payment of an approved Certificate for Payment shall be made within 30 days from the date of approval by the Owner.

9.6.1.2 Payments due and not paid to the Contractor within such 30 day period shall bear interest from the date payment is due under the Contract Documents at the average of the prime rate established at the commercial banks in the city of over 100,000 population that is nearest to the Project, pursuant to Section 153.14, ORC.

Add the following paragraph 9.11 to 9.11.3.

- 9.11 Retainage

9.11.1 Partial payments to this contractor for material and labor performed under the contract shall be made at the rate of 92 percent of the amount invoiced until The Certificate for Payment which shows the total contract completion at 50 percent or greater, pursuant to Section 153.13, ORC.

9.11.2 After the contract is 50 percent complete, as evidenced by payments in the amount of at least 50 percent of the contract price to the contractor. No additional funds shall be retained from payments for material and labor.

9.11.3 All funds retained for the faithful performance of the work shall be deposited in an escrow account with a bank in the state in accordance with the terms and conditions provided in an escrow agreement executed by the Contractor, the Owner, and the applicable bank, pursuant to Section 153.63, ORC.

**ARTICLE 11: INSURANCE AND BONDS**

Add the following Clause 11.1.2.1 to 11.1.2:

11.1.2.1 The insurance required by Subparagraph 11.1.1 shall be written for not less than the following limits or greater if required by law:

1. Worker's Compensation:
  - a. State Statutory
  - b. Applicable Federal  
(e.g., Longshoremen's) Statutory
  - c. Employer's Liability \$250,000 per Accident  
\$500,000 Disease, Policy Limit  
\$250,000 Disease, Each  
Employee
2. Comprehensive or Commercial General Liability (including Premises-Operations; Independent Contractors' Protective; Products and Completed Operations; Broad Form Property Damage);
  - a. Bodily Injury:  
\$250,000 Each Occurrence  
\$500,000 Aggregate
  - b. Property Damage:  
\$250,000 Each Occurrence  
\$500,000 Aggregate
  - c. Products and Completed Operations to be maintained for 1 year  
after final payment:  
\$500,000 Aggregate
  - d. Property Damage Liability Insurance shall provide X, C, and U  
coverage.
  - e. Broad Form Property Damage Coverage shall include Complete  
Operations.
3. Contractual Liability:
  - a. Bodily Injury:  
\$250,000 Each Occurrence  
\$500,000 Aggregate

- 4. Personal Injury, with Employment Exclusion deleted:  
\$500,000 Aggregate
- 5. Business Auto Liability (including owned, non-owned and hired vehicles):
  - a. Bodily Injury
    - \$250,000 Each Person
    - \$500,000 Each Occurrence
  - b. Property Damage:  
\$250,000 Each Occurrence

Delete paragraph 11.3 Prospect Management Protective Liability Insurance and subparagraphs 11.3.1 to 11.3.3.

Add the following subparagraph 11.5.1.1

11.5.1.1 The Contractor shall furnish a performance bond for the entire project.

**ARTICLE 13: MISCELLANEOUS PROVISIONS**

Add the following paragraphs 13.8 to 13.8.4, 13.9 to 13.9.3 and 13.10 to 13.10.2.4.

13.8 Subcontractors and Material Suppliers

13.8.1 Within ten (10) days of the Notice to Proceed, the Contractor shall list the Contractor's proposed Subcontractors and Material Suppliers and submit such list to the Architect.

13.8.2 The Contractor shall not replace any Subcontractor or Material Supplier after execution of the Contract without written approval of the Owner.

13.8.3 The Contractor shall be fully responsible for all acts and omissions of the Contractor's Subcontractors and Material Suppliers and shall be responsible for scheduling and coordinating the Work of the Contractor's Subcontractors and Material Suppliers.

13.8.3.1 Delays attributable to the contractor's Subcontractors or Material Suppliers shall be deemed to be delays within the control of the Contractor.

13.8.3.2 The Contractor shall required that each of the Contractor's Subcontractors have a competent supervisor at the Project whenever Work is being performed by the Subcontractor.

13.8.3.3. The Contractor agrees to bind the Contractor's Subcontractor and Material Supplier to the terms of the Contract Documents, so far as applicable to the Work of such Subcontractor or Material Supplier.

13.8.4 The Contractor shall required each Subcontractor and Material Supplier to fully warrant and guarantee, for the benefit of the Owner, the effectiveness, fitness for the purpose intended, quality and merchantability of any Work performed or item provided or installed by such Subcontractor or Material Supplier.

13.9 Prompt Payment

13.9.1 Pursuant to Section 4113.61(A)(1), ORC, if a subcontractor or Material Supplier requests payment in time to allow the Contractor to include the request in the Contractor's Certificate for Payment, the Contractor shall pay within ten (10) days after the receipt of payment from the Owner.

13.9.1.1 To a Subcontractor an amount equal to percent of completion allowed by the Owner for the Subcontractor's Work.

13.9.1.2 To a Material Supplier an amount equal to all or a portion of the Material Supplier's request for materials furnished.

13.9.2 The Contractor may reduce the amount to be paid to a Subcontractor or Material Supplier pursuant to paragraph 9.11 by the amount of any retainage withheld from the Contractor and may withhold amounts necessary to resolve disputed liens or claims involving the Work of the Subcontractor or Material Supplier.

13.9.3 If the Contractor fails to comply with the provision of paragraph 9.11, the Contractor shall pay to the applicable Subcontractor or Material Supplier 18 percent interest on any unpaid amount beginning on the 11th day after receipt of payment from the Owner.

End of Section

SECTION 01010 - SUMMARY OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Requirements of the contract documents including Division 1 specifications, apply to this section.
- B. This section includes:
  - 2. Outline Scope of Work
  - 3. Contractor's use of site and premises
  - 4. Work sequence

1.2 WORK COVERED BY CONTRACT DOCUMENTS

- A. This section includes a brief description of the proposed work to be performed under Division B. It is issued as a guide to aid the bidders in understanding of the scope of work, but shall not be considered as being all inclusive or limited to the scope of work described in the contract documents. All bidders shall base bids on Scope of Work identified in the project drawings and project manual.
  - 1. **Base Bid** – Office Renovation. Demolition of interior and exterior finishes and renovation into new office suite including new brick and siding.
    - A. Provide cost to provide all labor, materials and equipment required to perform indicated work in base bid.
    - B. Demolish existing walls, finishes and accessories in accordance with the drawings.
    - C. Install all materials drawn and specified for the construction of the new office suite and exterior cladding indicated in the base bid on the drawings.

1.3 CONTRACTOR USE OF SITES AND PREMISES

- A. Contractor shall coordinate work with Owner.
- B. Contractor shall limit use of sites to the project areas indicated on drawings.
- C. Contractor shall provide Owner access to buildings as required for park district to function.
- D. Time restrictions for performing exterior work shall conform to the City of Fremont requirements.

**1.4 WORK SEQUENCES**

- A. Construction work shall accommodate Owner's occupancy requirements. During the construction period coordinate construction schedule and operation with Owner.
- B. The Contractor shall be prepared to start work within one week after award of Contract.
- C. The expected sequence of construction for the major components of the work will be determined upon award of the project.

**1.5 OCCUPANCY REQUIREMENTS / PARK ACCESS**

- A. Contractor shall cooperate with Owner to minimize conflict and to facilitate Owner's operations.
- B. Schedule the work to accommodate this requirement.
- C. It is expected that the work will occur during periods when the park will be open for regular activities. The Contractor shall make arrangements to ensure that patron and vehicular access to the park and all recreation areas are maintained throughout the duration of the work.
- D. The Contractor shall protect the work with an understanding that children will be in the park during periods when the Contractor may not be on site. This may require special protection of the work beyond what would normally be required for work within the public right-of-way.
- E. Work shall be permitted and is encouraged on the weekends to expedite construction schedule.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION



SECTION 01019 - CONTRACT CONSIDERATIONS

1. PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Contingency allowance.
- B. Schedule of Values.
- C. Application for Payment.
- D. Change procedures.

1.2 RELATED SECTIONS

- A. All sections.

1.3 CONTINGENCY ALLOWANCE

- A. Include in the project bids, the following project contingencies for use upon Owner's instruction:
  - 1. Office Renovation (Base Bid) \$20,000.00
- B. Contractor's costs for products, delivery, installation, labor, insurance, payroll, taxes, bonding, equipment rental, overhead and profit will be included in Change Orders authorizing expenditure of funds from this Allowance.
- C. Funds will be drawn from Contingency Allowance only by Change Order.
- D. At closeout of Contract, funds remaining in Contingency Allowance will be credited to Owner by Change Order.

1.4 SCHEDULE OF VALUES

- A. Submit typed schedule on AIA Form G703 - Application and Certificate for Payment Continuation Sheet.
- B. Submit Schedule of Values in duplicate within 15 days after date established in Notice to Proceed.

- C. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the major specification Section. Identify site mobilization, bonds and insurance, and other pertinent information.
- D. Include in each line item, the amount of Allowances specified in this Section. For unit cost Allowances, identify quantities taken from Contract Documents multiplied by the unit cost to achieve the total for the item.
- E. Include separately from each line item, a directly proportional amount of Contractor's overhead and profit.
- F. Revise schedule to list approved Change Orders, with each Application For Payment.

#### 1.5 APPLICATIONS FOR PAYMENT

- A. Submit three copies of each application on AIA Form G702 - Application and Certificate for Payment.
- B. Content and Format: Utilize Schedule of Values for listing items in Application for Payment.
- C. Payment Period: Monthly.
- D. Waiver of Lien: Include with each Application for Payment except the first Waiver of Lien for payments associated with previous work.

#### 1.6 CHANGE PROCEDURES

- A. The Architect/Engineer will advise of minor changes in the Work not involving an adjustment to Contract Sum/Price or Contract Time as authorized by AIA A201, by issuing supplemental instructions on AIA Form G710.
- B. The Architect/Engineer may issue a Proposal Request or which includes a detailed description of a proposed change with supplementary or revised Drawings and specifications. Contractor will prepare and submit an estimate with 15 days, and will include a revised project schedule.
- C. The Contractor may propose a change by submitting request for change to the Architect/Engineer, describing the proposed change and its full effect on the Work. Include a statement describing the reason for the change, and the effect on the Contract Sum/Price and Contract Time with full documentation and a statement describing the effect on Work by separate or other contractors. Document any requested substitutions in accordance with Section 01600.

- D. Stipulated Sum/Price Change Order: Based on Proposal Request or Bulletin and Contractor's fixed maximum price quotation or Contractor's request for a Change Order as approved by Architect/Engineer.
- E. Time and Material Change Order: Submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract. Architect/Engineer will determine the change allowable in Contract Sum/Price and Contract Time as provided in the Contract Documents.
- F. Maintain detailed records of work done on Time and Material basis. Provide full information required for evaluation of proposed changes, and to substantiate costs for changes in the Work.
- G. Change Order Forms: AIA G701/AIA G701/CM Change Order.
- E. Execution of Change Orders: Architect/Engineer will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.

2. PART 2 PRODUCTS

Not Used

3. PART 3 EXECUTION

Not Used

END OF SECTION



SECTION 01027 - APPLICATIONS FOR PAYMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Requirements of the contract documents including Division 1 specifications, apply to this section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements governing each prime contractor's Applications for Payment.
  - 1. Coordinate the Schedule of Values and Applications for Payment with the Contractor's Construction Schedule, Submittal Schedule, and List of Subcontracts.
- B. Related Sections: The following Sections contain requirements that relate to this Section.
  - 1. Schedules: The Contractor's Construction Schedule and Submittal Schedule are specified in Division 1 Section "Submittals."

1.3 SCHEDULE OF VALUES

- A. Coordination: Prime Contractor for the demolition contract shall coordinate preparation of its Schedule of Values for the Work with preparation of the Project Schedule.
  - 1. Correlate line items in the Schedule of Values with other required administrative schedules and forms, including:
    - a. Contractor's Construction Schedule.
    - b. Application for Payment forms, including Continuation Sheets.
    - c. List of subcontractors.
    - d. List of principal suppliers and fabricators.
  - 2. Submit the Schedule of Values to the Architect at the earliest possible date but no later than 7 days before the date scheduled for submittal of the initial Applications for Payment.

- B. Format and Content: Use the Project Manual table of contents as a guide to establish the format for the Schedule of Values. Provide at least one line item for each Specification Section.
1. Identification: Include the following Project identification on the Schedule of Values:
    - a. Project name and location.
    - b. Name of the Architect.
    - c. Contractor's name and address.
    - d. Date of submittal.
  2. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:
    - a. Related Specification Section or Division.
    - b. Description of Work.
    - c. Name of subcontractor.
    - d. Name of manufacturer or fabricator.
    - e. Name of supplier.
    - f. Dollar value.
      - 1) Percentage of Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
  3. Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Break principal subcontract amounts down into several line items.
  4. Round amounts to nearest whole dollar; the total shall equal the Contract Sum.
  5. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment, purchased or fabricated and stored, but not yet installed.
    - a. Differentiate between items stored on-site and items stored off-site. Include requirements for insurance and bonded warehousing, if required.
  6. Provide separate line items on the Schedule of Values for initial cost of the materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
  7. Margins of Cost: Show line items for indirect costs and margins on actual costs only when such items are listed individually in Applications for Payment. Each item in the Schedule of Values and Applications for Payment shall be complete. Include the total cost and proportionate share of general overhead and profit margin for each item.

- a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at the Contractor's option.

#### **1.4 APPLICATIONS FOR PAYMENT**

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by the Architect and paid for by the Owner.
  1. The initial Application for Payment, the Application for Payment at time of Substantial Completion, and the final Application for Payment involve additional requirements.
- B. Payment-Application Times: The date for each progress payment is the 15th day of each month. The period covered by each Application for Payment starts on the day following the end of the preceding period and ends 15 days prior to the date for each progress payment.
- C. Payment-Application Forms: Use AIA Document G702 and Continuation Sheets G703 as the form for Applications for Payment.
- D. Application Preparation: Complete every entry on the form. Include notarization and execution by a person authorized to sign legal documents on behalf of the Contractor. The Architect will return incomplete applications without action.
  1. Entries shall match data on the Schedule of Values and the Contractor's Construction Schedule. Use updated schedules if revisions were made.
  2. Retainage will be 5% for Labor and 5% for stored materials up to 50% of substantial completion.
- E. Transmittal: Submit 3 signed and notarized original copies of each Application for Payment to the Architect by a method ensuring receipt within 24 hours. One copy shall be complete, including waivers of lien and similar attachments, when required.
  1. Transmit each copy with a transmittal form listing attachments and recording appropriate information related to the application, in a manner acceptable to the Architect.
- F. Waivers of Mechanics Lien: With each Application for Payment, submit waivers of mechanics liens from subcontractors, sub-subcontractors and suppliers for the construction period covered by the previous application.
  1. Submit partial waivers on each item for the amount requested, prior to deduction for retainage, on each item.

2. When an application shows completion of an item, submit final or full waivers.
  3. The Owner reserves the right to designate which entities involved in the Work must submit waivers.
  4. Waiver Forms: Submit waivers of lien on forms, and executed in a manner, acceptable to the Owner.
- G. Initial Application for Payment: Administrative actions and submittals, that must precede or coincide with submittal of the first Application for Payment, include the following:
1. List of subcontractors.
  2. List of principal suppliers.
  3. Schedule of Values.
  4. Contractor's Construction Schedule.
  5. Schedule of principal products.
  6. Copies of authorizations and licenses from governing authorities for performance of the Work.
  7. Initial progress report.
  8. Report of preconstruction meeting.
  9. Certificates of insurance and insurance policies.
  10. Performance and payment bonds.
  11. Data needed to acquire the Owner's insurance.
- H. Application for Payment at Substantial Completion: Following issuance of the Certificate of Substantial Completion, submit an Application for Payment.
1. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
  2. Administrative actions and submittals that shall precede or coincide with this application include:
    - a. Occupancy permits and similar approvals.
    - b. Warranties (guarantees) and maintenance agreements.
    - c. Test records.
    - d. Maintenance instructions.
    - e. Final site cleaning.
    - f. Application for reduction of retainage and consent of surety.
    - g. List of incomplete Work, recognized as exceptions to Architect's Certificate of Substantial Completion.
- I. Final Payment Application: Administrative actions and submittals that must precede or coincide with submittal of the final Application for Payment include the following:
1. Completion of Project closeout requirements.



2. Completion of items specified for completion after Substantial Completion.
3. Ensure that unsettled claims will be settled.
4. Ensure that incomplete Work is not accepted and will be completed without undue delay.
5. Transmittal of required Project construction records to the Owner.
6. Proof that taxes, fees, and similar obligations were paid.
7. Removal of temporary facilities and services.
8. Removal of surplus materials, rubbish, and similar elements.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION



## SECTION 01035 - MODIFICATION PROCEDURES

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Requirements of the contract documents including Division 1 specifications, apply to this section.

#### 1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for handling and processing contract modifications.
  - 1. Prime Contract: Provisions of this Section apply to the work of prime contractor.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
  - 1. Division 1 Section "Contract Considerations" for procedural requirements governing the handling and processing of allowances.
  - 2. Division 1 Section "Submittals" for requirements for the Contractor's Construction Schedule.
  - 3. Division 1 Section "Applications for Payment" for administrative procedures governing Applications for Payment.

#### 1.3 MINOR CHANGES IN THE WORK

- A. The Architect/Engineer will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or Contract Time, on either AIA Form G710, Architect/Engineer's Supplemental Instructions or as part of an RFI (Request for Information) response form.

#### 1.4 CHANGE ORDER PROPOSAL REQUESTS

- A. The Architect/Engineer will issue a detailed description of proposed changes in the Work that will require adjustment to the Contract Sum or Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
  - 1. Proposal requests issued by the Architect/Engineer are for information only. Do not consider them as an instruction either to stop work in progress or to execute the proposed change.
  - 2. Within 10 days of receipt of a proposal request, submit an estimate of cost necessary to execute the change to the Architect/Engineer for the Owner's review.

- a. Include a list of quantities of products required and unit costs, with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.
- b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
- c. Include a statement indicating the effect the proposed change in the Work will have on the Contract Time.

#### 1.5 CHANGE ORDER PRICING GUIDELINES

- A. For each change, the Contractor shall furnish a detailed, written Proposal itemized according to these Pricing Guidelines. Any Subcontractor or Material Supplier pricing shall also be itemized according to these Pricing Guidelines. In order to expedite the review and approval process, all Proposals shall be prepared in the categories and in the order listed below. These Pricing Guidelines are intended to establish the maximum amount which the Owner will pay for any Change Order, including without limitation all amounts for interference, delay, hindrance or disruption of the Work. A Change Order may provide that the Owner may pay less than the amount established by these Pricing Guidelines if an equitable amount is negotiated between the Construction Manager and the Contractor.
- B. LABOR: All field labor shall be priced at the current base rate being paid by the Contractor for such labor on the Project, or if such labor has not been previously employed on the Project, the base rate currently being paid by the Contractor on projects in the same locality, excluding fringe benefits. The payroll is to be based on straight time only and is to include number of hours and rate of pay for each classification of worker. If overtime is approved, list only the straight time portion in this item; overhead and profit will not be permitted on the cost of any premium time costs or shift work premiums.
- C. FRINGES: All established payroll taxes, assessments and fringe benefits on the labor in Paragraph 1.5.B. This may include, without limitation, FICA, Federal and State Unemployment, Health and Welfare, Pension Funds, Workers' Compensation and Apprentice Fund. Each of the fringes is to be a separate line item.
- D. EQUIPMENT RENTALS: All charges for certain non-owned heavy or specialized equipment at up to 100 percent of the documented rental cost. No rental charges will be allowed for hand tools, minor equipment, simple scaffolds, etc. Downtime due to repairs, maintenance and weather delays will not be allowed.
- E. OWNED EQUIPMENT: All charges for certain owned, heavy or specialized equipment at up to 100 percent of the cost listed by the Associated Equipment Dealers Blue Book. No recovery will be allowed for hand tools, minor

equipment, simple scaffolds, etc. The longest period of time that the equipment is to be required for the Work will be the basis for the pricing. Downtime due to repairs, maintenance and weather delays will not be allowed.

- F. TRUCKING: A reasonable delivery charge or per-mile trucking charge for delivery of required materials or equipment. Charges for use of a pick-up truck will not be allowed.
- G. OVERHEAD: Overhead on items in Paragraph 1.5.B, C., D., E., and F., up to 10 percent, which shall include all costs required to schedule the work and coordinate with the Contractors.
  - 1. Overhead includes, without limitation, telephone, telephone charges, facsimile, telegrams, postage, photos, photocopying, hand tools, simple scaffolds (one level high), tool breakage, tool repairs, tool replacement, tool blades, tool bits, home office estimating and expediting, home office clerical and accounting support, home office labor (management, supervision, engineering\*), legal services, travel and parking expenses.
  - 2. \*An exception from Paragraph 1.5.G.1., is allowed for shop or engineering labor for steel fabricators, sheet metal fabricators and sprinkler system fabricators. Recovery for such matters will be allowed under Paragraph 1.5.B. and C.
- H. MATERIALS
  - 1. All materials purchased by the Contractor and incorporated into the changed Work, showing costs, quantities, or Unit Prices of all items, as appropriate. Reimbursement of material costs shall only be allowed in the amount of the Contractor's actual cost, including any and all discounts, rebates or related credits.
  - 2. One-third (33 percent) of the cost of reusable materials for each use, such as formwork lumber, shoring or temporary enclosures.
- I. PROFIT: Profit on items in Paragraphs 1.5, Items B., C., D., E., F., G., and H, up to 5 percent.
- J. SUBCONTRACTOR: The reasonable cost of all labor and material provided by a Subcontractor whose pricing is included and which complies with these Pricing Guidelines.
- K. CONTRACTOR MARK-UP ON SUBCONTRACTOR: Mark-up on items in Paragraph 1.5.J. up to 5 percent.
- L. MISCELLANEOUS: The following items are allowable at the cost of the Work, with no overhead or profit.

1. The cost of extending the Bond and the cost of extending liability, property damage, builder's risk or specialty coverage insurance.
  2. The premium portion only for approved overtime (labor and fringes). The straight time portion is included in Paragraphs 1.5.B. and 1.5.C.
  3. Fees for permits, licenses, inspections, tests, etc.
  4. When requested by the Contractor and approved in writing by the Owner due to special circumstances, reimbursement will be paid for overnight lodging, travel and food in an amount not to exceed the Owner's travel guidelines.
- M. Costs which will not be reimbursed for Change Order Work include the following:
1. Employee Profit Sharing Plans: Regardless of how defined or described, the Contractor will pay these charges from Contractor profit and will not be reimbursed.
  2. Voluntary Employee Deductions: Examples are United Way and U.S. Savings Bonds, etc.
- N. State sales tax shall be allowed on items as defined by Paragraph 1.6.
- 1.6 TAXES
- A. Only those materials which ultimately become a part of the completed structure or improvement which constitutes the Project will be exempt from State sales tax as provided in Section 5739.02, ORC, and State use tax as provided in Section 5741.01, ORC.
  - B. The purchase, lease or rental of material, equipment, parts or expendable items such as form lumber, tools, oils, greases and fuels, which are used in connection with the Work, are subject to the application of State sales tax and State use tax.
- 1.7 ALLOWANCES
- A. Allowance Adjustment: For allowance-cost adjustment, base each Change Order Proposal on the difference between the actual purchase amount and the allowance, multiplied by the final measurement of work-in-place. Where applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.
    1. Include installation costs in the purchase amount only where indicated as part of the allowance.
    2. When requested, prepare explanations and documentation to substantiate the margins claimed.

**1.8 CONSTRUCTION CHANGE DIRECTIVE**

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

**1.9 CHANGE ORDER PROCEDURES**

- A. Upon the Owner's approval of a Proposal Request, the Architect/Engineer will issue a Change Order for signatures of the Owner and the Contractor.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION





## SECTION 01200 - PROJECT MEETINGS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Requirements of the contract documents including Division 1 specifications, apply to this section.

#### 1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for project meetings, including, but not limited to, the following:
  - 1. Preconstruction conferences.
  - 2. Progress meetings.
  - 3. Coordination meetings.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
  - 1. Division 1 Section "Submittals" for submitting the Contractor's Construction Schedule.

#### 1.3 PRECONSTRUCTION CONFERENCE

- A. Schedule a preconstruction conference before starting construction, at a time convenient to the Owner and the Architect/Engineer, but no later than 15 days after execution of the Agreement. Hold the conference at the Project Site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.
- B. Attendees: Authorized representatives of the Owner, Architect/Engineer, and their consultants; the Contractors and their superintendents; major subcontractors; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with the Project and authorized to conclude matters relating to the Work.
- C. Agenda: Discuss items of significance that could affect progress, including the following:

1. Tentative construction schedule.
2. Critical work sequencing.
3. Designation of responsible personnel.
4. Procedures for processing field decisions and Change Orders.
5. Procedures for processing Applications for Payment.
6. Distribution of Contract Documents.
7. Submittal of Shop Drawings, Product Data, and Samples.
8. Preparation of record documents.
9. Use of the premises.
10. Parking availability.
11. Office, work, and storage areas.
12. Equipment deliveries and priorities.
13. Safety procedures.
14. First aid.
15. Security.
16. Housekeeping.
17. Working hours.

#### **1.4 PROGRESS MEETINGS**

- A. Conduct progress meetings at the Project Site at regular intervals. Notify the Owner and the Architect/Engineer of scheduled meeting dates. Coordinate dates of meetings with preparation of the payment request. The job progress meetings will be facilitated by the Architect/Engineer.
- B. Attendees: In addition to representatives of the Owner and the Architect/Engineer, each subcontractor, supplier, or other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with the Project and authorized to conclude matters relating to the Work.
- C. Agenda: Review and correct or approve minutes of the previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to the status of the Project.
  1. Contractor's Construction Schedule: Review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction Schedule, whether on time or ahead or behind schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to insure that current and subsequent activities will be completed within the Contract Time.
  2. Review the present and future needs of each entity present, including the following:

- a. Interface requirements.
  - b. Time.
  - c. Sequences.
  - d. Status of submittals.
  - e. Deliveries.
  - f. Off-site fabrication problems.
  - g. Access.
  - h. Site utilization.
  - i. Temporary facilities and services.
  - j. Hours of work.
  - k. Hazards and risks.
  - l. Housekeeping.
  - m. Quality and work standards.
  - n. Change Orders.
  - o. Documentation of information for payment requests.
- D. Reporting: The Architect/Engineer will distribute minutes of the meeting to each party present and to parties who should have been present. Include a brief summary, in narrative form, of progress since the previous meeting and report.
1. Schedule Updating: Revise the Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue the revised schedule concurrently with the report of each meeting.

#### 1.5 COORDINATION MEETINGS

- A. Conduct project coordination meetings at weekly intervals convenient for all parties involved. Project coordination meetings are in addition to specific meetings held for other purposes, such as regular progress meetings.
- B. Request representation at each meeting by every party currently involved in coordination or planning for the construction activities involved.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION



SECTION 01270 – UNIT PRICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Requirements of the contract documents including Division 1 specifications, apply to this section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for unit prices.
- B. Related Sections include the following:
  - 1. Division 1 Section "Contract Considerations or Modification Procedures" for procedures for submitting and handling Change Orders.

1.3 DEFINITIONS

- A. Unit price is stated on the Bid Form as a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification, if estimated quantities of Work required by the Contract Documents are increased or decreased.

1.4 PROCEDURES

- A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead and profit.
- B. Measurement and Payment" Refer to individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.
- C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.
- D. List of Unit Prices: A list of required unit prices is included on the Bid Proposal Form.

PART 2 - PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION



## SECTION 01300 - SUBMITTALS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Requirements of the contract documents including Division 1 specifications, apply to this section.

#### 1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for submittals required for performance of the Work, including the following:
  - 1. Contractor's construction schedule.
  - 2. Submittal schedule.
  - 3. Daily construction reports.
- B. Administrative Submittals: Refer to other Division 1 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to, the following:
  - 1. Permits.
  - 2. Applications for Payment.
  - 3. Performance and payment bonds.
  - 4. Insurance certificates.
  - 5. List of subcontractors.
- C. Owner, Contractor and Architect shall utilize the electronic project management system EPMS as specified in Section 01320 for the central repository of project related documents including but not limited to submittals, information for the record and O&M Manuals.
- D. Related Sections: The following Sections contain requirements that relate to this Section:
  - 1. Division 1 Section "Applications for Payment" specifies requirements for submittal of the Schedule of Values.
  - 2. Division 1 Section "Project Meetings" specifies requirements for submittal and distribution of meeting and conference minutes.
  - 3. Division 1 Section "Quality Control" specifies requirements for submittal of inspection and test reports.
  - 4. Division 1 Section "Contract Closeout" specifies requirements for submittal of Project Record Documents and warranties at project closeout.

#### 1.3 DEFINITIONS

- A. Coordination Drawings show the relationship and integration of different construction elements that require careful coordination during fabrication or installation to fit in the space provided or to function as intended.

1. Preparation of Coordination Drawings is specified in Division 1 Section "Coordination" and may include components previously shown in detail on Shop Drawings or Product Data.

#### **1.4 SUBMITTAL PROCEDURES**

- A. The Contractor shall be responsible for the coordination of submittals and field verifications as required for the various parts of the work.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.
- C. Submittal Transmittal: Transmit each submittal from the prime Contractor to the Architect/Engineer using an electronic transmittal form. The Architect/Engineer will not accept submittals received from sources other than the prime Contractors.
- D. All submittals shall reference the Specification item that it covers, the Contractor's name, the Contract title and location, and the date of submission. Submittal shall also indicate whether the information is for the Engineer's review and approval, for record purposes, or for the fulfillment of the operation and maintenance requirements.

#### **1.5 CONTRACTOR'S CONSTRUCTION SCHEDULE**

- A. Bar-Chart Schedule: The Contractor shall prepare a fully developed, horizontal bar-chart-type, contractor's construction schedule. Submit within 15 days after the date established for "Commencement of the Work."

#### **1.6 DAILY CONSTRUCTION REPORTS**

- A. Prepare a weekly construction report recording the following information concerning events at the site, and submit copies to the Architect/Engineer at weekly intervals:
  1. List of subcontractors at the site.
  2. Approximate count of personnel at the site.
  3. High and low temperatures, general weather conditions.
  4. Accidents and unusual events.
  5. Stoppages, delays, shortages, and losses.
  6. Orders and requests of governing authorities.
  7. Change Orders received, implemented.
  8. Services connected, disconnected.

**PART 2 - PRODUCTS (Not Applicable)**

**PART 3 - EXECUTION**



**3.1 IDENTIFICATION OF SUBMITTALS**

- A. All submittals shall have a Submittal Identification & Approval cover sheet attached. A sample of the submittal cover sheet is attached for reference. The form will be provided by the Architect and coordinated with Contractor.
- B. All submittals shall be given a consecutive number when they are entered into the Electronic Project Management System (EPMS), See Section 01320.
- C. Resubmittals shall be entered into EPMS as resubmittals.
- D. Submittals to satisfy the Operation and Maintenance information requirements shall be entered into the EPMS as a submittal. The description shall have the prefix "OM".

**3.2 PRINTING AND DISTRIBUTION**

- A. Contractor shall provide printed copies of approved submittals and deliver them to the Owner and Engineers RPR at the project site.
- B. Contractor shall provide one printed copy of the approved O&M Manual and the electronic copy on portable electronic media device to the Owner.
- C. Contractor shall provide printed copies of submittals, project information or documents required to satisfy the building permit and inspections as may be required by the governing agency.
- D. The Architect will provide the stamped/sealed Contract Drawings for the initial filing of the building permit applications.

END OF SECTION



SECTION 01340 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Requirements of the contract documents including Division 1 specifications, apply to this section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for submittal of Shop Drawings, Product Data, Samples, and other miscellaneous quality-control submittals.
- B. Shop Drawings include, but are not limited to, the following:
  - 1. Fabrication drawings.
  - 2. Installation drawings.
  - 3. Setting diagrams.
  - 4. Shopwork manufacturing instructions.
  - 5. Schedules.
    - a. Standard information prepared without specific reference to the Project is not Shop Drawings.
- C. Product Data include, but are not limited to, the following:
  - 1. Manufacturer's product specifications.
  - 2. Manufacturer's installation instructions.
  - 3. Standard color charts.
  - 4. Catalog cuts.
  - 5. Roughing-in diagrams and templates.
  - 6. Standard wiring diagrams.
  - 7. Printed performance curves.
  - 8. Operational range diagrams.
  - 9. Mill reports.
  - 10. Standard product operating and maintenance manuals.
- D. Samples include, but are not limited to, the following:
  - 1. Partial Sections of manufactured or fabricated components.
  - 2. Small cuts or containers of materials.
  - 3. Swatches showing color, texture, and pattern.
  - 4. Color range sets.
  - 5. Field samples.
- E. Quality-control submittals include, but are not limited to, the following:

1. Design data.
  2. Certifications.
  3. Manufacturer's instructions.
  4. Manufacturer's field reports.
- F. Administrative Submittals: Refer to other Division 1 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to, the following:
1. Permits.
  2. Applications for payment.
  3. Performance and payment bonds.
  4. Insurance certificates.
  5. Listing of subcontractors.
- G. Related Sections: The following Sections contain requirements that relate to this Section:
1. Division 1 Section "Coordination" specifies requirements governing preparation and submittal of required Coordination Drawings.
  2. Division 1 Section "Schedules and Reports" specifies requirements for submittal of required schedules and reports, including the Submittal Schedule.
  3. Division 1 Section "Quality Control" specifies requirements for submittal of inspection and test reports.
  4. Division 1 Section "Contract Closeout" specifies requirements for submittal of Project Record Documents, including copies of final Shop Drawings, at project closeout.

### 1.3 DEFINITIONS

- A. Coordination Drawings show the relationship and integration of different construction elements that require careful coordination during fabrication or installation to fit in the space provided or to function as intended.
1. Preparation of Coordination Drawings is specified in Division 1 Section "Coordination" and may include components previously shown in detail on Shop Drawings or Product Data.
- B. Field samples are full-size physical examples erected on-site to illustrate finishes, coatings, or finish materials. Field samples are used to establish the standard by which the Work will be judged.

**1.4 SUBMITTAL PROCEDURES**

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal to the Architect/Engineer sufficiently in advance of scheduled performance of related construction activities to avoid delay.
1. Coordinate each submittal with other submittals and related activities that require sequential activity including:
    - a. Testing.
    - b. Purchasing.
    - c. Fabrication.
    - d. Delivery.
  2. Coordinate transmittal of different types of submittals for the same element of the Work and different elements of related parts of the Work to avoid delay in processing because of the Architect/Engineer's need to review submittals concurrently for coordination.
    - a. The Architect/Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are forthcoming.
  3. Processing: To avoid the need to delay installation as a result of the time required to process submittals, allow sufficient time for submittal review, including time for resubmittals.
    - a. Allow 2 weeks for the Architect/Engineer's initial review of each submittal. Allow additional time if the Architect/Engineer must delay processing to permit coordination with subsequent submittals. The Architect/Engineer will advise the Contractor when a submittal being processed must be delayed for coordination.
    - b. Where necessary to provide an intermediate submittal, process the intermediate submittal in the same manner as the initial submittal.
    - c. Allow 2 weeks for reprocessing each submittal.
    - d. The Architect/Engineer will not authorize an extension of time because of the Contractor's failure to transmit submittals to the Architect/Engineer sufficiently in advance of the Work to permit processing.
- B. Contractors Review: Submittals shall clearly indicate contractors and subcontractors review of the information submitted.
1. Supplier, fabricator, subcontractor, and contractor's identification of their review and concurrence that the submittal meets the requirements of the contract documents shall be clearly indicated on each sheet.

2. Submittals that have not been so identified and/or submittals that have major or multiple discrepancies with contract documents will be returned without further review.
  - C. Submittal Preparation: Place a permanent label or title block on each submittal for identification.
    1. Indicate name of the firm or entity that prepared each submittal on the label or title block.
  - D. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from the Contractor to the Architect/Engineer and to other destinations by use of a transmittal form. The Architect/Engineer will return submittals received from sources other than the Contractor.
    1. Record relevant information and requests for data on the transmittal form. On the form, or an attached separate sheet, record deviations from requirements of the Contract Documents, including minor variations and limitations.
    2. Include the Contractor's certification stating that information submitted complies with requirements of the Contract Documents.
- 1.5 SHOP DRAWINGS
- A. Submit newly prepared information, drawn accurately to scale. Do not reproduce Contract Documents or copy standard printed information as the basis of Shop Drawings.
    1. Include the following information on Shop Drawings:
      - a. Dimensions.
      - b. Identification of products and materials included.
      - c. Compliance with specified standards.
      - d. Notation of coordination requirements.
      - e. Notation of dimensions established by field measurement.
    2. Submit Coordination Drawings where required for integration of different construction elements. Show construction sequences and relationships of separate components where necessary to avoid conflicts in utilization of the space available.
    3. Highlight, encircle, or otherwise indicate deviations from the Contract Documents on the Shop Drawings.
    4. Do not allow Shop Drawing copies that do not contain an appropriate final stamp or other marking indicating the action taken by the Architect/Engineer to be used in construction.
    5. Sheet Size: Except for templates, patterns, and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm) but no larger than 30 by 40 inches (750 by 1000 mm).

6. Submittal: Submit one correctable, translucent, reproducible print and three blue- or black-line print for the Architect/Engineer's review. The Architect/Engineer will return the reproducible print and two copies.
  - a. The Contractor shall mark up and retain one copy of the returned reproducible as a "Record Document."

#### 1.6 PRODUCT DATA

- A. Collect Product Data into a single submittal for each element of construction or system. Mark each copy to show which choices and options are applicable to the Project.
  1. Where Product Data includes information on several similar products, some of which are not required for use on the Project, mark copies clearly to indicate which products are applicable.
  2. Where Product Data must be specially prepared for required products, materials, or systems because standard printed data are not suitable for use, submit as Shop Drawings not Product Data.
  3. Include the following information in Product Data:
    - a. Manufacturer's printed recommendations.
    - b. Compliance with recognized trade association standards.
    - c. Compliance with recognized testing agency standards.
    - d. Application of testing agency labels and seals.
    - e. Notation of dimensions verified by field measurement.
    - f. Notation of coordination requirements.
  4. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.
- B. Submittals: Submit 2 copies of each required Product Data submittal. Submit 2 additional copies where copies are required for maintenance manuals. The Architect/Engineer will retain one copy and will return the other marked with the action taken and corrections or modifications required.
  1. Unless the Architect/Engineer observes noncompliance with provisions of the Contract Documents, the submittal may serve as the final submittal.
- C. Distribution: Furnish copies of final Product Data submittal to the manufacturers, subcontractors, suppliers, fabricators, installers, governing authorities and others as required for performance of the construction activities. Show distribution on transmittal forms.
  1. Do not proceed with installation of materials, products, and systems until a copy of Product Data applicable to the installation is in the Installer's possession.

2. Do not permit use of unmarked copies of Product Data in connection with construction.

#### 1.7 SAMPLES

- A. Submit full-size, fully fabricated Samples, cured and finished in the manner specified, and physically identical with the material or product proposed for use.
- B. Submittals: Except for Samples intended to illustrate assembly details, workmanship, fabrication techniques, connections, operation, and other characteristics, submit 3 sets of Samples. One set will be returned marked with the action taken.
  1. Maintain sets of Samples, as returned by the Architect/Engineer, at the Project Site, available for quality-control comparisons throughout the course of construction activity.
  2. Unless the Architect/Engineer observes noncompliance with provisions of the Contract Documents, the submittal may serve as the final submittal.
  3. Sample sets may be used to obtain final acceptance of the construction associated with each set.
- C. Distribution of Samples: Distribute additional sets of Samples to the subcontractors, suppliers, fabricators, manufacturers, installers, governing authorities, and others as required for performance of the Work. Show distribution on transmittal forms.
- D. Field samples specified in individual Specification Sections are special types of Samples. Comply with Sample submittal requirements to the fullest extent possible. Process transmittal forms to provide a record of activity.

#### 1.8 QUALITY ASSURANCE SUBMITTALS

- A. Submit quality-control submittals, including design data, certifications, manufacturer's instructions, manufacturer's field reports, and other quality-control submittals as required under other Sections of the Specifications.
- B. Certifications: Where other Sections of the Specifications require certification that a product, material, or installation complies with specified requirements, submit a notarized certification from the manufacturer certifying compliance with specified requirements.
  1. Signature: Certification shall be signed by an officer of the manufacturer or other individual authorized to sign documents on behalf of the company.
- C. Inspection and Test Reports: Requirements for submittal of inspection and test reports from independent testing agencies are specified in Division 1 Section "Quality Control."



1.9 ARCHITECT/ENGINEER'S ACTION

- A. Except for submittals for the record or for information, where action and return of submittals is required, the Architect/Engineer will review each submittal, mark to indicate the action taken, and return.
1. Compliance with specified characteristics is the Contractor's responsibility and not considered part of the Architect/Engineer's review and indication of action taken.
- B. Action Stamp: The Architect/Engineer will stamp each submittal with a uniform, action stamp. The Architect/Engineer will mark the stamp appropriately to indicate the action taken.
1. Architect/Engineer review portion of the review stamp shall be interpreted as follows:
- | <u>Comment</u>      | <u>Meaning</u>              |
|---------------------|-----------------------------|
| No Exceptions Taken | Acceptance for Construction |
| Note Markings       | Incorporate Corrections     |
| Rejected            | Not Acceptable              |
| Comments Attached   | Incorporate Comments        |
2. Response required of Contractor portion of the review stamp shall be interpreted as follows:
- | <u>Comment</u> | <u>Meaning</u>            |
|----------------|---------------------------|
| Process        | Proceed with Construction |
3. Other Action: Where a submittal is for information or record purposes or special processing or other activity, the Architect/Engineer will return the submittal marked "Action Not Required."
- C. Unsolicited Submittals: The Architect/Engineer will return unsolicited submittals to the sender without action.
- D. Incomplete or Inaccurate Submittals: The Architect/Engineer will return submittals that do not comply with contract requirements including, but not limited to, requirements of this section.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION



SECTION 01400 - QUALITY CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Requirements of the contract documents including Division 1 specifications, apply to this section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for quality-control services.
- B. Quality-control services include inspections, tests, and related actions, including reports performed by Contractor, by independent agencies, and by governing authorities. They do not include contract enforcement activities performed by Architect/Engineer.
- C. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with Contract Document requirements.
- D. Requirements of this Section relate to customized fabrication and installation procedures, not production of standard products.
  - 1. Specific quality-control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
  - 2. Specified inspections, tests, and related actions do not limit Contractor's quality-control procedures that facilitate compliance with Contract Document requirements.
  - 3. Requirements for Contractor to provide quality-control services required by Architect/Engineer, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
- E. Related Sections: The following Sections contain requirements that relate to this Section:
  - 1. Division 1 Section "Submittals" specifies requirements for development of a schedule of required tests and inspections.

### 1.3 RESPONSIBILITIES

- A. Contractor Responsibilities: Unless otherwise indicated as the responsibility of another identified entity, Contractor shall provide inspections, tests, and other quality-control services specified elsewhere in the Contract Documents and required by authorities having jurisdiction. Costs for these services are included in the Contract Sum.
- B. Retesting: The Contractor is responsible for retesting where results of inspections, tests, or other quality-control services prove unsatisfactory and indicate noncompliance with Contract Document requirements, regardless of whether the original test was Contractor's responsibility.
  - 1. The cost of retesting construction, revised or replaced by the Contractor, is the Contractor's responsibility where required tests performed on original construction indicated noncompliance with Contract Document requirements.
- C. Associated Services: Cooperate with agencies performing required inspections, tests, and similar services, and provide reasonable auxiliary services as requested. Notify the agency sufficiently in advance of operations to permit assignment of personnel.
- D. Duties of the Testing Agency: The independent agency engaged to perform inspections, sampling, and testing of materials and construction specified in individual Sections shall cooperate with the Architect/Engineer and the Contractor in performance of the agency's duties. The testing agency shall provide qualified personnel to perform required inspections and tests.
  - 1. The agency shall notify the Architect/Engineer and the Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
  - 2. The agency is not authorized to release, revoke, alter, or enlarge requirements of the Contract Documents or approve or accept any portion of the Work.
  - 3. The agency shall not perform any construction duties of the Contractor.
- E. Coordination: Coordinate the sequence of activities to accommodate required services with a minimum of delay. Coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.

### 1.4 SUBMITTALS

- A. Unless the Contractor is responsible for this service, the independent testing agency shall submit a certified written report, in duplicate, of each inspection, test, or similar service to the Architect/Engineer. If the Contractor is responsible for the service, submit a certified written report, in duplicate, of each inspection, test, or similar service through the Contractor.
  - 1. Submit additional copies of each written report directly to the governing authority, when the authority so directs.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

- A. General: Upon completion of inspection, testing, sample taking and similar services, repair damaged construction and restore substrates and finishes. Comply with Contract Document requirements for Division 1 Section "Cutting and Patching."
- B. Protect construction exposed by or for quality-control service activities, and protect repaired construction.
- C. Repair and protection is Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing, or similar services.

END OF SECTION



SECTION 01501 - TEMPORARY FACILITIES & CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Requirements of the contract documents including Division 1 specifications, apply to this section.

1.2 SUMMARY

- A. This Section includes requirements for temporary facilities and controls, including temporary utilities, support facilities, and security and protection.
- B. Temporary utilities include, but are not limited to, the following:
  - 1. Water service and distribution.
  - 2. Temporary electric power.
  - 3. Telephone service.
  - 4. Sanitary facilities, including drinking water.
  - 5. Storm and sanitary sewer.
- C. Support facilities include, but are not limited to, the following:
  - 1. Dewatering facilities and drains.
  - 2. Waste disposal services.
  - 3. Construction aids and miscellaneous services and facilities.
- D. Security and protection facilities include, but are not limited to, the following:
  - 1. Temporary fire protection.
  - 2. Barricades, warning signs, and lights.
  - 3. Sidewalk bridge or enclosure fence for the site.
  - 4. Environmental protection.

1.3 DIVISION OF RESPONSIBILITIES

- A. General: These Specifications assigns the Prime Contractor specific responsibilities for certain temporary facilities used at the site.
- B. Prime Contractor is responsible for the following:
  - 1. Installation, operation, maintenance, and removal of each temporary facility usually considered as its own normal construction activity, as well as the costs and use charges associated with each facility.
  - 2. Plug-in electric power cords and extension cords, supplementary plug-in task lighting, and special lighting necessary exclusively for its own activities.
  - 3. Its own storage and fabrication sheds (as required).

4. Collection and disposal of its own hazardous, dangerous, unsanitary, or other harmful waste material.
5. Secure lockup of its own tools, materials, and equipment.
6. Construction aids and miscellaneous services and facilities necessary exclusively for its own construction activities.
7. Temporary telephone service.
8. Temporary toilets, including disposable supplies.
9. General collection and disposal of wastes.
10. Barricades, warning signs, and lights.
11. Security enclosure and lockup.
12. Environmental protection.

**1.4 USE CHARGES**

- A. General: Cost or use charges for temporary facilities are not chargeable to the Owner or the Architect/Engineer. The Architect/Engineer will not accept a Prime Contractor's cost or use charges for temporary services or facilities as a basis of claim for an adjustment in the Contract Sum or the Contract Time.
- B. Water Service: Use water from the Owner's existing water system without metering and without payment of use charges.
- C. Electric Power Service: Use of electricity from Owner's existing system without metering or payment.
- D. Owner may terminate privilege of existing building heat, power, or water if abuse or excessive use by the contractor exists.

**1.5 SUBMITTALS**

Not used.

**1.6 QUALITY ASSURANCE**

- A. Regulations: Prime Contractor shall comply with industry standards and with applicable laws and regulations of authorities having jurisdiction including, but not limited to, the following:
  1. Building code requirements.
  2. Health and safety regulations.
  3. Utility company regulations.
  4. Police, fire department and rescue squad rules.
  5. Environmental protection regulations.
- B. Standards: Prime Contractor shall comply with NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations," ANSI-A10 Series standards for "Safety Requirements for Construction and Demolition," and NECA Electrical Design Library "Temporary Electrical Facilities."



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

1.7 PROJECT CONDITIONS

- A. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Do not overload facilities or permit them to interfere with progress. Take necessary fire-prevention measures. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist on-site.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Each Prime Contractor shall provide new materials. If acceptable to the Architect/Engineer, undamaged, previously used materials in serviceable condition may be used. Provide materials suitable for use intended.

2.2 EQUIPMENT

- A. General: Each Prime Contractor shall provide new equipment. If acceptable to the Architect/Engineer, undamaged, previously used equipment in serviceable condition may be used. Provide equipment suitable for use intended.
- B. Electrical Power Cords: Provide grounded extension cords. Use hard-service cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.
- C. Temporary Toilet Units: Provide self-contained, single-occupant toilet units of the chemical, aerated recirculation, or combustion type. Provide units properly vented and fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material. If existing toilet facilities in the building are operational during construction, contractor may use these facilities.
- D. Fire Extinguishers: Provide hand-carried, portable, UL-rated, Class A fire extinguishers for temporary offices and similar spaces. In other locations, provide hand-carried, portable, UL-rated, Class ABC, dry-chemical extinguishers or a combination of extinguishers of NFPA-recommended classes for the exposures.
  1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.
- B. Prime Contractor shall provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

### 3.2 TEMPORARY UTILITY INSTALLATION

- A. Sanitary facilities include temporary toilets and wash facilities. Comply with regulations and health codes for the type, number, location, operation, and maintenance of fixtures and facilities. Install where facilities will best serve the Project's needs.
  - 1. Provide toilet tissue, paper towels, paper cups, and similar disposable materials for each facility. Provide covered waste containers for used material.
- B. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy. Use of pit-type privies will not be permitted.
  - 1. Provide separate facilities for male and female personnel.
- C. Wash Facilities: Install wash facilities supplied with potable water at convenient locations for personnel involved in handling materials that require wash-up for a healthy and sanitary condition. Dispose of drainage properly. Supply cleaning compounds appropriate for each condition.

### 3.3 SUPPORT FACILITIES INSTALLATION

- A. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 deg F (27 deg C). Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material lawfully.

### 3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Temporary Facility Changeover: Except for using permanent fire protection as soon as available, do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion, or longer, as requested by the Architect/Engineer.
- B. Barricades, Warning Signs, and Lights: Comply with standards and code requirements for erecting structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and the public of the

hazard being protected against. Where appropriate and needed, provide lighting, including flashing red or amber lights.

- C. Security Enclosure and Lockup: Install substantial temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft and similar violations of security.
  - 1. Storage: Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.
- D. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations.

### 3.5 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.
- B. Maintenance: Maintain facilities and good operating condition until removal. Protect from damage by freezing temperatures and similar elements.
- C. Termination and Removal: Unless the Architect/Engineer requests that it be maintained longer, remove each temporary facility when the need has ended, when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

END OF SECTION



**SECTION 01540 - CUTTING AND PATCHING**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Attention is directed to Bidding and Contract Requirements, and to Division 1, General Requirements, which are hereby made a part of this Section.

**1.2 INSPECTION**

- A. Before cutting existing surfaces, examine surfaces to be cut, including elements subject to damage or movement during cutting and patching work. Report any unsatisfactory or questionable conditions to General Trades Contractor and Project Architect.
- B. Before proceeding, meet at the site with General Trades Contractor. Review areas of potential interference, conflict and possible effects on the Owner's existing operations. Coordinate procedures, temporary support, methods of dust and water protection, etc. and resolve potential conflicts before proceeding.
- C. If any hazardous material is encountered or is suspected to be present, General Trades Contractor and Project Architect are to be notified.

**1.3 PREPARATION**

- A. Provide adequate temporary support as necessary to assure the structural value and integrity of the affected portion of the work. Where specified or required, submit temporary support methodologies to the Architect for approval.
- B. Provide devices and methods to protect adjacent areas or other portions of the Project from damage including dust protection, water protection, exposure, maintain excavations free of water, etc. as necessary to provide protection from the elements.

**1.4 EXECUTION**

- A. Each Contractor and Subcontractor is responsible for the cutting of all holes and openings through existing walls, partitions, ceilings, floors and roofs as necessary for the installation of their work as specified in the contract documents. Holes and openings shall be neatly cut and of minimum size to allow the work to be installed. Execute cutting and demolition by methods which will prevent damage to other work, and will provide proper surfaces to receive installation of repairs.
- C. Execute work in such a manner as to minimize disruptions to or interference with the Owner's normal operations or functioning in the existing buildings and provide all means necessary to provide safety and convenience of those employed in and about the premises. Every effort should be made to minimize disruptions to the operations of other contractors.
- D. Each Contractor is responsible for patching of all holes and openings they make. Fit work airtight to pipes, sleeves, ducts, conduit and other penetrations through surfaces. Patching is to match adjacent surfaces in materials and finish. All rated walls shall be

sealed with approved fire rated sealants. Each Contractor is to utilize only tradesmen skilled in the specific finish and material involved in making the patches. All patching is to be done in a neat and workmanlike manner to the satisfaction of General Trades Contractor and Architect. Defective work shall be corrected at no cost to the Owner.

- E. Where new work connects with existing, do all necessary cutting and fitting required to make a satisfactory connection with the work to be performed so as to leave the entire work in finished and workmanlike condition. Furnish all labor and materials to this end, whether or not shown or specified. All measurements must be verified at the building.
- F. Employ the original Installer and Fabricator, when possible, to perform cutting and patching for:
  - 1. Weather-exposed or moisture-resistant elements.
  - 2. Sight-exposed finished surfaces.
- G. Execute fitting and adjustment of products to provide a finished installation to comply with the specified products, functions, tolerances and finishes.
- H. Restore work which has been cut or removed. Install new products to provide completed work in accordance with the Contract Documents. Each Contractor will be responsible to pay the appropriate Contractor as designated by Project Architect for restoring any portion of the building that is disturbed, including but not limited to, slabs, walls, ceilings, fire rated partitions, spray-on fireproofing, finishes, etc. to their original state as a result of that Contractor's action.
- I. Refinish entire surfaces as the Contractor's work scope requires to provide an even finish to match adjacent surfaces and finishes.
  - 1. For continuous surfaces, refinish to nearest intersection.
  - 2. For an assembly, refinish the entire unit.
- J. Removal and replacement of ceilings not scheduled to be replaced shall be the responsibility of the Contractor requiring access.
- K. All Trade Contractors shall be held responsible for reckless cutting of holes in slabs, walls or other finishes, or for scraping off areas of fireproofing larger or greater than that which is necessary for installation of their work.

**END OF SECTION**

SECTION 01600 - MATERIALS AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Requirements of the contract documents including Division 1 specifications, apply to this section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements governing the Contractor's selection of products for use in the Project.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
  - 1. Division 1 Section "Submittals" specifies requirements for submittal of the Contractor's Construction Schedule and the Submittal Schedule.

1.3 DEFINITIONS

- A. Definitions used in this Article are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties," "systems," "structure," "finishes," "accessories," and similar terms. Such terms are self-explanatory and have well-recognized meanings in the construction industry.
  - 1. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
    - a. "Named Products" are items identified by the manufacturer's product name, including make or model number or other designation, shown or listed in the manufacturer's published product literature, that is current as of the date of the Contract Documents.
  - 2. "Materials" are products substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.
  - 3. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections, such as wiring or piping.

**1.4 SUBMITTALS**

- A. Product List: Prepare a list showing products specified in tabular form acceptable to the Architect/Engineer. Include generic names of products required. Include the manufacturer's name and proprietary product names for each item listed.
1. Coordinate product list with the Contractor's Construction Schedule and the Schedule of Submittals.
  2. Form: Prepare product list with information on each item tabulated under the following column headings:
    - a. Related Specification Section number.
    - b. Generic name used in Contract Documents.
    - c. Proprietary name, model number, and similar designations.
    - d. Manufacturer's name and address.
    - e. Supplier's name and address.
    - f. Installer's name and address.
    - g. Projected delivery date or time span of delivery period.
  3. Initial Submittal: Within 15 days after date of commencement of the Work, submit 3 copies of an initial product list. Provide a written explanation for omissions of data and for known variations from Contract requirements.
    - a. At the Contractor's option, the initial submittal may be limited to product selections and designations that must be established early in the Contract period.
  4. Completed List: Within 30 days after date of commencement of the Work, submit 3 copies of the completed product list. Provide a written explanation for omissions of data and for known variations from Contract requirements.
  5. Architect/Engineer's Action: The Architect/Engineer will respond in writing to Contractor within 1 week of receipt of the completed product list. No response within this period constitutes no objection to listed manufacturers or products but does not constitute a waiver of the requirement that products comply with Contract Documents. The Architect/Engineer's response will include a list of unacceptable product selections, containing a brief explanation of reasons for this action.

**1.5 QUALITY ASSURANCE**

- A. Source Limitations: To the fullest extent possible, provide products of the same kind from a single source.



1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products according to the manufacturer's recommendations, using means and methods that will prevent damage, deterioration, and loss, including theft.
  - 1. Schedule delivery to minimize long-term storage at the site and to prevent overcrowding of construction spaces.
  - 2. Coordinate delivery with installation time to assure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
  - 3. Deliver products to the site in an undamaged condition in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
  - 4. Store products subject to damage by the elements above ground, under cover in a weathertight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, new at the time of installation.
  - 1. Provide products complete with accessories, trim, finish, safety guards, and other devices and details needed for a complete installation and the intended use and effect.
  - 2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.

PART 3 - EXECUTION

3.1 INSTALLATION OF PRODUCTS

- A. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other Work.
  - 1. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

END OF SECTION



SECTION 01700 - CONTRACT CLOSEOUT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Requirements of the contract documents including Division 1 specifications, apply to this section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for contract closeout including, but not limited to, the following:
  - 1. Inspection procedures.
  - 2. Project record document submittal.
  - 3. Submittal of warranties.
  - 4. Final cleaning.
- B. Closeout requirements for specific construction activities are included in the appropriate Sections in Divisions 2 through 16.

1.3 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request.
  - 1. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete.
    - a. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
    - b. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.
  - 2. Advise the Owner of pending insurance changeover requirements.
  - 3. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications, and similar documents.
  - 4. Obtain and submit releases enabling the Owner unrestricted use of the work. Include occupancy permits and similar releases.
  - 5. Submit record drawings, damage or settlement surveys, property surveys, and similar final record information.

6. Deliver spare parts and similar items.
7. Make final changeover of permanent locks and transmit keys to the Owner. Advise the Owner's personnel of changeover in security provisions.
8. Discontinue and remove temporary facilities from the site, construction tools, and similar elements.
9. Complete final cleanup requirements.

B. Inspection Procedures: On receipt of a request for inspection, the Architect/Engineer will either proceed with inspection or advise the Contractor of unfilled requirements. The Architect/Engineer will prepare the Certificate of Substantial Completion following inspection or advise the Contractor of construction that must be completed or corrected before the certificate will be issued.

1. The Architect/Engineer will repeat inspection when requested and assured that the Work is substantially complete.
2. Results of the completed inspection will form the basis of requirements for final acceptance.
3. Cost and Architect/Engineer fees for multiple or extensive inspections due to incomplete or faulty work by the Contractor may be deducted from the contractor's contract.

#### 1.4 FINAL ACCEPTANCE

A. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.

1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include insurance certificates for products and completed operations where required.
2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
3. Submit a certified copy of the Architect/Engineer's final inspection list of items to be completed or corrected, endorsed and dated by the Architect/Engineer. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance and shall be endorsed and dated by the Architect/Engineer.
4. Submit consent of surety to final payment.
5. Submit a final liquidated damages settlement statement.
6. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

B. Reinspection Procedure: The Architect/Engineer will reinspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except for items whose completion is delayed under circumstances acceptable to the Architect/Engineer.

1. Upon completion of reinspection, the Architect/Engineer will prepare a certificate of final acceptance. If the Work is incomplete, the Architect/Engineer will advise the Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.
2. If necessary, reinspection will be repeated.
3. Cost and Architect/Engineer fees for multiple or extensive inspections due to incomplete or faulty work by the Contractor may be deducted from the contractor's contract.

#### 1.5 RECORD DOCUMENT SUBMITTALS

- A. Record Drawings: Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark which drawing is most capable of showing conditions fully and accurately. Where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.
  1. Mark record sets with red erasable pencil. Use other colors to distinguish between variations in separate categories of the Work.
  2. Mark new information that is important to the Owner but was not shown on Contract Drawings or Shop Drawings.
  3. Note related change-order numbers where applicable.
  4. Organize record drawing sheets into manageable sets. Bind sets with durable-paper cover sheets; print suitable titles, dates, and other identification on the cover of each set.
- B. Record Specifications: Maintain one complete copy of the Project Manual, including addenda. Include with the Project Manual one copy of other written construction documents, such as Change Orders and modifications issued in printed form during construction.
  1. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications.
  2. Give particular attention to substitutions and selection of options and information on concealed construction that cannot otherwise be readily discerned later by direct observation.
  3. Note related record drawing information and Product Data.
  4. Upon completion of the Work, submit record Specifications to the Architect/Engineer for the Owner's records.
- C. Record Product Data: Maintain one copy of each Product Data submittal. Note related Change Orders and markup of record drawings and Specifications.
  1. Mark these documents to show significant variations in actual Work performed in comparison with information submitted. Include variations in

- products delivered to the site and from the manufacturer's installation instructions and recommendations.
2. Give particular attention to concealed products and portions of the Work that cannot otherwise be readily discerned later by direct observation.
  3. Upon completion of markup, submit complete set of record Product Data to the Architect/Engineer for the Owner's records.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 CLOSEOUT PROCEDURES

3.2 FINAL CLEANING

- A. General: The General Conditions require general cleaning during construction. Regular site cleaning is included in Division 1 Section "Construction Facilities and Temporary Controls."
- B. Clean the site, including landscape development areas, of rubbish, litter, and other foreign substances. Sweep paved areas broom clean; remove stains, spills, and other foreign deposits. Rake grounds that are neither paved nor planted to a smooth, even-textured surface.
- C. Removal of Protection: Remove temporary protection and facilities installed for protection of the Work during construction.
- D. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from the site and dispose of lawfully.

END OF SECTION

**SECTION 01740 - WARRANTIES**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Requirements of the contract documents including Division 1 specifications, apply to this section.

**1.2 SUMMARY**

- A. This Section includes administrative and procedural requirements for warranties required by the Contract Documents, including manufacturers standard warranties on products and special warranties.
  - 1. Refer to the General Conditions for terms of the Contractor's period for correction of the Work.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
  - 1. Division 1 Section "Submittals" specifies procedures for submitting warranties.
  - 2. Division 1 Section "Contract Closeout" specifies contract closeout procedures.
  - 3. Division 2 for specific requirements for warranties on products and installations specified to be warranted.
  - 4. Certifications and other commitments and agreements for continuing services to Owner are specified elsewhere in the Contract Documents.
- C. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products. Manufacturer's disclaimers and limitations on product warranties do not relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

**1.3 WARRANTY REQUIREMENTS**

- A. Related Damages and Losses: When correcting failed or damaged warranted construction, remove and replace construction that has been damaged as a result of such failure or must be removed and replaced to provide access for correction of warranted construction.
- B. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
- C. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of the Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.
- D. Owner's Recourse: Expressed warranties made to the Owner are in addition to implied warranties and shall not limit the duties, obligations, rights, and remedies otherwise

available under the law. Expressed warranty periods shall not be interpreted as limitations on the time in which the Owner can enforce such other duties, obligations, rights, or remedies.

1. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
- E. Where the Contract Documents require a special warranty, or similar commitment on the Work or part of the Work, the Owner reserves the right to refuse to accept the Work, until the Contractor presents evidence that entities required to countersign such commitments are willing to do so.

#### 1.4 SUBMITTALS

- A. Submit written warranties to the Architect/Engineer prior to the date certified for Substantial Completion. If the Architect/Engineer's Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Architect/Engineer.
1. When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Architect/Engineer within 15 days of completion of that designated portion of the Work.
- B. When the Contract Documents require the Contractor, or the Contractor and a subcontractor, supplier or manufacturer to execute a special warranty, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner, through the Architect/Engineer, for approval prior to final execution.
1. Refer to Division 2 for specific content requirements and particular requirements for submitting special warranties.
- C. Form of Submittal: At Final Completion compile 2 copies of each required warranty properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

**END OF SECTION**



## **SECTION 24119 - SELECTIVE DEMOLITION**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Demolition and removal of selected portions of building or structure.
  - 2. Demolition and removal of selected site elements.
  - 3. Salvage of existing items to be reused or recycled.

#### **1.2 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.

#### **1.3 PREINSTALLATION MEETINGS**

- A. Predemolition Conference: Conduct conference at 1329 Tiffin St. Fremont, OH 43420.

#### **1.4 INFORMATIONAL SUBMITTALS**

- A. Engineering Survey: Submit engineering survey of condition of building.
- B. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property, for dust control. Indicate proposed locations and construction of barriers.
- C. Schedule of selective demolition activities with starting and ending dates for each activity.
- D. Predemolition photographs or video.
- E. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician.

#### **1.5 CLOSEOUT SUBMITTALS**

- A. Inventory of items that have been removed and salvaged.

#### **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.
  - 1. Before selective demolition, Owner will remove the following items:
    - a. .
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
  - 1. Hazardous materials will be removed by Owner before start of the Work.
  - 2. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- E. Storage or sale of removed items or materials on-site is not permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
  - 1. Maintain fire-protection facilities in service during selective demolition operations.
- 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 ASSE 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. Engage a professional engineer to perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.
- C. Inventory and record the condition of items to be removed and salvaged.

### **3.2 PREPARATION**

- A. Refrigerant: Before starting demolition, remove refrigerant from mechanical equipment according to 40 CFR 82 and regulations of authorities having jurisdiction.

### **3.3 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS**

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
  - 1. Arrange to shut off utilities with utility companies.
  - 2. 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.
  - 3. 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 PROTECTION**

- A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
- B. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
- C. Remove temporary barricades and protections where hazards no longer exist.

### **3.5 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. Maintain fire watch during and for at least 2 hours after flame-cutting operations.
  5. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
  6. 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.

### **3.6 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.] [and recycle or dispose of them according to Section 01 7419 "Construction Waste Management and Disposal."]
1. Do not allow demolished materials to accumulate on-site.
  2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
  3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
  4. Comply with requirements specified in Section 01 7419 "Construction Waste Management and Disposal."
- 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 02 4119**



SECTION 02936

SEEDING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Seeding, Hydroseeding, mulching and fertilizer.
- B. Maintenance.

1.2 RELATED SECTIONS

- A. Seeding used in conjunction with Sitework:  
Section 02230 – Site Clearing

1.3 REFERENCES

- A. FS O-F-241 - Fertilizers, Mixed, Commercial.

1.4 DEFINITIONS

- A. Weeds: Include Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

1.5 MAINTENANCE DATA

- A. Submit under provisions of Section 01700.
- B. Maintenance Data: Include maintenance instructions, cutting method and maximum grass height; types, application frequency, and recommended coverage of fertilizer.

1.6 QUALITY ASSURANCE

- A. Provide seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging.

1.7 REGULATORY REQUIREMENTS

- A. Comply with regulatory agencies for fertilizer and herbicide composition.

- B. Provide certificate of compliance from authority having jurisdiction indicating approval of seed mixture.

#### 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Section 01600.
- B. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable.
- C. Deliver fertilized in waterproof bags showing weight, chemical analysis, and name of manufacturer.

#### 1.9 MAINTENANCE SERVICE

- A. Maintain seeded areas immediately after placement until grass is well established and exhibits a vigorous growing condition.

### PART 2 - PRODUCTS

#### 2.1 SEED MIXTURE

- A. Shall match adjacent grass. Submit to architect for approval.

#### 2.1 SOIL MATERIALS

- A. Topsoil: Excavated from site and free of weeds.

#### 2.2 ACCESSORIES

- A. Mulching Material: Oat or wheat straw, free from weeds, foreign matter detrimental to plant life, and dry. Hay or chopped cornstalks are [not] acceptable.
- B. Fertilizer: FS O-F-241, Type [I] [II] Grade [A] [B]; recommended for grass, with fifty percent of the elements derived from organic sources; of proportion necessary to eliminate any deficiencies of topsoil [to the following proportions: Nitrogen 10 percent, phosphoric acid 20 percent, soluble potash 10 percent.
- C. Water: Clean, fresh and free of substances or matter which could inhibit vigorous growth of grass.
- D. Erosion Fabric: Jute matting, open weave.
- E. Herbicide:



- F. Stakes: Softwood lumber, chisel pointed.
- G. String: Inorganic fiber.

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- A. Verify that prepared soil base is ready to receive the work of this Section.

#### **3.2 FERTILIZING**

- A. Apply fertilizer in accordance with manufacturer's instructions.
- B. Apply after smooth raking of topsoil and prior to roller compaction.
- C. Do not apply fertilizer at same time or with same machine as will be used to apply seed.
- D. Mix thoroughly into upper 2 inches of topsoil.
- E. Lightly water to aid the dissipation of fertilizer.

#### **3.3 MAINTENANCE**

- A. Contractor is responsible for watering and maintaining grass and seed until well established. Reseed any areas as required.

**END OF SECTION**



## **SECTION 040110 - MASONRY CLEANING**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. Section includes cleaning the following:

1. Unit masonry surfaces.
2. Stone surfaces.

#### **1.2 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).
- C. High-Pressure Spray: 800 to 1200 psi (5510 to 8250 kPa); 4 to 6 gpm (0.25 to 0.4 L/s).

#### **1.3 QUALITY ASSURANCE**

- A. Mockups: Prepare mockups of cleaning on existing surfaces to demonstrate aesthetic effects and to set quality standards for materials and execution.
1. Cleaning: Clean an area approximately 25 sq. ft. (2.3 sq.m) as indicated for each type of masonry and surface condition.
    - a. Test cleaners and methods on samples of adjacent materials for possible adverse reactions. Do not test cleaners and methods known to have deleterious effect.
    - b. Allow a waiting period of not less than seven days after completion of sample cleaning to permit a study of sample panels for negative reactions.

### **PART 2 - PRODUCTS**

#### **2.1 PAINT REMOVERS**

- A. Covered or Skin-Forming Alkaline Paint Remover: Manufacturer's standard covered or skin-forming, alkaline paste or gel formulation, for removing paint from masonry; containing no methylene chloride.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. American Building Restoration Products, Inc.
    - b. Diedrich Technologies, Inc.; a Hohmann & Barnard company.

- c. Dumond Chemicals, Inc.

## 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. Detergent Solution, Job Mixed: Solution prepared by mixing 2 cups (0.5 L) of tetrasodium pyrophosphate (TSPP), 1/2 cup (125 mL) of laundry detergent, and 20 quarts (20 L) of hot water for every 5 gal. (20 L) of solution required.
- D. Mold, Mildew, and Algae Remover, Job Mixed: Solution prepared by mixing 2 cups (0.5 L) of tetrasodium pyrophosphate (TSPP), 5 quarts (5 L) of 5 percent sodium hypochlorite (bleach), and 15 quarts (15 L) of hot water for every 5 gal. (20 L) of solution required.
- E. Nonacidic Gel Cleaner: Manufacturer's standard gel formulation, with pH between 6 and 9, that contains detergents with chelating agents and is specifically formulated for cleaning masonry surfaces.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Cathedral Stone Products, Inc.
    - b. Price Research, Ltd.
    - c. PROSOCO, Inc.
- F. Nonacidic Liquid Cleaner: Manufacturer's standard mildly alkaline liquid cleaner formulated for removing mold, mildew, and other organic soiling from ordinary building materials, including polished stone, brick, aluminum, plastics, and wood.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Cathedral Stone Products, Inc.
    - b. Price Research, Ltd.
    - c. PROSOCO, Inc.
- G. Mild-Acid Cleaner: Manufacturer's standard mild-acid cleaner containing no muriatic (hydrochloric), hydrofluoric, or sulfuric acid; or ammonium bifluoride or chlorine bleaches.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. American Building Restoration Products, Inc.
    - b. Cathedral Stone Products, Inc.
    - c. Diedrich Technologies, Inc.; a Hohmann & Barnard company.

- H. 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. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. American Building Restoration Products, Inc.
    - b. Cathedral Stone Products, Inc.
    - c. Diedrich Technologies, Inc.; a Hohmann & Barnard company.
- I. One-Part Limestone Acidic Cleaner: Manufacturer's standard one-part acidic formulation for cleaning limestone.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Cathedral Stone Products, Inc.
    - b. Price Research, Ltd.
    - c. PROSOCO, Inc.

## 2.3 CHEMICAL CLEANING SOLUTIONS

- A. Dilute chemical cleaners with water to produce solutions not exceeding concentration recommended in writing by chemical-cleaner manufacturer.
- B. Acidic Cleaner Solution for Nonglazed Masonry: Dilute acidic cleaner with water to produce hydrofluoric acid content of 3 percent or less, but not greater than that recommended in writing by chemical-cleaner manufacturer.
  - 1. Stones: Use only on unpolished granite, unpolished dolomite marble, and siliceous sandstone.
- C. Acidic Cleaner for Glazed Masonry: Dilute acidic cleaner with water to concentration demonstrated by testing that does not etch or otherwise damage glazed or polished surface, but not greater than that recommended in writing by chemical-cleaner manufacturer.
  - 1. Stones: Use only on polished granite and polished dolomite marble.

## PART 3 - EXECUTION

### 3.1 PROTECTION

- A. Comply with each manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products. Prevent paint removers and 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 paint removers and chemical cleaners used unless products being used will not damage

adjacent surfaces. Use protective materials that are waterproof and UV resistant. Apply masking agents according to manufacturer's written instructions. Do not apply liquid strippable masking agent to painted or porous surfaces. When no longer needed, promptly remove masking to prevent adhesive staining.

### 3.2 CLEANING MASONRY, GENERAL

- A. Cleaning Appearance Standard: Cleaned surfaces are to have a uniform appearance as viewed from 20 feet (6 m) away by Architect.
- B. Proceed with cleaning in an orderly manner; work from top to bottom of each scaffold width and from one end of each elevation to the other. Ensure that dirty residues and rinse water do not wash over dry, cleaned surfaces.
- C. Use only those cleaning methods indicated for each masonry material and location.
  - 1. Brushes: Do not use wire brushes or brushes that are not resistant to chemical cleaner being used.
  - 2. Spray Equipment: Use spray equipment that provides controlled application at volume and pressure indicated, measured at nozzle. Adjust pressure and volume to ensure that cleaning methods do not damage surfaces, including joints.
    - a. Equip units with pressure gages.
    - b. For chemical-cleaner spray application, use low-pressure tank or chemical pump suitable for chemical cleaner indicated, equipped with nozzle having a cone-shaped spray.
    - c. For water-spray application, use fan-shaped spray that disperses water at an angle of 25 to 50 degrees.
    - d. 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.
- D. 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. Keep wall wet below area being cleaned to prevent streaking from runoff.
- E. Perform additional general cleaning, paint and stain removal, and spot cleaning of small areas that are noticeably different when viewed according to the "Cleaning Appearance Standard" Paragraph, so that cleaned surfaces blend smoothly into surrounding areas.
- F. Water-Spray Application Method: Unless otherwise indicated, hold spray nozzle at least 6 inches (150 mm) from masonry surface and apply water in horizontal back-and-forth sweeping motion, overlapping previous strokes to produce uniform coverage.
- G. Chemical-Cleaner Application Methods: Apply chemical cleaners to masonry surfaces according to 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 in writing by manufacturer.

- H. 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.

### 3.3 PRELIMINARY CLEANING

- A. Preliminary Cleaning: Before beginning general cleaning, remove extraneous substances that are resistant to planned cleaning methods. Extraneous substances include paint, calking, asphalt, and tar.

- 1. Carefully remove heavy accumulations of rigid materials from masonry surface with 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 paste 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.

### 3.4 PAINT REMOVAL

- A. Paint-Remover Application, General: Apply paint removers according to paint-remover manufacturer's written instructions. Do not allow paint removers to remain on surface for periods longer than those indicated or recommended in writing by manufacturer.

- B. Paint Removal with Covered or Skin-Forming Alkaline Paint Remover:

- 1. Remove loose and peeling paint using low-pressure water spray, scrapers, stiff brushes, or a combination of these. Let surface dry thoroughly.
  - 2. Apply paint remover to dry, painted surface with trowel, spatula, or as recommended in writing by manufacturer.
  - 3. Apply cover according to manufacturer's written instructions.
  - 4. Allow paint remover to remain on surface for period recommended in writing by manufacturer or as determined by preconstruction testing.
  - 5. Scrape off paint and remover.
  - 6. Rinse with hot water applied by low-pressure spray to remove chemicals and paint residue.
  - 7. Apply acidic cleaner or manufacturer's recommended afterwash to surface, while surface is still wet, using low-pressure spray equipment or soft-fiber brush. Let cleaner or afterwash remain on surface as a neutralizing agent for period recommended by chemical-cleaner or afterwash manufacturer.

8. Rinse with cold water applied by low-pressure spray to remove chemicals and soil.
9. Retreat spots of remaining paint.

C. Paint Removal with Solvent-Type Paste Paint Remover:

1. Remove loose and peeling paint using low-pressure water spray, scrapers, stiff brushes, or a combination of these. Let surface dry thoroughly.
2. Apply thick coating of paint remover to painted surface with natural-fiber cleaning brush, deep-nap roller, or large paint brush. Apply in one or two coats according to manufacturer's written instructions.
3. Allow paint remover to remain on surface for period recommended in writing by manufacturer or as determined by preconstruction testing.
4. Rinse with hot water applied by low-pressure spray to remove chemicals and paint residue.

3.5 CLEANING MASONRY

A. Detergent Cleaning:

1. Wet surface with cold water applied by low-pressure spray.
2. Scrub surface with detergent solution using medium-soft brushes until soil is thoroughly dislodged and can be removed by rinsing. Use small brushes to remove soil from mortar joints and crevices. Dip brush in solution often to ensure that adequate fresh detergent is used and that surface remains wet.
3. Rinse with cold water applied by low-pressure spray to remove detergent solution and soil.

B. Mold, Mildew, and Algae Removal:

1. Wet surface with hot water applied by low-pressure spray.
2. Apply mold, mildew, and algae remover by brush or low-pressure spray.
3. Scrub surface with medium-soft brushes until mold, mildew, and algae are thoroughly dislodged and can be removed by rinsing. Use small brushes for mortar joints and crevices. Dip brush in mold, mildew, and algae remover often to ensure that adequate fresh cleaner is used and that surface remains wet.
4. Rinse with cold water applied by low-pressure spray to remove mold, mildew, and algae remover and soil.

C. Nonacidic Gel Chemical Cleaning:

1. Wet surface with hot water applied by low-pressure spray.
2. Apply gel cleaner in 1/8-inch (3-mm) thickness by brush, working into joints and crevices. Apply quickly and do not brush out excessively, so area is uniformly covered with fresh cleaner and dwell time is uniform throughout area being cleaned.
3. Rinse with cold water applied by low-pressure spray to remove chemicals and soil.

D. Nonacidic Liquid Chemical Cleaning:

1. Wet surface with hot water applied by low-pressure spray.



2. Apply cleaner to surface in two applications by brush or low-pressure spray.
3. Let cleaner remain on surface for period recommended in writing by chemical-cleaner manufacturer.
4. Rinse with cold water applied by low-pressure spray to remove chemicals and soil.

E. Mild-Acid Chemical Cleaning:

1. Wet surface with cold water applied by low-pressure spray.
2. Apply cleaner to surface in two applications by brush or low-pressure spray.
3. Let cleaner remain on surface for period recommended in writing by chemical-cleaner manufacturer.
4. Rinse with cold water applied by low-pressure spray to remove chemicals and soil.

F. Acidic Chemical Cleaning:

1. Wet surface with cold water applied by low-pressure spray.
2. Apply cleaner to surface in two applications by brush or low-pressure spray.
3. Let cleaner remain on surface for period recommended in writing by chemical-cleaner manufacturer.
4. Rinse with cold water applied by low-pressure spray to remove chemicals and soil. Rinse until all foaming, if any, stops and suds disappear.

G. One-Part Limestone Chemical Cleaning:

1. Wet surface with cold water applied by low-pressure spray.
2. Apply cleaner to surface by brush or low-pressure spray.
3. Let cleaner remain on surface for period recommended in writing by chemical-cleaner manufacturer.
4. Rinse with cold water applied by medium-pressure spray to remove chemicals and soil.

END OF SECTION 040110



**SECTION 042000 - UNIT MASONRY**

**PART 1 - GENERAL**

**1.1 SUMMARY**

**A. Section Includes:**

1. Concrete masonry units.
2. Concrete building brick.
3. Decorative concrete masonry units.
4. Pre-faced concrete masonry units.
5. Concrete face brick.
6. Clay face brick.
7. Building (common) brick.
8. Hollow brick.
9. Structural clay facing tile.

**1.2 ALLOWANCES**

- A. Face brick is part of the Face Brick Allowance.

**1.3 DEFINITIONS**

- A. CMU(s): Concrete masonry unit(s).
- B. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

**1.4 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Shop Drawings: For reinforcing steel. Detail bending, lap lengths, and placement of unit masonry reinforcing bars. Comply with ACI 315. Show elevations of reinforced walls.
- C. Samples for Verification: For each type and color of exposed masonry unit and colored mortar.

**1.5 INFORMATIONAL SUBMITTALS**

- A. Material Certificates: For each type and size of product. For masonry units, include data on material properties material test reports substantiating compliance with requirements.
- B. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.

1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C109/C109M for compressive strength, ASTM C1506 for water retention, and ASTM C91/C91M for air content.
2. Include test reports, according to ASTM C1019, for grout mixes required to comply with compressive strength requirement.

#### 1.6 QUALITY ASSURANCE

- A. Sample Panels: Build sample panels to verify selections made under Sample submittals and to demonstrate aesthetic effects. Comply with requirements in Section 014000 "Quality Requirements" for mockups.
  1. Build sample panels for each type of exposed unit masonry construction in sizes approximately **48 inches (1200 mm)** long by **36 inches (900 mm)** high by full thickness.

#### 1.7 FIELD CONDITIONS

- A. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.
- B. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

### PART 2 - PRODUCTS

#### 2.1 UNIT MASONRY, GENERAL

- A. Masonry Standard: Comply with TMS 602/ACI 530.1/ASCE 6, except as modified by requirements in the Contract Documents.
- B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects are exposed in the completed Work and will be within **20 feet (6 m)** vertically and horizontally of a walking surface.
- C. Fire-Resistance Ratings: Comply with requirements for fire-resistance-rated assembly designs indicated.
  1. Where fire-resistance-rated construction is indicated, units shall be listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction.

2.2 CONCRETE MASONRY UNITS

- A. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.
  - 1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
- B. CMUs: ASTM C90.
  - 1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of **2150 psi (14.8 MPa)**.
  - 2. Density Classification: Normal weight.
- C. Concrete Building Brick: ASTM C55.
  - 1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of **2800 psi (19.3 MPa)**.
  - 2. Density Classification: Normal weight.

2.3 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C150/C150M, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
- B. Hydrated Lime: ASTM C207, Type S.
- C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.
- D. Masonry Cement: ASTM C91/C91M.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Cemex S.A.B. de C.V.
    - b. Essroc.
    - c. Holcim (US) Inc.
    - d. Lafarge North America Inc.
    - e. Lehigh Hanson; HeidelbergCement Group.
- E. Aggregate for Mortar: ASTM C144.
  - 1. For joints less than **1/4 inch (6 mm)** thick, use aggregate graded with 100 percent passing the **No. 16 (1.18-mm)** sieve.
  - 2. White-Mortar Aggregates: Natural white sand or crushed white stone.
  - 3. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.
- F. Aggregate for Grout: ASTM C404.

- G. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C494/C494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Euclid Chemical Company (The); an RPM company.
    - b. GCP Applied Technologies Inc.
- H. Water-Repellent Admixture: Liquid water-repellent mortar admixture intended for use with CMUs containing integral water repellent from same manufacturer.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. ACM Chemistries.
    - b. BASF Corporation.
    - c. Euclid Chemical Company (The); an RPM company.
    - d. GCP Applied Technologies Inc.
- I. Water: Potable.

## 2.4 REINFORCEMENT

- A. Uncoated-Steel Reinforcing Bars: ASTM A615/A615M or ASTM A996/A996M, **Grade 60** (**Grade 420**).
- B. Masonry-Joint Reinforcement, General: ASTM A951/A951M.
  - 1. Interior Walls: Hot-dip galvanized carbon steel.
  - 2. Exterior Walls: Hot-dip galvanized carbon steel.
  - 3. Wire Size for Side Rods: **0.148-inch (3.77-mm)** diameter.
  - 4. Wire Size for Cross Rods: **0.148-inch (3.77-mm)** diameter.
  - 5. Wire Size for Veneer Ties: **0.148-inch (3.77-mm)** diameter.
  - 6. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than **16 inches (407 mm)** o.c.
  - 7. Provide in lengths of not less than **10 feet (3 m)**, with prefabricated corner and tee units.
- C. Masonry-Joint Reinforcement for Single-Wythe Masonry: Ladder type with single pair of side rods.
- D. Masonry-Joint Reinforcement for Multiwythe Masonry:
  - 1. Ladder type with one side rod at each face shell of hollow masonry units more than **4 inches (100 mm)** wide, plus one side rod at each wythe of masonry **4 inches (100 mm)** wide or less.

- E. Masonry-Joint Reinforcement for Veneers Anchored with Seismic Masonry-Veneer Anchors: Single 0.187-inch- (4.76-mm-) diameter, hot-dip galvanized carbon steel continuous wire.

## 2.5 TIES AND ANCHORS

- A. General: Ties and anchors shall extend at least 1-1/2 inches (38 mm) into veneer but with at least a 5/8-inch (16-mm) cover on outside face.
- B. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated:
  - 1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A82/A82M, with ASTM A153/A153M, Class B-2 coating.
  - 2. Steel Sheet, Galvanized after Fabrication: ASTM A1008/A1008M, Commercial Steel, with ASTM A153/A153M, Class B coating.
  - 3. Steel Plates, Shapes, and Bars: ASTM A36/A36M.
- C. Individual Wire Ties: Rectangular units with closed ends and not less than 4 inches (100 mm) wide.
  - 1. Wire: Fabricate from 3/16-inch- (4.76-mm-) diameter, hot-dip galvanized-steel wire.
- D. Adjustable Anchors for Connecting to Structural Steel Framing: 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- (6.35-mm-) diameter, hot-dip galvanized-steel wire.
  - 2. Tie Section: Triangular-shaped wire tie made from 0.187-inch- (4.76-mm-) diameter, hot-dip galvanized-steel wire.
- E. Adjustable Anchors for Connecting to Concrete: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.
  - 1. Connector Section: Dovetail tabs for inserting into dovetail slots in concrete and attached to tie section; formed from 0.060-inch- (1.52-mm-) thick steel sheet, galvanized after fabrication
  - 2. Tie Section: Triangular-shaped wire tie made from 0.187-inch- (4.76-mm-) diameter, hot-dip galvanized-steel wire.
- F. Partition Top Anchors: 0.105-inch- (2.66-mm-) thick metal plate with a 3/8-inch- (9.5-mm-) diameter metal rod 6 inches (152 mm) 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.
- G. Rigid Anchors: Fabricate from steel bars 1-1/2 inches (38 mm) wide by 1/4 inch (6.35 mm) thick by 24 inches (610 mm) long, with ends turned up 2 inches (51 mm) or with cross pins unless otherwise indicated.

1. Corrosion Protection: Hot-dip galvanized to comply with ASTM A153/A153M.
- H. Adjustable Masonry-Veneer Anchors:
  1. General: Provide anchors that allow vertical adjustment but resist a 100-lbf (445-N) load in both tension and compression perpendicular to plane of wall without deforming or developing play in excess of 1/16 inch (1.5 mm).
  2. Fabricate sheet metal anchor sections and other sheet metal parts from 0.075-inch- (1.90-mm-) thick steel sheet, galvanized after fabrication.
  3. Fabricate wire ties from 0.187-inch- (4.76-mm-) diameter, hot-dip galvanized-steel wire unless otherwise indicated.
  4. Screw-Attached, Masonry-Veneer Anchors: Wire tie and a rib-stiffened, sheet metal anchor section.
    - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      - 1) FERO Corporation.
      - 2) Hohmann & Barnard, Inc.
      - 3) PROSOCO, Inc.
      - 4) Wire-Bond.
  5. Screw-Attached, Masonry-Veneer Anchors: Wire tie and a gasketed sheet metal anchor section, with pronged legs of length to match thickness of insulation or sheathing and raised rib-stiffened strap to provide a slot for inserting wire tie.
    - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      - 1) Hohmann & Barnard, Inc.
      - 2) Wire-Bond.
  6. Seismic Masonry-Veneer Anchors: Connector section and rib-stiffened, sheet metal anchor section with screw holes top and bottom, and having slotted holes for inserting connector section. Connector section consists of a rib-stiffened, sheet metal bent plate, sheet metal clip, or wire tie with rigid PVC extrusion designed to engage continuous wire.
    - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      - 1) Hohmann & Barnard, Inc.
      - 2) Wire-Bond.
  7. Coated, Steel Drill Screws for Steel Studs: ASTM C954 except with hex washer head and neoprene or EPDM washer, No. 10 (4.83-mm) diameter, and with coating with salt-spray resistance to red rust of more than 800 hours according to ASTM B117.



2.6 EMBEDDED FLASHING MATERIALS

A. Metal Flashing: Provide metal flashing complying with SMACNA's "Architectural Sheet Metal Manual" and as follows:

1. Stainless Steel: ASTM A240/A240M or ASTM A666, Type 304, 0.016 inch (0.40 mm) thick.
2. Copper: ASTM B370, Temper H00, cold-rolled copper sheet, 16-oz./sq. ft. (4.9-kg/sq. m) weight or 0.0216 inch (0.55 mm) thick or ASTM B370, Temper H01, high-yield copper sheet, 12-oz./sq. ft. (3.7-kg/sq. m) weight or 0.0162 inch (0.41 mm) thick.
3. Fabricate continuous flashings in sections 96 inches (2400 mm) long minimum, but not exceeding 12 feet (3.7 m). Provide splice plates at joints of formed, smooth metal flashing.
4. Fabricate metal drip edges from stainless steel. Extend at least 3 inches (76 mm) into wall and 1/2 inch (13 mm) out from wall, with outer edge bent down 30 degrees and hemmed.
5. Fabricate metal sealant stops from stainless steel. Extend at least 3 inches (76 mm) into wall and out to exterior face of wall. At exterior face of wall, bend metal back on itself for 3/4 inch (19 mm) and down into joint 1/4 inch (6 mm) to form a stop for retaining sealant backer rod.
6. Fabricate metal expansion-joint strips from stainless steel to shapes indicated.

B. Flexible Flashing: Use one of the following unless otherwise indicated:

1. Rubberized-Asphalt Flashing: Composite flashing product consisting of a pliable, adhesive rubberized-asphalt compound, bonded to a high-density, cross-laminated polyethylene film to produce an overall thickness of not less than 0.030 inch (0.76 mm).
  - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - 1) Advanced Building Products Inc.
    - 2) Carlisle Coatings & Waterproofing Inc.
    - 3) W.R. Meadows, Inc.
    - 4) Wire-Bond.
2. Butyl Rubber Flashing: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than [0.030 inch (0.8 mm)] [0.040 inch (1.0 mm)].
  - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - 1) DuPont de Nemours, Inc.
    - 2) GCP Applied Technologies Inc.
    - 3) Protecto Wrap Company.
    - 4) Raven Industries, Inc.
    - 5) Wire-Bond.

3. Elastomeric Thermoplastic Flashing: Composite flashing product consisting of a polyester-reinforced ethylene interpolymer alloy.
  - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - 1) Hohmann & Barnard, Inc.
    - 2) Hyload, Inc.
    - 3) Mortar Net Solutions.
    - 4) Wire-Bond.
4. EPDM Flashing: Sheet flashing product made from ethylene-propylene-diene terpolymer, complying with ASTM D4637/D4637M, **0.040 inch (1.02 mm)** thick.
  - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - 1) Carlisle Coatings & Waterproofing Inc.
    - 2) Firestone Specialty Products.
    - 3) Heckmann Building Products, Inc.
    - 4) Hohmann & Barnard, Inc.
    - 5) Wire-Bond.
- C. Solder and Sealants for Sheet Metal Flashings: As specified in Section 076200 "Sheet Metal Flashing and Trim."
- D. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.

## 2.7 MISCELLANEOUS MASONRY ACCESSORIES

- A. Compressible Filler: Premolded filler strips complying with ASTM D1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene or PVC.
- B. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D2000, Designation M2AA-805 or PVC, complying with ASTM D2287, Type PVC-65406 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.
- C. Bond-Breaker Strips: Asphalt-saturated felt complying with ASTM D226/D226M, Type I (No. 15 asphalt felt).

## 2.8 MASONRY-CELL FILL

- A. Loose-Fill Insulation: Perlite complying with ASTM C549, Type II (surface treated for water repellency and limited moisture absorption) or Type IV (surface treated for water repellency and to limit dust generation).

- B. Lightweight-Aggregate Fill: ASTM C331/C331M.

## 2.9 MASONRY CLEANERS

- A. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Diedrich Technologies, Inc.; a Hohmann & Barnard company.
    - b. EaCo Chem, Inc.
    - c. PROSOCO, Inc.

## 2.10 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.
  - 1. Do not use calcium chloride in mortar or grout.
  - 2. Use portland cement-lime or masonry cement mortar unless otherwise indicated.
  - 3. For exterior masonry, use portland cement-lime or masonry cement mortar.
  - 4. For reinforced masonry, use portland cement-lime or masonry cement mortar.
  - 5. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.
- B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.
- C. Mortar for Unit Masonry: Comply with ASTM C270, Proportion Specification. Provide the following types of mortar for applications stated unless another type is indicated or needed to provide required compressive strength of masonry.
  - 1. For masonry below grade or in contact with earth, use Type M.
  - 2. For reinforced masonry, use Type M.
  - 3. For mortar parge coats, use Type S or Type N.
  - 4. For exterior, above-grade, load-bearing and nonload-bearing walls and parapet walls; for interior load-bearing walls; for interior nonload-bearing partitions; and for other applications where another type is not indicated, use Type N.
  - 5. For interior nonload-bearing partitions, Type O may be used instead of Type N.
- D. Grout for Unit Masonry: Comply with ASTM C476.

1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with TMS 602/ACI 530.1/ASCE 6 for dimensions of grout spaces and pour height.
2. Proportion grout in accordance with ASTM C476, Table 1 or paragraph 4.2.2 for specified 28-day compressive strength indicated, but not less than **2000 psi (14 MPa)**.
3. Provide grout with a slump of **8 to 11 inches (200 to 280 mm)** as measured according to ASTM C143/C143M.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION, GENERAL

- A. 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.
- B. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures. Mix units from several pallets or cubes as they are placed.

#### 3.2 TOLERANCES

##### A. Dimensions and Locations of Elements:

1. For dimensions in cross section or elevation, do not vary by more than plus **1/2 inch (12 mm)** or minus **1/4 inch (6 mm)**.
2. For location of elements in plan, do not vary from that indicated by more than plus or minus **1/2 inch (12 mm)**.
3. For location of elements in elevation, do not vary from that indicated by more than plus or minus **1/4 inch (6 mm)** in a story height or **1/2 inch (12 mm)** total.

##### B. Lines and Levels:

1. For bed joints and top surfaces of bearing walls, do not vary from level by more than **1/4 inch in 10 feet (6 mm in 3 m)**, or **1/2-inch (12-mm)** maximum.
2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than **1/8 inch in 10 feet (3 mm in 3 m)**, **1/4 inch in 20 feet (6 mm in 6 m)**, or **1/2-inch (12-mm)** maximum.
3. For vertical lines and surfaces, do not vary from plumb by more than **1/4 inch in 10 feet (6 mm in 3 m)**, **3/8 inch in 20 feet (9 mm in 6 m)**, or **1/2-inch (12-mm)** maximum.
4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than **1/8 inch in 10 feet (3 mm in 3 m)**, **1/4 inch in 20 feet (6 mm in 6 m)**, or **1/2-inch (12-mm)** maximum.
5. For lines and surfaces, do not vary from straight by more than **1/4 inch in 10 feet (6 mm in 3 m)**, **3/8 inch in 20 feet (9 mm in 6 m)**, or **1/2-inch (12-mm)** maximum.

C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus **1/8 inch (3 mm)**, with a maximum thickness limited to **1/2 inch (12 mm)**.
2. For head and collar joints, do not vary from thickness indicated by more than plus **3/8 inch (9 mm)** or minus **1/4 inch (6 mm)**.
3. For exposed head joints, do not vary from thickness indicated by more than plus or minus **1/8 inch (3 mm)**.

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.
- B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less-than-nominal **4-inch (100-mm)** horizontal face dimensions at corners or jambs.
- C. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.
- D. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.
- E. Fill cores in hollow CMUs with grout **24 inches (600 mm)** under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.

3.4 MORTAR BEDDING AND JOINTING

- A. Lay CMUs as follows:
  1. Bed face shells in mortar and make head joints of depth equal to bed joints.
  2. Bed webs in mortar in all courses of piers, columns, and pilasters.
  3. Bed webs in mortar in grouted masonry, including starting course on footings.
  4. Fully bed entire units, including areas under cells, at starting course on footings where cells are not grouted.
- B. Lay solid masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.
- C. Lay structural clay tile as follows:
  1. Lay vertical-cell units with full head joints unless otherwise indicated. Provide bed joints with full mortar coverage on face shells and webs.
  2. Lay horizontal-cell units with full bed joints unless otherwise indicated. Keep drainage channels, if any, free of mortar. Form head joints with sufficient mortar so excess will be squeezed out as units are placed in position. Butter both sides of

units to be placed, or butter one side of unit already in place and one side of unit to be placed.

3. Maintain joint thicknesses indicated except for minor variations required to maintain bond alignment. If not indicated, lay walls with 1/4- to 3/8-inch- (6- to 10-mm-) thick joints.

- D. Rake out mortar joints at pre-faced CMUs to a uniform depth of 1/4 inch (6 mm) and point with epoxy mortar to comply with epoxy-mortar manufacturer's written instructions.
- E. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.
- F. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint) unless otherwise indicated.

### 3.5 COMPOSITE MASONRY

- A. Bond wythes of composite masonry together using one of the following methods:
  1. Individual Metal Ties: Provide ties as shown installed in horizontal joints, but not less than one metal tie for 4.5 sq. ft. (0.42 sq. m) of wall area spaced not to exceed 36 inches (914 mm) o.c. horizontally and 16 inches (406 mm) o.c. vertically. Stagger ties in alternate courses. Provide additional ties within 12 inches (305 mm) of openings and space not more than 36 inches (914 mm) apart around perimeter of openings. At intersecting and abutting walls, provide ties at no more than 24 inches (610 mm) o.c. vertically.
  2. Masonry-Joint Reinforcement: Installed in horizontal mortar joints.
    - a. Where bed joints of both wythes align, use ladder-type reinforcement extending across both wythes.
    - b. Where bed joints of wythes do not align, use adjustable-type (two-piece-type) reinforcement.
- B. Collar Joints: Solidly fill collar joints by parging face of first wythe that is laid and shoving units of other wythe into place.
- C. Collar Joints in Clay Tile Masonry: After each course is laid, fill the vertical, longitudinal joint between wythes solidly with mortar at exterior walls, except cavity walls.
- D. Corners: Provide interlocking masonry unit bond in each wythe and course at corners unless otherwise indicated.
- E. Intersecting and Abutting Walls: Unless vertical expansion or control joints are shown at juncture, bond walls together as follows:
  1. Provide individual metal ties not more than 16 inches (406 mm) o.c.

3.6 CAVITY WALLS

- A. Bond wythes of cavity walls together using one of the following methods:
1. Individual Metal Ties: Provide ties as shown installed in horizontal joints, but not less than one metal tie for 4.5 sq. ft. (0.42 sq. m) of wall area spaced not to exceed 36 inches (914 mm) o.c. horizontally and 16 inches (406 mm) o.c. vertically. Stagger ties in alternate courses. Provide additional ties within 12 inches (305 mm) of openings and space not more than 36 inches (915 mm) apart around perimeter of openings. At intersecting and abutting walls, provide ties at no more than 24 inches (610 mm) o.c. vertically.
  2. Masonry-Joint Reinforcement: Installed in horizontal mortar joints.
    - a. Where bed joints of both wythes align, use ladder-type reinforcement extending across both wythes.
    - b. Where bed joints of wythes do not align, use adjustable-type (two-piece-type) reinforcement.
    - c. Where one wythe is of clay masonry and the other of concrete masonry, use adjustable-type (two-piece-type) reinforcement to allow for differential movement regardless of whether bed joints align.
- B. Keep cavities clean of mortar droppings and other materials during construction. Bevel beds away from cavity, to minimize mortar protrusions into cavity. Do not attempt to trowel or remove mortar fins protruding into cavity.
- C. Parge cavity face of backup wythe in a single coat approximately 3/8 inch (10 mm) thick. Trowel face of parge coat smooth.
- D. Installing Cavity Wall Insulation: Place small dabs of adhesive, spaced approximately 12 inches (300 mm) o.c. both ways, on inside face of insulation boards, or attach with plastic fasteners designed for this purpose. Fit courses of insulation between wall ties and other confining obstructions in cavity, with edges butted tightly both ways. Press units firmly against inside wythe of masonry or other construction as shown.

3.7 ANCHORED MASONRY VENEERS

- A. Anchor masonry veneers to wall framing and concrete and masonry backup with masonry-veneer anchors to comply with the following requirements:
1. Fasten screw-attached anchors through sheathing to wall framing and to concrete and masonry backup with metal fasteners of type indicated. Use two fasteners unless anchor design only uses one fastener.
  2. Embed tie sections in masonry joints.
  3. Locate anchor sections to allow maximum vertical differential movement of ties up and down.
  4. Space anchors as indicated, but not more than 18 inches (458 mm) o.c. vertically and 24 inches (610 mm) o.c. horizontally, with not less than one anchor for each 2 sq. ft. (0.2 sq. m) of wall area. Install additional anchors within 12 inches (305 mm) of openings and at intervals, not exceeding 8 inches (203 mm), around perimeter.

3.8 MASONRY-CELL FILL

- A. Pour loose-fill insulation into cavities to fill void spaces. Maintain inspection ports to show presence of fill at extremities of each pour area. Close the ports after filling has been confirmed. Limit the fall of fill to one story high, but not more than 20 feet (6 m).

3.9 MASONRY-JOINT REINFORCEMENT

- A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch (16 mm) on exterior side of walls, 1/2 inch (13 mm) elsewhere. Lap reinforcement a minimum of 6 inches (150 mm).
  - 1. Space reinforcement not more than 16 inches (406 mm) o.c.
  - 2. Space reinforcement not more than 8 inches (203 mm) o.c. in foundation walls and parapet walls.
  - 3. Provide reinforcement not more than 8 inches (203 mm) above and below wall openings and extending 12 inches (305 mm) beyond openings.
- B. Interrupt joint reinforcement at control and expansion joints unless otherwise indicated.
- C. Provide continuity at wall intersections by using prefabricated T-shaped units.
- D. Provide continuity at corners by using prefabricated L-shaped units.

3.10 ANCHORING MASONRY TO STRUCTURAL STEEL AND CONCRETE

- A. Anchor masonry to structural steel and concrete, where masonry abuts or faces structural steel or concrete, to comply with the following:
  - 1. Provide an open space not less than 1 inch (25 mm) wide between masonry and structural steel or concrete unless otherwise indicated. Keep open space free of mortar and other rigid materials.
  - 2. Anchor masonry with anchors embedded in masonry joints and attached to structure.
  - 3. Space anchors as indicated, but not more than 24 inches (610 mm) o.c. vertically and 36 inches (915 mm) o.c. horizontally.

3.11 FLASHING, WEEP HOLES, AND CAVITY VENTS

- A. General: Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated. Install cavity vents at shelf angles, ledges, and other obstructions to upward flow of air in cavities, and where indicated.
- B. Install flashing as follows unless otherwise indicated:
  - 1. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, place through-wall flashing on sloping bed of mortar and cover with mortar. Before covering with



- mortar, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.
2. At multiwythe masonry walls, including cavity walls, extend flashing through outer wythe, turned up a minimum of **4 inches (100 mm)**, and through inner wythe to within **1/2 inch (13 mm)** of the interior face of wall in exposed masonry. Where interior face of wall is to receive furring or framing, carry flashing completely through inner wythe and turn flashing up approximately **2 inches (50 mm)** on interior face.
  3. At lintels and shelf angles, extend flashing a minimum of **6 inches (150 mm)** into masonry at each end. At heads and sills, extend flashing **6 inches (150 mm)** at ends and turn up not less than **2 inches (50 mm)** to form end dams.
  4. Install metal drip edges beneath flexible flashing at exterior face of wall. Stop flexible flashing **1/2 inch (13 mm)** back from outside face of wall, and adhere flexible flashing to top of metal drip edge.
  5. Install metal flashing termination beneath flexible flashing at exterior face of wall. Stop flexible flashing **1/2 inch (13 mm)** back from outside face of wall, and adhere flexible flashing to top of metal flashing termination.
- C. Install weep holes in exterior wythes and veneers in head joints of first course of masonry immediately above embedded flashing.
1. Use specified weep/cavity vent products to form weep holes.
  2. Space weep holes **24 inches (600 mm)** o.c. unless otherwise indicated.
  3. Cover cavity side of weep holes with plastic insect screening at cavities insulated with loose-fill insulation.
- D. Place cavity drainage material in cavities to comply with configuration requirements for cavity drainage material in "Miscellaneous Masonry Accessories" Article.
- 3.12 REINFORCED UNIT MASONRY
- A. Placing Reinforcement: Comply with requirements in TMS 602/ACI 530.1/ASCE 6.
- B. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.
1. Comply with requirements in TMS 602/ACI 530.1/ASCE 6 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
  2. Limit height of vertical grout pours to not more than **60 inches (1520 mm)**.
- 3.13 FIELD QUALITY CONTROL
- A. Testing and Inspecting: Owner will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.
- B. Inspections: Special inspections according to Level B in TMS 402/ACI 530/ASCE 5.

1. Begin masonry construction only after inspectors have verified proportions of site-prepared mortar.
  2. Place grout only after inspectors have verified compliance of grout spaces and of grades, sizes, and locations of reinforcement.
  3. Place grout only after inspectors have verified proportions of site-prepared grout.
- C. Testing Prior to Construction: One set of tests.
- D. Testing Frequency: One set of tests for each **5000 sq. ft. (464 sq. m)** of wall area or portion thereof.
- E. Concrete Masonry Unit Test: For each type of unit provided, according to ASTM C140 for compressive strength.
- F. Mortar Aggregate Ratio Test (Proportion Specification): For each mix provided, according to ASTM C780.
- G. Mortar Test (Property Specification): For each mix provided, according to ASTM C780. Test mortar for mortar air content and compressive strength.
- H. Grout Test (Compressive Strength): For each mix provided, according to ASTM C1019.

### 3.14 PARGING

- A. Parge exterior faces of below-grade masonry walls, where indicated, in two uniform coats to a total thickness of **3/4 inch (19 mm)**. Dampen wall before applying first coat, and scarify first coat to ensure full bond to subsequent coat.
- B. Use a steel-trowel finish to produce a smooth, flat, dense surface with a maximum surface variation of **1/8 inch per foot (3 mm per 300 mm)**. Form a wash at top of parging and a cove at bottom.
- C. Damp-cure parging for at least 24 hours and protect parging until cured.

### 3.15 REPAIRING, POINTING, AND CLEANING

- A. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- B. 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.
  3. Protect adjacent surfaces from contact with cleaner.
  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.

### 3.16 MASONRY WASTE DISPOSAL

- A. Waste Disposal as Fill Material: Dispose of clean masonry waste, including excess or soil-contaminated sand, waste mortar, and broken masonry units, by crushing and mixing with fill material as fill is placed.
  1. Do not dispose of masonry waste as fill within 18 inches (450 mm) of finished grade.
- B. Masonry Waste Recycling: Return broken CMUs not used as fill to manufacturer for recycling.
- C. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above or recycled, and other masonry waste, and legally dispose of off Owner's property.

END OF SECTION 042000



**SECTION 042613 - MASONRY VENEER**

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Clay face brick.
  - 2. Concrete face brick.
- B. Products Installed but Not Furnished under This Section:
  - 1. Steel lintels in masonry veneer.
  - 2. Steel shelf angles for supporting masonry veneer.

1.2 ALLOWANCES

- A. Face brick is part of the Face Brick Allowance.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples for Verification: For each type and color of brick and colored mortar.

1.4 INFORMATIONAL SUBMITTALS

- A. Material Certificates: For each type and size of product.

1.5 FIELD CONDITIONS

- A. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.
  - 1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F (4 deg C) and higher and will remain so until masonry has dried, but not less than seven days after completing cleaning.
- B. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

PART 2 - PRODUCTS

2.1 UNIT MASONRY, GENERAL

- A. Masonry Standard: Comply with TMS 602/ACI 530.1/ASCE 6, except as modified by requirements in the Contract Documents.
- B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects will be exposed in the completed Work.

2.2 CONCRETE BRICK

- A. Concrete Face Brick: ASTM C1634.
  - 1. Heritage Collection Designer Concrete
  - 2. Density Classification: Normal weight.
  - 3. Size (Actual Dimensions): 3-5/8 inches (92 mm) wide by 2-1/4 inches (57 mm) high by 7-5/8 inches (194 mm) long.
  - 4. Texture: smooth finish.
    - a. Match Architect's samples.
  - 5. Colors: As selected by architect from Manufacturers Price Group A .

2.3 MORTAR MATERIALS

- A. Portland Cement: ASTM C150/C150M, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
- B. Hydrated Lime: ASTM C207, Type S.
- C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.
- D. Masonry Cement: ASTM C91/C91M.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Cemex S.A.B. de C.V.
    - b. Essroc.
    - c. Holcim (US) Inc.
    - d. Lafarge North America Inc.
    - e. Lehigh Hanson; HeidelbergCement Group.

- E. Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes and complying with ASTM C979/C979M. Use only pigments with a record of satisfactory performance in masonry mortar.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Davis Colors.
    - b. Euclid Chemical Company (The); an RPM company.
    - c. Lanxess Corporation.
    - d. Solomon Colors, Inc.
- F. Aggregate for Mortar: ASTM C144.
  - 1. White-Mortar Aggregates: Natural white sand or crushed white stone.
  - 2. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.
- G. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C494/C494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Euclid Chemical Company (The); an RPM company.
    - b. GCP Applied Technologies Inc.
- H. Water: Potable.

## 2.4 TIES AND ANCHORS

- A. General: Ties and anchors shall extend at least **1-1/2 inches (38 mm)** into veneer but with at least a **5/8-inch (16-mm)** cover on outside face.
- B. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated:
  - 1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A82/A82M, with ASTM A153/A153M, Class B-2 coating.
  - 2. Steel Sheet, Galvanized after Fabrication: ASTM A1008/A1008M, Commercial Steel, with ASTM A153/A153M, Class B coating.
- C. Adjustable Anchors for Connecting to Structural Steel Framing: 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- (6.35-mm-)** diameter, hot-dip galvanized-steel wire.
  - 2. Tie Section: Triangular-shaped wire tie made from **0.187-inch- (4.76-mm-)** diameter, hot-dip galvanized-steel wire.

- D. Adjustable Anchors for Connecting to Concrete: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.
1. Connector Section: Dovetail tabs for inserting into dovetail slots in concrete and attached to tie section; formed from 0.060-inch- (1.52-mm-) thick, steel sheet, galvanized after fabrication.
  2. Tie Section: Triangular-shaped wire tie made from 0.187-inch- (4.76-mm-) diameter, hot-dip galvanized-steel wire.
  3. Corrugated-Metal Ties: Metal strips not less than 7/8 inch (22 mm) wide with corrugations having a wavelength of 0.3 to 0.5 inch (7.6 to 12.7 mm) and an amplitude of 0.06 to 0.10 inch (1.5 to 2.5 mm) made from 0.060-inch- (1.52-mm-) thick steel sheet, galvanized after fabrication with dovetail tabs for inserting into dovetail slots in concrete.
- E. Adjustable Masonry-Veneer Anchors:
1. General: Provide anchors that allow vertical adjustment but resist a 100-lbf (445-N) load in both tension and compression perpendicular to plane of wall without deforming or developing play in excess of 1/16 inch (1.5 mm).
  2. Fabricate sheet metal anchor sections and other sheet metal parts from 0.075-inch- (1.90-mm-) thick steel sheet, galvanized after fabrication.
  3. Fabricate wire ties from 0.187-inch- (4.76-mm-) diameter, hot-dip galvanized-steel wire unless otherwise indicated.
  4. Fabricate wire connector sections from 0.187-inch- (4.76-mm-) diameter, hot-dip galvanized, carbon-steel wire.
  5. Contractor's Option: Unless otherwise indicated, provide any of the adjustable masonry-veneer anchors specified.
  6. Polymer-Coated, Steel Drill Screws for Steel Studs: ASTM C954 except with hex washer head and neoprene or EPDM washer, No. 10 (4.83-mm) diameter and with organic polymer coating with salt-spray resistance to red rust of more than 800 hours according to ASTM B117.

## 2.5 EMBEDDED FLASHING MATERIALS

- A. Metal Flashing: Provide metal flashing complying with SMACNA's "Architectural Sheet Metal Manual" and as follows:
1. Stainless Steel: ASTM A240/A240M or ASTM A666, Type 304, 0.016 inch (0.40 mm) thick.
  2. Copper: ASTM B370, Temper H00, cold-rolled copper sheet, 16-oz./sq. ft. (4.9-kg/sq. m) weight or 0.0216 inch (0.55 mm) thick or ASTM B370, Temper H01, high-yield copper sheet, 12-oz./sq. ft. (3.7-kg/sq. m) weight or 0.0162 inch (0.41 mm) thick.
  3. Fabricate continuous flashings in sections 96 inches (2400 mm) long minimum, but not exceeding 12 feet (3.7 m). Provide splice plates at joints of formed, smooth metal flashing.
  4. Fabricate metal drip edges from stainless steel. Extend at least 3 inches (76 mm) into wall and 1/2 inch (13 mm) out from wall, with outer edge bent down 30 degrees and hemmed.



5. Fabricate metal sealant stops from stainless steel. Extend at least **3 inches (76 mm)** into wall and out to exterior face of wall. At exterior face of wall, bend metal back on itself for **3/4 inch (19 mm)** and down into joint **1/4 inch (6 mm)** to form a stop for retaining sealant backer rod.
- B. Flexible Flashing: Use one of the following unless otherwise indicated:
  1. Rubberized-Asphalt Flashing: Composite flashing product consisting of a pliable, adhesive rubberized-asphalt compound, bonded to a high-density, cross-laminated polyethylene film to produce an overall thickness of not less than **0.030 inch (0.76 mm)**.
    - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      - 1) Advanced Building Products Inc.
      - 2) Carlisle Coatings & Waterproofing Inc.
      - 3) Polyguard Products, Inc.
      - 4) W.R. Meadows, Inc.
  2. Butyl Rubber Flashing: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than **0.030 inch (0.76 mm)**.
    - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      - 1) DuPont de Nemours, Inc.
      - 2) GCP Applied Technologies Inc.
      - 3) Protecto Wrap Company.
      - 4) Raven Industries, Inc.
  3. Elastomeric Thermoplastic Flashing: Composite flashing product consisting of a polyester-reinforced ethylene interpolymer alloy.
    - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      - 1) DuPont.
      - 2) Hohmann & Barnard, Inc.
      - 3) Hyload, Inc.
      - 4) Mortar Net Solutions.
      - 5) Wire-Bond.
  4. EPDM Flashing: Sheet flashing product made from ethylene-propylene-diene terpolymer, complying with ASTM D4637/D4637M, **0.040 inch (1.02 mm)** thick.
    - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      - 1) Carlisle Coatings & Waterproofing Inc.

- 2) [Firestone Specialty Products.](#)
- 3) [Heckmann Building Products, Inc.](#)
- 4) [Hohmann & Barnard, Inc.](#)
- 5) [Wire-Bond.](#)

- C. Solder and Sealants for Sheet Metal Flashings: As specified in Section 076200 "Sheet Metal Flashing and Trim."
- D. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.

## 2.6 MISCELLANEOUS MASONRY ACCESSORIES

- A. Compressible Filler: Premolded filler strips complying with ASTM D1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene or PVC.
- B. 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 (3 mm)** less than depth of outer wythe, in color selected from manufacturer's standard.
    - a. [Manufacturers:](#) Subject to compliance with requirements, provide products by one of the following:
      - 1) [Advanced Building Products Inc.](#)
      - 2) [Heckmann Building Products, Inc.](#)
      - 3) [Hohmann & Barnard, Inc.](#)
      - 4) [Mortar Net Solutions.](#)
      - 5) [Wire-Bond.](#)
  2. Mesh Weep/Vent: Free-draining mesh; made from polyethylene strands, full height and width of head joint and depth **1/8 inch (3 mm)** less than depth of outer wythe; in color selected from manufacturer's standard.
    - a. [Manufacturers:](#) Subject to compliance with requirements, provide products by one of the following:
      - 1) [CavClear/Archovations, Inc.](#)
      - 2) [Hohmann & Barnard, Inc.](#)
      - 3) [Keene Building Products.](#)
      - 4) [Mortar Net Solutions.](#)
- C. Cavity Drainage Material: Free-draining mesh, made from polymer strands that will not degrade within the wall cavity.
1. [Manufacturers:](#) Subject to compliance with requirements, provide products by one of the following:

- a. [Advanced Building Products Inc.](#)
  - b. [Keene Building Products.](#)
  - c. [Mortar Net Solutions.](#)
  - d. [Wire-Bond.](#)
2. Configuration: Provide one of the following:
- a. Strips, full depth of cavity and **10 inches (250 mm)** high, with dovetail-shaped notches **7 inches (175 mm)** deep that prevent clogging with mortar droppings.
  - b. Strips, not less than **3/4 inch (19 mm)** thick and **10 inches (250 mm)** high, with dimpled surface designed to catch mortar droppings and prevent weep holes from clogging with mortar.
  - c. Sheets or strips, full depth of cavity and installed to full height of cavity.

## 2.7 MASONRY CLEANERS

- A. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.
1. [Manufacturers:](#) Subject to compliance with requirements, provide products by one of the following:
    - a. [Diedrich Technologies, Inc.; a Hohmann & Barnard company.](#)
    - b. [EaCo Chem, Inc.](#)
    - c. [PROSOCO, Inc.](#)

## 2.8 MORTAR MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.
1. Do not use calcium chloride in mortar or grout.
  2. Use portland cement-lime or masonry cement mortar unless otherwise indicated.
  3. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.
- B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.
- C. Mortar for Unit Masonry: Comply with ASTM C270, Proportion Specification. Use Type N unless another type is indicated.
- D. Pigmented Mortar: Use colored cement product or select and proportion pigments with other ingredients to produce color required. Do not add pigments to colored cement products.

1. Pigments shall not exceed 10 percent of portland cement by weight.
- E. Colored-Aggregate Mortar: Produce required mortar color by using colored aggregates and natural color or white cement as necessary to produce required mortar color.
  1. Mix to match Architect's sample.
  2. Application: Use colored aggregate mortar for exposed mortar joints.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION, GENERAL

- A. 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.
- B. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures. Mix units from several pallets or cubes as they are placed.
- C. 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 according to ASTM C67. Allow units to absorb water so they are damp but not wet at time of laying.

#### 3.2 TOLERANCES

- A. Dimensions and Locations of Elements:
  1. For dimensions in cross section or elevation, do not vary by more than plus 1/2 inch (12 mm) or minus 1/4 inch (6 mm).
  2. For location of elements in plan, do not vary from that indicated by more than plus or minus 1/2 inch (12 mm).
  3. For location of elements in elevation, do not vary from that indicated by more than plus or minus 1/4 inch (6 mm) in a story height or 1/2 inch (12 mm) total.
- B. Lines and Levels:
  1. For bed joints and top surfaces of bearing walls, do not vary from level by more than 1/4 inch in 10 feet (6 mm in 3 m), or 1/2 inch (12 mm) maximum.
  2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 1/2 inch (12 mm) maximum.
  3. For vertical lines and surfaces, do not vary from plumb by more than 1/4 inch in 10 feet (6 mm in 3 m), 3/8 inch in 20 feet (9 mm in 6 m), or 1/2 inch (12 mm) maximum.
  4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10

feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 1/2 inch (12 mm) maximum.

5. For lines and surfaces, do not vary from straight by more than 1/4 inch in 10 feet (6 mm in 3 m), 3/8 inch in 20 feet (9 mm in 6 m), or 1/2 inch (12 mm) maximum.

C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch (3 mm), with a maximum thickness limited to 1/2 inch (12 mm).
2. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch (3 mm). Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch (3 mm).

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.
- B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less-than-nominal 4-inch (100-mm) horizontal face dimensions at corners or jambs.
- C. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.

3.4 MORTAR BEDDING AND JOINTING

- A. Lay masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.
- B. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.

3.5 ANCHORED MASONRY VENEERS

- A. Anchor masonry veneers to wall framing and concrete and masonry backup with masonry-veneer anchors to comply with the following requirements:
  1. Fasten screw-attached anchors through sheathing to wall framing and to concrete and masonry backup with metal fasteners of type indicated. Use two fasteners unless anchor design only uses one fastener.
  2. Embed tie sections in masonry joints.
  3. Locate anchor sections to allow maximum vertical differential movement of ties up and down.
  4. Space anchors as indicated, but not more than 18 inches (458 mm) o.c. vertically and 24 inches (610 mm) o.c. horizontally, with not less than one anchor for each 2

sq. ft. (0.2 sq. m) of wall area. Install additional anchors within 12 inches (305 mm) of openings and at intervals, not exceeding 8 inches (203 mm), around perimeter.

- B. Provide not less than 2 inches (50 mm) of airspace between back of masonry veneer and face of insulation.

### 3.6 ANCHORING MASONRY TO STRUCTURAL STEEL AND CONCRETE

- A. Anchor masonry to structural steel and concrete, where masonry abuts or faces structural steel or concrete to comply with the following:
  - 1. Provide an open space not less than 1/2 inch (13 mm) wide between masonry and structural steel or concrete unless otherwise indicated. Keep open space free of mortar and other rigid materials.
  - 2. Anchor masonry with anchors embedded in masonry joints and attached to structure.
  - 3. Space anchors as indicated, but not more than 24 inches (610 mm) o.c. vertically and 36 inches (915 mm) o.c. horizontally.

### 3.7 FLASHING, WEEP HOLES, AND VENTS

- A. General: Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated. Install vents at shelf angles, ledges, and other obstructions to upward flow of air in cavities, and where indicated.
- B. Install flashing as follows unless otherwise indicated:
  - 1. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, place through-wall flashing on sloping bed of mortar and cover with mortar. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.
  - 2. At lintels and shelf angles, extend flashing a minimum of 6 inches (150 mm) into masonry at each end. At heads and sills, extend flashing 6 inches (150 mm) at ends and turn up not less than 2 inches (50 mm) to form end dams.
  - 3. Install metal drip edges beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch (13 mm) back from outside face of wall, and adhere flexible flashing to top of metal drip edge.
  - 4. Install metal flashing termination beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch (13 mm) back from outside face of wall, and adhere flexible flashing to top of metal flashing termination.
- C. Install weep holes in veneers in head joints of first course of masonry immediately above embedded flashing.
  - 1. Use specified weep/vent products to form weep holes.
  - 2. Space weep holes 24 inches (600 mm) o.c. unless otherwise indicated.

- D. Place cavity drainage material in airspace behind veneers to comply with configuration requirements for cavity drainage material in "Miscellaneous Masonry Accessories" Article.
- E. Install vents in head joints in exterior wythes at spacing indicated. Use specified weep/vent products to form vents.
  - 1. Close cavities off vertically and horizontally with blocking in manner indicated. Install through-wall flashing and weep holes above horizontal blocking.

### 3.8 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Owner will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.
- B. Clay Masonry Unit Test: For each type of unit provided, according to ASTM C67 for compressive strength.
- C. Concrete Masonry Unit Test: For each type of unit provided, according to ASTM C140 for compressive strength.
- D. Mortar Aggregate Ratio Test (Proportion Specification): For each mix provided, according to ASTM C780.

### 3.9 REPAIRING, POINTING, AND CLEANING

- A. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- B. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
  - 1. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes.
  - 2. Protect adjacent stone and nonmasonry surfaces from contact with cleaner.
  - 3. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
  - 4. Clean brick by bucket-and-brush hand-cleaning method described in BIA Technical Notes 20.
  - 5. Clean masonry with a proprietary acidic cleaner applied according to manufacturer's written instructions.

### 3.10 MASONRY WASTE DISPOSAL

- A. Waste Disposal as Fill Material: Dispose of clean masonry waste, including excess or soil-contaminated sand, waste mortar, and broken masonry units, by crushing and mixing with fill material as fill is placed.

1. Do not dispose of masonry waste as fill within 18 inches (450 mm) of finished grade.
- B. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above or recycled, and other masonry waste, and legally dispose of off Owner's property.

END OF SECTION 042613



**SECTION 061000 - ROUGH CARPENTRY**

**PART 1 - GENERAL**

**1.1 SUMMARY**

**A. Section Includes:**

1. Framing with dimension lumber.
2. Framing with engineered wood products.
3. Shear wall panels.
4. Rooftop equipment bases and support curbs.
5. Wood blocking and nailers.
6. Wood furring and grounds.
7. Wood sleepers.
8. Plywood backing panels.

**1.2 ACTION SUBMITTALS**

- A. Product Data:** For each type of process and factory-fabricated product.

**1.3 INFORMATIONAL SUBMITTALS**

- A. Material Certificates:** For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.
- B. Evaluation Reports:** For the following, from ICC-ES:
1. Wood-preservative-treated wood.
  2. Fire-retardant-treated wood.
  3. Engineered wood products.
  4. Shear panels.
  5. Power-driven fasteners.
  6. Post-installed anchors.
  7. Metal framing anchors.

**PART 2 - PRODUCTS**

**2.1 WOOD PRODUCTS, GENERAL**

- A. Lumber:** DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, comply with the applicable rules of any rules-writing agency

certified by the ALSC Board of Review. Grade lumber by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
  2. For exposed lumber indicated to receive a stained or natural finish, mark grade stamp on end or back of each piece.
  3. Dress lumber, S4S, unless otherwise indicated.
- B. Maximum Moisture Content of Lumber: 19 percent unless otherwise indicated.
- C. Engineered Wood Products: Acceptable to authorities having jurisdiction and for which current model code research or evaluation reports exist that show compliance with building code in effect for Project.
1. Allowable design stresses, as published by manufacturer, shall meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

## 2.2 WOOD-PRESERVATIVE-TREATED LUMBER

- A. Preservative Treatment by Pressure Process: AWPAC U1; Use Category UC2 for interior construction not in contact with ground, Use Category UC3b for exterior construction not in contact with ground, and Use Category UC4a for items in contact with ground.
1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.
- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.
- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
- D. Application: Treat items indicated on Drawings, and the following:
1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
  2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.
  3. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.
  4. Wood framing members that are less than 18 inches (460 mm) above the ground in crawlspaces or unexcavated areas.
  5. Wood floor plates that are installed over concrete slabs-on-grade.

**2.3 FIRE-RETARDANT-TREATED MATERIALS**

- A. General: Where fire-retardant-treated materials are indicated, materials shall comply with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.
- B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than **10.5 feet (3.2 m)** beyond the centerline of the burners at any time during the test.
  - 1. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated lumber and plywood by pressure process after being subjected to accelerated weathering according to ASTM D2898. Use for exterior locations and where indicated.
  - 2. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D3201 at 92 percent relative humidity. Use where exterior type is not indicated.
- C. Kiln-dry lumber after treatment to maximum moisture content of 19 percent. Kiln-dry plywood after treatment to maximum moisture content of 15 percent.
- D. Identify fire-retardant-treated wood with appropriate classification marking of qualified testing agency.
- E. Application: Treat items indicated on Drawings, and the following:
  - 1. Framing for raised platforms.
  - 2. Framing for stages.
  - 3. Concealed blocking.
  - 4. Framing for non-load-bearing partitions.
  - 5. Framing for non-load-bearing exterior walls.
  - 6. Roof construction.
  - 7. Plywood backing panels.

**2.4 DIMENSION LUMBER FRAMING**

- A. Non-Load-Bearing Interior Partitions: Construction or No. 2 grade.
  - 1. Application: All interior partitions.
  - 2. Species:
    - a. Southern pine or mixed southern pine; SPIB.
    - b. Northern species; NLGA.
    - c. Eastern softwoods; NeLMA.
    - d. Western woods; WCLIB or WWP.
- B. Framing Other Than Non-Load-Bearing Partitions: No. 2 grade.

1. Application: Framing other than interior partitions.
2. Species:
  - a. Hem-fir (north); NLGA.
  - b. Douglas fir-larch; WCLIB or WWPA.
  - c. Southern pine or mixed southern pine; SPIB.
  - d. Spruce-pine-fir; NLGA.
  - e. Douglas fir-south; WWPA.
  - f. Hem-fir; WCLIB or WWPA.
  - g. Douglas fir-larch (north); NLGA.
  - h. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.

C. Exposed Framing: Hand-select material for uniformity of appearance and freedom from characteristics, on exposed surfaces and edges, that would impair finish appearance, including decay, honeycomb, knot-holes, shake, splits, torn grain, and wane.

1. Species and Grade: As indicated above for load-bearing construction of same type.

## 2.5 MISCELLANEOUS LUMBER

A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:

1. Blocking.
2. Nailers.
3. Rooftop equipment bases and support curbs.
4. Cants.
5. Furring.
6. Grounds.

B. Dimension Lumber Items: Construction or No. 2 grade lumber of any species.

C. Concealed Boards: 19 percent maximum moisture content and any of the following species and grades:

1. Mixed southern pine or southern pine; No. 3 grade; SPIB.
2. Eastern softwoods; No. 3 Common grade; NeLMA.
3. Northern species; No. 3 Common grade; NLGA.
4. Western woods; Standard or No. 3 Common grade; WCLIB or WWPA.

## 2.6 PLYWOOD BACKING PANELS

A. Equipment Backing Panels: Plywood, DOC PS 1, Exterior, A-C, in thickness indicated or, if not indicated, not less than 1/2-inch (13-mm) nominal thickness.

2.7 FASTENERS

- A. General: Fasteners shall be of size and type indicated and shall comply with requirements specified in this article for material and manufacture.
  - 1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A153/A153M.
- B. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.
- C. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC01 ICC-ES AC58 ICC-ES AC193 or ICC-ES AC308 as appropriate for the substrate.

2.8 METAL FRAMING ANCHORS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Cleveland Steel Specialty Co.
  - 2. MiTek Industries, Inc.
  - 3. Simpson Strong-Tie Co., Inc.
- B. Allowable design loads, as published by manufacturer, shall meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency. Framing anchors shall be punched for fasteners adequate to withstand same loads as framing anchors.
- C. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A653/A653M, **G60 (Z180)** coating designation.
  - 1. Use for interior locations unless otherwise indicated.
- D. Hot-Dip, Heavy-Galvanized Steel Sheet: ASTM A653/A653M; structural steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); **G185 (Z550)** coating designation; and not less than **0.036 inch (0.9 mm)** thick.
  - 1. Use for wood-preservative-treated lumber and where indicated.

2.9 MISCELLANEOUS MATERIALS

- A. Sill-Sealer Gaskets: Glass-fiber-resilient insulation, fabricated in strip form, for use as a sill sealer; **1-inch (25-mm)** nominal thickness, compressible to **1/32 inch (0.8 mm)**; selected from manufacturer's standard widths to suit width of sill members indicated.

- B. Sill-Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch (6.4 mm) thick, selected from manufacturer's standard widths to suit width of sill members indicated.
- C. Flexible Flashing: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber or rubberized-asphalt compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.025 inch (0.6 mm).
- D. Adhesives for Gluing Furring and Sleepers to Concrete or Masonry: Formulation complying with ASTM D3498 that is approved for use indicated by adhesive manufacturer.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- B. Framing with Engineered Wood Products: Install engineered wood products to comply with manufacturer's written instructions.
- C. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry accurately to other construction. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.
- D. Install shear wall panels to comply with manufacturer's written instructions.
- E. Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.
- F. Do not splice structural members between supports unless otherwise indicated.
- G. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
- H. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.
- I. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
  - 1. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code (IBC).
  - 2. ICC-ES evaluation report for fastener.

3.2 PROTECTION

- A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.
- B. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 061000





**SECTION 061053 - MISCELLANEOUS ROUGH CARPENTRY**

**PART 1 - GENERAL**

**1.1 SUMMARY**

**A. Section Includes:**

1. Framing with dimension lumber.
2. Rooftop equipment bases and support curbs.
3. Wood blocking, cants, and nailers.
4. Wood furring and grounds.
5. Wood sleepers.
6. Utility shelving.
7. Plywood backing panels.

**1.2 ACTION SUBMITTALS**

- A. Product Data:** For each type of process and factory-fabricated product.

**1.3 INFORMATIONAL SUBMITTALS**

**A. Evaluation Reports:** For the following, from ICC-ES:

1. Preservative-treated wood.
2. Fire-retardant-treated wood.
3. Power-driven fasteners.

**PART 2 - PRODUCTS**

**2.1 WOOD PRODUCTS, GENERAL**

- A. Lumber:** DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. For exposed lumber indicated to receive a stained or natural finish, mark grade stamp on end or back of each piece.
3. Dress lumber, S4S, unless otherwise indicated.

- B. Maximum Moisture Content of Lumber:** 19 percent unless otherwise indicated.

## 2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

- A. Preservative Treatment by Pressure Process: AWPAC U1; Use Category UC2 for interior construction not in contact with ground, Use Category UC3b for exterior construction not in contact with ground, and Use Category UC4a for items in contact with ground.
  - 1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.
- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or does not comply with requirements for untreated material.
- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
- D. Application: Treat items indicated on Drawings, and the following:
  - 1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
  - 2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.
  - 3. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.
  - 4. Wood framing members that are less than 18 inches (460 mm) above the ground in crawlspaces or unexcavated areas.
  - 5. Wood floor plates that are installed over concrete slabs-on-grade.

## 2.3 FIRE-RETARDANT-TREATED MATERIALS

- A. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet (3.2 m) beyond the centerline of the burners at any time during the test.
  - 1. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated lumber and plywood by pressure process after being subjected to accelerated weathering according to ASTM D2898. Use for exterior locations and where indicated.
  - 2. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D3201 at 92 percent relative humidity. Use where exterior type is not indicated.
  - 3. Design Value Adjustment Factors: Treated lumber shall be tested according to ASTM D5664, and design value adjustment factors shall be calculated according to ASTM D6841. For enclosed roof framing, framing in attic spaces, and where high-temperature fire-retardant treatment is indicated, provide material with adjustment factors of not less than 0.85 modulus of elasticity and 0.75 for extreme fiber in bending for Project's climatological zone.

- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent.

#### 2.4 DIMENSION LUMBER FRAMING

- A. Non-Load-Bearing Interior Partitions: Construction or No. 2 grade of any species.
- B. Other Framing: Construction or No. 2 grade of any of the following species:
  - 1. Hem-fir (north); NLGA.
  - 2. Southern pine; SPIB.
  - 3. Douglas fir-larch; WCLIB or WWPA.
  - 4. Spruce-pine-fir; NLGA.
  - 5. Douglas fir-south; WWPA.
  - 6. Hem-fir; WCLIB or WWPA.
  - 7. Douglas fir-larch (north); NLGA.

#### 2.5 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
  - 1. Blocking.
  - 2. Nailers.
  - 3. Rooftop equipment bases and support curbs.
  - 4. Cants.
  - 5. Furring.
  - 6. Grounds.
  - 7. Utility shelving.
- B. Dimension Lumber Items: Standard, Stud, or No. 3 grade lumber of any species.
- C. Utility Shelving: Lumber with 19 percent maximum moisture content of eastern white pine, Idaho white, lodgepole, ponderosa, or sugar pine; Premium or No. 2 Common (Sterling) grade; NELMA, NLGA, WCLIB, or WWPA.
- D. Concealed Boards: 19 percent maximum moisture content of any of the following species and grades:
  - 1. Mixed southern pine or southern pine, No. 3 grade; SPIB.
  - 2. Eastern softwoods, No. 3 Common grade; NELMA.
  - 3. Northern species, No. 3 Common grade; NLGA.
  - 4. Western woods, Standard or No. 3 Common grade; WCLIB or WWPA.

#### 2.6 PLYWOOD BACKING PANELS

- A. Equipment Backing Panels: Plywood, DOC PS 1, Exterior, A-C, in thickness indicated or, if not indicated, not less than 1/2-inch (13-mm) nominal thickness.

**2.7 FASTENERS**

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
  - 1. Where carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A153/A153M.
- B. Screws for Fastening to Metal Framing: ASTM C1002, length as recommended by screw manufacturer for material being fastened.
- C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

**2.8 MISCELLANEOUS MATERIALS**

- A. Adhesives for Gluing Furring and Sleepers to Concrete or Masonry: Formulation complying with ASTM D3498 that is approved for use indicated by adhesive manufacturer.
- B. Flexible Flashing: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber or rubberized-asphalt compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than **0.025 inch** (**0.6 mm**).

**PART 3 - EXECUTION**

**3.1 INSTALLATION**

- A. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- B. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry accurately to other construction. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.
- C. Install plywood backing panels by fastening to studs; coordinate locations with utilities requiring backing panels.
- D. Do not splice structural members between supports unless otherwise indicated.
- E. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
- F. Securely attach carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.
2. Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," in ICC's International Residential Code for One- and Two-Family Dwellings.
3. ICC-ES evaluation report for fastener.

3.2 PROTECTION

- A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 061053



## **SECTION 061600 - SHEATHING**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

**A. Section Includes:**

1. Wall sheathing.
2. Roof sheathing.
3. Parapet sheathing.
4. Composite nail base insulated roof sheathing.
5. Subflooring.
6. Underlayment.
7. Sheathing joint and penetration treatment.

#### **1.2 ACTION SUBMITTALS**

- A. Product Data:** For each type of process and factory-fabricated product.

#### **1.3 INFORMATIONAL SUBMITTALS**

- A. Evaluation Reports:** For the following, from ICC-ES:
1. Wood-preservative-treated plywood.

### **PART 2 - PRODUCTS**

#### **2.1 WOOD PANEL PRODUCTS**

- A. Emissions:** Products shall meet the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

#### **2.2 PRESERVATIVE-TREATED PLYWOOD**

- A. Preservative Treatment by Pressure Process:** AWPAC U1; Use Category UC2 for interior construction not in contact with ground, Use Category UC3b for exterior construction not in contact with ground, and Use Category UC4a for items in contact with ground.
- B. Mark plywood with appropriate classification marking of an inspection agency acceptable to authorities having jurisdiction.**

- C. Application: Treat items indicated on Drawings and plywood in contact with masonry or concrete or used with roofing, flashing, vapor barriers, and waterproofing.

## 2.3 FIRE-RETARDANT-TREATED PLYWOOD

- A. General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article that are acceptable to authorities having jurisdiction and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.
- B. Fire-Retardant-Treated Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet (3.2 m) beyond the centerline of the burners at any time during the test.
  - 1. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated plywood by pressure process after being subjected to accelerated weathering according to ASTM D2898. Use for exterior locations and where indicated.
  - 2. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D3201/D3201M at 92 percent relative humidity. Use where exterior type is not indicated.
  - 3. Design Value Adjustment Factors: Treated lumber plywood shall be tested according to ASTM D5516 and design value adjustment factors shall be calculated according to ASTM D6305. Span ratings after treatment shall be not less than span ratings specified. For roof sheathing and where high-temperature fire-retardant treatment is indicated, span ratings for temperatures up to 170 deg F (76 deg C) shall be not less than span ratings specified.
- C. Kiln-dry material after treatment to a maximum moisture content of 15 percent.
- D. Identify fire-retardant-treated plywood with appropriate classification marking of qualified testing agency.
- E. Application: Treat plywood indicated on Drawings.

## 2.4 WALL SHEATHING

- A. Plywood Sheathing: Either DOC PS 1 or DOC PS 2, Exterior sheathing.
- B. Oriented-Strand-Board Sheathing: DOC PS 2, Exposure 1 sheathing.

## 2.5 ROOF SHEATHING

- A. Plywood Sheathing: Either DOC PS 1 or DOC PS 2, Exterior sheathing.
- B. Oriented-Strand-Board Sheathing: DOC PS 2, Exposure 1 sheathing.



**2.6 FASTENERS**

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
  - 1. For roof and wall sheathing, provide fasteners of Type 304 stainless steel.
  - 2. For roof and wall sheathing, provide fasteners with organic-polymer or other corrosion-protective coating having a salt-spray resistance of more than 800 hours according to ASTM B117.

**2.7 MISCELLANEOUS MATERIALS**

- A. Adhesives for Field Gluing Panels to Wood Framing: Formulation complying with ASTM D3498 that is approved for use with type of construction panel indicated by manufacturers of both adhesives and panels.

**PART 3 - EXECUTION**

**3.1 INSTALLATION, GENERAL**

- A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.
- B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated.
- C. Securely attach to substrate by fastening as indicated, complying with the following:
  - 1. Table 2304.9.1, "Fastening Schedule," in the ICC's International Building Code.
  - 2. Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," in the ICC's International Residential Code for One- and Two-Family Dwellings.
  - 3. ICC-ES evaluation report for fastener.
- D. Coordinate wall and roof sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.
- E. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.

**3.2 WOOD STRUCTURAL PANEL INSTALLATION**

- A. General: Comply with applicable recommendations in APA Form No. E30, "Engineered Wood Construction Guide," for types of structural-use panels and applications indicated.
- B. Fastening Methods: Fasten panels as indicated below:

1. Wall and Roof Sheathing:
  - a. Nail to wood framing. Apply a continuous bead of glue to framing members at edges of wall sheathing panels.
  - b. Screw to cold-formed metal framing.
  - c. Space panels **1/8 inch (3 mm)** apart at edges and ends.

END OF SECTION 061600

**SECTION 061753 - SHOP-FABRICATED WOOD TRUSSES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Wood roof trusses.
  - 2. Wood floor trusses.
  - 3. Wood girder trusses.

**1.2 ALLOWANCES**

- A. Provide wood truss bracing under the Metal-Plate-Connected Truss Bracing Allowance as specified in Section 012100 "Allowances."

**1.3 ACTION SUBMITTALS**

- A. Product Data: For metal-plate connectors, metal truss accessories, and fasteners.
- B. Shop Drawings: Show fabrication and installation details for trusses.
  - 1. Show location, pitch, span, camber, configuration, and spacing for each type of truss required.
  - 2. Indicate sizes, stress grades, and species of lumber.
  - 3. Indicate locations of permanent bracing required to prevent buckling of individual truss members due to design loads.
  - 4. Indicate locations, sizes, and materials for permanent bracing required to prevent buckling of individual truss members due to design loads.
  - 5. Indicate type, size, material, finish, design values, orientation, and location of metal connector plates.
  - 6. Show splice details and bearing details.
- C. Delegated-Design Submittal: For metal-plate-connected wood trusses indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

**1.4 INFORMATIONAL SUBMITTALS**

- A. Product Certificates: For metal-plate-connected wood trusses, signed by officer of truss-fabricating firm.
- B. Evaluation Reports: For the following, from ICC-ES:
  - 1. Metal-plate connectors.

2. Metal truss accessories.

## 1.5 QUALITY ASSURANCE

- A. Metal Connector-Plate Manufacturer Qualifications: A manufacturer that is a member of TPI and that complies with quality-control procedures in TPI 1 for manufacture of connector plates.
  1. Manufacturer's responsibilities include providing professional engineering services needed to assume engineering responsibility.
  2. Engineering Responsibility: Preparation of Shop Drawings and comprehensive engineering analysis by a qualified professional engineer.
- B. Fabricator Qualifications: Shop that participates in a recognized quality-assurance program, complies with quality-control procedures in TPI 1, and involves third-party inspection by an independent testing and inspecting agency acceptable to Architect and authorities having jurisdiction.

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Handle and store trusses to comply with recommendations in SBCA BCSI, "Building Component Safety Information: Guide to Good Practice for Handling, Installing, Restraining, & Bracing Metal Plate Connected Wood Trusses."

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design metal-plate-connected wood trusses.
- B. Structural Performance: Metal-plate-connected wood trusses shall be capable of withstanding design loads within limits and under conditions indicated. Comply with requirements in TPI 1.
- C. Comply with applicable requirements and recommendations of TPI 1, TPI DSB, and SBCA BCSI.
- D. Wood Structural Design Standard: Comply with applicable requirements in AF&PA's "National Design Specifications for Wood Construction" and its "Supplement."

### 2.2 DIMENSION LUMBER

- A. Lumber: DOC PS 20 and applicable rules of any rules-writing agency certified by the American Lumber Standard Committee (ALSC) Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Provide dry lumber with 19 percent maximum moisture content at time of dressing.
- B. Permanent Bracing: Provide wood bracing that complies with requirements for miscellaneous lumber in Section 061053 "Miscellaneous Rough Carpentry."

## 2.3 METAL CONNECTOR PLATES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  1. Cherokee Metal Products, Inc.; Masengill Machinery Company.
  2. Eagle Metal Products.
  3. MiTek Industries, Inc.
  4. Truswal Systems Corporation.
- B. Fabricate connector plates to comply with TPI 1.
- C. Hot-Dip Galvanized-Steel Sheet: ASTM A653/A653M; Structural Steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); **G60 (Z180)** coating designation; and not less than **0.036 inch (0.9 mm)** thick.

## 2.4 FASTENERS

- A. Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
  1. Provide fasteners for use with metal framing anchors that comply with written recommendations of metal framing manufacturer.
  2. Where trusses are exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A153/A153M.
- B. Nails, Brads, and Staples: ASTM F1667.

## 2.5 METAL FRAMING ANCHORS AND ACCESSORIES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  1. Cleveland Steel Specialty Co.
  2. Simpson Strong-Tie Co., Inc.
  3. USP Structural Connectors.
- B. Allowable design loads, as published by manufacturer, shall comply with or exceed those of products of manufacturers listed. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency. Framing anchors shall be punched for fasteners adequate to withstand same loads as framing anchors.

- C. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A653/A653M, G60 (Z180) coating designation.

## 2.6 FABRICATION

- A. Assemble truss members in design configuration indicated; use jigs or other means to ensure uniformity and accuracy of assembly, with joints closely fitted to comply with tolerances in TPI 1. Position members to produce design camber indicated.
  - 1. Fabricate wood trusses within manufacturing tolerances in TPI 1.
- B. Connect truss members by metal connector plates located and securely embedded simultaneously in both sides of wood members by air or hydraulic press.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install wood trusses only after supporting construction is in place and is braced and secured.
- B. If trusses are delivered to Project site in more than one piece, assemble trusses before installing.
- C. Hoist trusses in place by lifting equipment suited to sizes and types of trusses required, exercising care not to damage truss members or joints by out-of-plane bending or other causes.
- D. Install and brace trusses according to TPI recommendations and as indicated.
- E. Anchor trusses securely at bearing points; use metal truss tie-downs or floor truss hangers as applicable. Install fasteners through each fastener hole in metal framing anchors according to manufacturer's fastening schedules and written instructions.
- F. Securely connect each truss ply required for forming built-up girder trusses.
- G. Install and fasten permanent bracing during truss erection and before construction loads are applied. Anchor ends of permanent bracing where terminating at walls or beams.
  - 1. Install bracing to comply with Section 061053 "Miscellaneous Rough Carpentry."
  - 2. Install and fasten strongback bracing vertically against vertical web of parallel-chord floor trusses at centers indicated.
- H. Install wood trusses within installation tolerances in TPI 1.
- I. Do not alter trusses in field. Do not cut, drill, notch, or remove truss members.
- J. Replace wood trusses that are damaged or do not comply with requirements.

END OF SECTION 061753





**SECTION 064023 - INTERIOR ARCHITECTURAL WOODWORK**

**PART 1 - GENERAL**

**1.1 SUMMARY**

**A. Section Includes:**

1. Interior standing and running trim.
2. Interior frames and jambs.
3. Wood furring, blocking, shims, and hanging strips for installing interior architectural woodwork items that are not concealed within other construction.
4. Shop priming of interior architectural woodwork.
5. Shop finishing of interior architectural woodwork.

**1.2 ACTION SUBMITTALS**

**A. Product Data: For the following:**

1. Anchors.
2. Adhesives.
3. Shop finishing materials.

**B. Shop Drawings:**

1. Include the following:
  - a. Dimensioned plans, elevations, and sections.
  - b. Attachment details.

**C. Samples: For each exposed product and for each shop-applied color and finish specified.**

**1.3 INFORMATIONAL SUBMITTALS**

**A. Product Certificates: For the following:**

1. Composite wood products.
2. Adhesives.

**B. Field quality-control reports.**

**1.4 FIELD CONDITIONS**

**A. Environmental Limitations without Humidity Control: Do not deliver or install interior architectural woodwork until building is enclosed, wet-work is complete, and HVAC**

system is operating and maintaining temperature and relative humidity at levels designed for building occupants for the remainder of the construction period.

## PART 2 - PRODUCTS

### 2.1 ARCHITECTURAL WOODWORK, GENERAL

- A. Quality Standard: Unless otherwise indicated, comply with the Architectural Woodwork Standards for grades of interior architectural woodwork indicated for construction, finishes, installation, and other requirements.

### 2.2 INTERIOR STANDING AND RUNNING TRIM FOR TRANSPARENT FINISH

- A. Architectural Woodwork Standards Grade: Custom.
- B. Hardwood Lumber:
  - 1. Wood Species and Cut: Match species and cut indicated for other types of transparent-finished architectural woodwork located in same area of building unless otherwise indicated.
  - 2. Species: Match species selected for Interior Wood doors.
  - 3. Cut: Plain sliced/plain sawn.
  - 4. Wood Moisture Content: 5 to 10 percent.
- C. Softwood Lumber:
  - 1. Wood Species and Cut: Match species and cut indicated for other types of transparent-finished architectural woodwork located in same area of building unless otherwise indicated.
  - 2. Species: Match species selected for Interior Wood Doors.
  - 3. Cut: Plain sawn.
  - 4. Wood Moisture Content: 5 to 10 percent.

### 2.3 INTERIOR FRAMES AND JAMBS FOR TRANSPARENT FINISH

- A. Architectural Woodwork Standards Grade: Custom.
- B. Wood Species and Cut: Match species and cut indicated for other types of transparent-finished architectural woodwork located in same area of building unless otherwise indicated.
  - 1. Species: Match species selected for Interior Wood doors.
  - 2. Cut: Plain sliced/plain sawn.
  - 3. Wood Moisture Content: 5 to 10 percent.
  - 4. Provide split species on frames and jambs that face areas with different wood species, matching each face of woodwork to species and cut of finish wood surfaces in areas finished.

- C. For frames or jambs wider than available lumber, use veneered construction. Do not glue for width.
  - 1. Do not use plain-sawn softwood lumber with exposed, flat surfaces more than **3 inches (76 mm)** wide.

## 2.4 MISCELLANEOUS MATERIALS

- A. Furring, Blocking, Shims, and Nailers: Softwood or hardwood lumber, kiln-dried to less than 15 percent moisture content.
  - 1. Preservative Treatment: Provide softwood lumber treated by pressure process, AWPA U1; Use Category UC3b.
    - a. Provide where in contact with concrete or masonry.
    - b. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent.
    - c. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
    - d. Mark lumber with treatment quality mark of an inspection agency approved by the American Lumber Standards Committee's (ALSC) Board of Review.
- B. Provide self-drilling screws for metal-framing supports, as recommended by metal-framing manufacturer.
- C. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage.
  - 1. Provide metal expansion sleeves or expansion bolts for post-installed anchors.
  - 2. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.
- D. Installation Adhesive: Product recommended by fabricator for each substrate for secure anchorage.

## 2.5 FABRICATION

- A. Sand fire-retardant-treated wood lightly to remove raised grain on exposed surfaces before fabrication.
- B. Fabricate interior architectural woodwork to dimensions, profiles, and details indicated.
  - 1. Ease edges to radius indicated for the following:
    - a. Edges of Solid-Wood (Lumber) Members: **1/16 inch (1.5 mm)** unless otherwise indicated.
    - b. Edges of Rails and Similar Members More Than **3/4 Inch (19 mm)** Thick: **1/8 inch (3 mm)**.

- C. Complete fabrication, including assembly, to maximum extent possible before shipment to Project site.
  - 1. Disassemble components only as necessary for shipment and installation.
  - 2. Where necessary for fitting at site, provide allowance for scribing, trimming, and fitting.
    - a. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting.
    - b. Verify that parts fit as intended, and check measurements of assemblies against field measurements indicated on approved Shop Drawings before disassembling for shipment.

## 2.6 SHOP FINISHING

- A. Finish interior architectural woodwork with transparent finish at fabrication shop. Defer only final touchup, cleaning, and polishing until after installation.
- B. Preparation for Finishing: Comply with Architectural Woodwork Standards, Section 5 for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing interior architectural woodwork, as applicable to each unit of work.
  - 1. Backpriming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of interior architectural woodwork. Apply two coats to end-grain surfaces.
- C. Transparent Finish:
  - 1. Architectural Woodwork Standards Grade: Same as item to be finished.
  - 2. Finish System - 4: Latex Acrylic, Water Based.
  - 3. Wash Coat for Closed-Grain Woods: Apply wash-coat sealer to woodwork made from closed-grain wood before staining and finishing.
  - 4. Staining: None required.
  - 5. Open Finish for Open-Grain Woods: Do not apply filler to open-grain woods.
  - 6. Sheen: Satin, 31-45 gloss units measured on 60-degree gloss meter in accordance with ASTM D523.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Before installation, condition interior architectural woodwork to humidity conditions in installation areas for not less than 72 hours prior to beginning of installation.
- B. Before installing interior architectural woodwork, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming of concealed surfaces.

3.2 INSTALLATION

- A. Grade: Install interior architectural woodwork to comply with same grade as item to be installed.
- B. Assemble interior architectural woodwork and complete fabrication at Project site to the extent that it was not completed during shop fabrication.
- C. Install interior architectural woodwork level, plumb, true in line, and without distortion.
  - 1. Shim as required with concealed shims.
  - 2. Install level and plumb to a tolerance of **1/8 inch in 96 inches (3 mm in 2400 mm)**.
- D. Scribe and cut interior architectural woodwork to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
- E. Preservative-Treated Wood: Where cut or drilled in field, treat cut ends and drilled holes in accordance with AWPA M4.
- F. Fire-Retardant-Treated Wood: Install fire-retardant-treated wood to comply with chemical treatment manufacturer's written instructions, including those for adhesives used to install woodwork.
- G. Anchor interior architectural woodwork to anchors or blocking built in or directly attached to substrates.
  - 1. Secure with countersunk, concealed fasteners and blind nailing.
  - 2. Use fine finishing nails[ **or finishing screws**] for exposed fastening, countersunk and filled flush with interior architectural woodwork.
  - 3. For shop-finished items, use filler matching finish of items being installed.
- H. Standing and Running Trim:
  - 1. Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to greatest extent possible.
  - 2. Do not use pieces less than **60 inches (1500 mm)** long, except where shorter single-length pieces are necessary.
  - 3. Scarf running joints and stagger in adjacent and related members.
  - 4. Fill gaps, if any, between top of base and wall with latex sealant, painted to match wall.
  - 5. Install standing and running trim with no more variation from a straight line than **1/8 inch in 96 inches (3 mm in 2400 mm)**.

END OF SECTION 064023



**SECTION 064116 - PLASTIC-LAMINATE-CLAD ARCHITECTURAL CABINETS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

**A. Section Includes:**

1. Plastic-laminate-clad architectural cabinets.
2. Cabinet hardware and accessories.
3. Wood furring, blocking, shims, and hanging strips for installing plastic-laminate-clad architectural cabinets that are not concealed within other construction.

**1.2 ACTION SUBMITTALS**

**A. Product Data:** For each type of product.

1. Include data for fire-retardant treatment from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements.

**B. Shop Drawings:**

1. Include plans, elevations, sections, and attachment details.

**C. Samples:** For each exposed product and for each color and texture specified.

**1.3 QUALITY ASSURANCE**

- A. Manufacturer's Qualifications:** Employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

**1.4 FIELD CONDITIONS**

- A. Environmental Limitations with Humidity Control:** Do not deliver or install cabinets until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature between 60 and 90 deg F (16 and 32 deg C) and relative humidity between 25 and 55 percent during the remainder of the construction period.

PART 2 - PRODUCTS

2.1 PLASTIC-LAMINATE-CLAD ARCHITECTURAL CABINETS

- A. Quality Standard: Unless otherwise indicated, comply with the Architectural Woodwork Standards for grades of cabinets indicated for construction, finishes, installation, and other requirements.
- B. Architectural Woodwork Standards Grade: Custom.
- C. Type of Construction: Face frame.
- D. Door and Drawer-Front Style: Reveal overlay.
  - 1. Reveal Dimension: 1/2 inch (13 mm).
- E. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated or if not indicated, as required by quality standard.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. Wilsonart LLC.
- F. Laminate Cladding for Exposed Surfaces:
  - 1. Horizontal Surfaces: Grade HGL.
  - 2. Postformed Surfaces: Grade HGP.
  - 3. Vertical Surfaces: Grade VGS.
  - 4. Edges: Grade VGS.
  - 5. Pattern Direction: Vertically for drawer fronts, doors, and fixed panels.
- G. Concealed Backs of Panels with Exposed Plastic-Laminate Surfaces: High-pressure decorative laminate, NEMA LD 3, Grade BKL.
- H. Drawer Construction: Fabricate with exposed fronts fastened to subfront with mounting screws from interior of body.
  - 1. Join subfronts, backs, and sides with glued rabbeted joints supplemented by mechanical fasteners.
- I. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
  - 1. As indicated by laminate manufacturer's designations.
  - 2. Match Architect's sample.
  - 3. As selected by Architect from laminate manufacturer's full range in the following categories:
    - a. Solid colors, matte finish.
    - b. Solid colors with core same color as surface, matte finish.



- c. Wood grains, matte finish.
- d. Patterns, matte finish.

## 2.2 WOOD MATERIALS

- A. Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of architectural cabinet and quality grade specified unless otherwise indicated.
  - 1. Wood Moisture Content: 5 to 10 percent.
- B. Composite Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of architectural cabinet and quality grade specified unless otherwise indicated.
  - 1. Medium-Density Fiberboard (MDF): ANSI A208.2, Grade 130.
  - 2. Particleboard (Medium Density): ANSI A208.1, Grade M-2.
  - 3. Softwood Plywood: DOC PS 1, medium-density overlay.

## 2.3 CABINET HARDWARE AND ACCESSORIES

- A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets except for items specified in Section 087100 "Door Hardware." Section 087111 "Door Hardware (Descriptive Specification)."
- B. Butt Hinges: 2-3/4-inch (70-mm), five-knuckle steel hinges made from 0.095-inch- (2.4-mm-) thick metal, and as follows:
  - 1. Semiconcealed Hinges for Flush Doors: ANSI/BHMA A156.9, B01361.
  - 2. Semiconcealed Hinges for Overlay Doors: ANSI/BHMA A156.9, B01521.
- C. Back-Mounted Pulls: ANSI/BHMA A156.9, B02011.
- D. Catches: Roller catches, ANSI/BHMA A156.9, B03071.
- E. Adjustable Shelf Standards and Supports: ANSI/BHMA A156.9, B04071; with shelf rests, B04081.
- F. Shelf Rests: ANSI/BHMA A156.9, B04013; two-pin plastic with shelf hold-down clip.
- G. Drawer Slides: ANSI/BHMA A156.9.
  - 1. Standard Duty (Grade 1 and Grade 2): Side mount.
  - 2. Heavy-Duty (Grade 1HD-100 and Grade 1HD-200): Side mount.
    - a. Type: Full extension.
    - b. Material: Aluminum slides.
- H. Door Locks: ANSI/BHMA A156.11, E07121.
- I. Drawer Locks: ANSI/BHMA A156.11, E07041.

- J. Door and Drawer Silencers: ANSI/BHMA A156.16, L03011.
- K. Grommets for Cable Passage: 2-inch (51-mm) OD, molded-plastic grommets and matching plastic caps with slot for wire passage.
  - 1. Color: Black.
- L. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with ANSI/BHMA A156.18 for ANSI/BHMA finish number indicated.
  - 1. Satin Stainless Steel: ANSI/BHMA 630.
- M. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in ANSI/BHMA A156.9.

#### 2.4 MISCELLANEOUS MATERIALS

- A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln-dried to less than 15 percent moisture content.
- B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.
- C. Adhesive for Bonding Plastic Laminate: Unpigmented contact cement.
  - 1. Adhesive for Bonding Edges: Hot-melt adhesive or adhesive specified above for faces.

#### 2.5 FABRICATION

- A. Complete fabrication, including assembly and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
- B. Shop-cut openings to maximum extent possible to receive hardware, appliances, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.
- C. Install glass to comply with applicable requirements in Section 088000 "Glazing" and in GANA's "Glazing Manual."
  - 1. For glass in frames, secure glass with removable stops.
  - 2. For exposed glass edges, polish and grind smooth.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Before installation, condition cabinets to humidity conditions in installation areas for not less than 72 hours.
- B. Anchor cabinets to anchors or blocking built in or directly attached to substrates. Secure with wafer-head cabinet installation screws.
- C. Install cabinets level, plumb, and true in line to a tolerance of **1/8 inch in 96 inches (3 mm in 2400 mm)** using concealed shims.
  - 1. Scribe and cut cabinets to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
  - 2. Install cabinets without distortion so doors and drawers fit openings and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
  - 3. Fasten wall cabinets through back, near top and bottom, and at ends not more than **16 inches (400 mm)** o.c. with No. 10 wafer-head screws sized for not less than **1-1/2-inch (38-mm)** penetration into wood framing, blocking, or hanging strips.

END OF SECTION 064116



**SECTION 071416 - COLD FLUID-APPLIED WATERPROOFING**

**PART 1 - GENERAL**

**1.1 SUMMARY**

**A. Section Includes:**

1. Polyurethane waterproofing.
2. Rubber waterproofing.
3. Cold-applied rubberized asphalt waterproofing.
4. Latex waterproofing.
5. Protection course.
6. Molded-sheet drainage panels.
7. Insulation drainage panels.

**1.2 ACTION SUBMITTALS**

**A. Product Data:** For each type of product.

**B. Shop Drawings:**

1. Show locations and extent of waterproofing.
2. Include details for substrate joints and cracks, sheet flashings, penetrations, inside and outside corners, tie-ins with adjoining waterproofing, and other termination conditions.

**1.3 INFORMATIONAL SUBMITTALS**

**A. Sample warranty.**

**1.4 QUALITY ASSURANCE**

**A. Installer Qualifications:** An entity that employs installers and supervisors who are trained and approved by waterproofing manufacturer.

**1.5 WARRANTY**

**A. Manufacturer's Special Warranty:** Manufacturer agrees to repair or replace waterproofing that fails in materials or workmanship within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 POLYURETHANE WATERPROOFING

- A. Single-Component, Modified Polyurethane Waterproofing: ASTM C836/C836M.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. BASF Corporation.
    - b. Carlisle Coatings & Waterproofing Inc.
    - c. MAPEI Corporation.
    - d. Tremco Incorporated.

### 2.2 AUXILIARY MATERIALS

- A. Primer: Manufacturer's standard primer, sealer, or surface conditioner; factory-formulated.
- B. Sheet Flashing: 50-mil- (1.3-mm-) minimum, nonstaining, uncured sheet neoprene.
  - 1. Adhesive: Manufacturer's recommended contact adhesive.
- C. Membrane-Reinforcing Fabric: Manufacturer's recommended fiberglass mesh or polyester fabric.
- D. Joint Reinforcing Strip: Manufacturer's recommended fiberglass mesh or polyester fabric.
- E. Joint Sealant: Multicomponent polyurethane sealant, compatible with waterproofing; and as recommended by manufacturer for substrate and joint conditions.
  - 1. Backer Rod: Closed-cell polyethylene foam.

### 2.3 PROTECTION COURSE

- A. Protection Course, Core of Extruded-Polystyrene Board Insulation, One Side with Plastic Film: Fan folded, thickness of 1/4 inch (6 mm), with compressive strength of not less than 8 psi (55 kPa) in accordance with ASTM C1621/C1621M and maximum water absorption by volume of 0.6 percent in accordance with ASTM C272/C272M.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. Dow Chemical Company (The).

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Clean, prepare, and treat substrates in accordance with manufacturer's written instructions. Provide clean, dust-free, and dry substrates for waterproofing application.
- B. Mask off adjoining surfaces not receiving waterproofing to prevent spillage and overspray affecting other construction.
- C. Close off deck drains and other deck penetrations to prevent spillage and migration of waterproofing fluids.
- D. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, acid residues, and other penetrating contaminants or film-forming coatings from concrete.
- E. Remove fins, ridges, and other projections, and fill honeycomb, aggregate pockets, holes, and other voids.
- F. Prepare surfaces at terminations and penetrations through waterproofing and at expansion joints, drains, sleeves, and corners in accordance with waterproofing manufacturer's written instructions and to recommendations in ASTM C1471/C1471M.
- G. Apply waterproofing in two separate applications, and embed a joint reinforcing strip in the first preparation coat when recommended by waterproofing manufacturer.
- H. Prepare, treat, rout, and fill joints and cracks in substrate in accordance with waterproofing manufacturer's written instructions and to recommendations in ASTM C1471/C1471M. Before coating surfaces, remove dust and dirt from joints and cracks in accordance with ASTM D4258.
- I. Install sheet flashing and bond to deck and wall substrates where required in accordance with waterproofing manufacturer's written instructions.

### 3.2 INSTALLATION OF WATERPROOFING

- A. Apply waterproofing in accordance with manufacturer's written instructions and to recommendations in ASTM C1471/C1471M.
- B. Unreinforced Waterproofing Applications.
  - 1. Apply one or more coats of waterproofing to obtain a seamless membrane free of entrapped gases and pinholes, with a dry film thickness of **60 mils (1.5 mm)**.
- C. Reinforced Waterproofing Applications.
  - 1. Apply first coat of waterproofing, embed membrane-reinforcing fabric, and apply second coat of waterproofing to completely saturate reinforcing fabric and to obtain a seamless reinforced membrane free of entrapped gases and pinholes, with an average dry film total thickness of **70 mils (1.8 mm)**.

- D. Install protection course with butted joints over waterproofing before starting subsequent construction operations.
  - 1. For horizontal applications, install protection course loose laid over fully cured membrane.
  - 2. For vertical applications, set protection course in nominally cured membrane, which will act as an adhesive. If membrane cures before application of protection course, use adhesive.

### 3.3 PROTECTION

- A. Do not permit foot or vehicular traffic on unprotected membrane.
- B. Protect waterproofing from damage and wear during remainder of construction period.
- C. Correct deficiencies in or remove waterproofing that does not comply with requirements; repair substrates, reapply waterproofing, and repair sheet flashings.

END OF SECTION 071416



## **SECTION 072100 - THERMAL INSULATION**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

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

#### **1.2 SUMMARY**

- A. Section Includes:

- 1. Extruded polystyrene foam-plastic board insulation.
- 2. Molded (expanded) polystyrene foam-plastic board insulation.
- 3. Graphite-polystyrene foam-plastic board insulation.
- 4. Polyisocyanurate foam-plastic board insulation.
- 5. Glass-fiber blanket insulation.
- 6. Glass-fiber board insulation.
- 7. Mineral-wool blanket insulation.
- 8. Mineral-wool board insulation.
- 9. Loose-fill insulation.
- 10. Spray-applied cellulosic insulation.
- 11. Cellular glass insulation.
- 12. Reflective insulation.

- B. Related Requirements:

- 1. Section 042000 "Unit Masonry" for insulation installed in masonry cells.
- 2. Section 061600 "Sheathing" for foam-plastic board sheathing installed directly over wood or steel framing.
- 3. Section 071416 "Cold Fluid-Applied Waterproofing" for insulated drainage panels installed with plaza deck insulation.
- 4. Section 072119 "Foamed-in-Place Insulation" for spray-applied polyurethane foam insulation.

#### **1.3 ACTION SUBMITTALS**

- A. Product Data: For the following:

- 1. Extruded polystyrene foam-plastic board insulation.
- 2. Loose-fill insulation.

1.4 INFORMATIONAL SUBMITTALS

- A. Installer's Certification: Listing type, manufacturer, and R-value of insulation installed in each element of the building thermal envelope.
  - 1. For blown-in or sprayed fiberglass and cellulosic-fiber loose-fill insulation, indicate initial installed thickness, settled thickness, settled R-value, installed density, coverage area, and number of bags installed.
  - 2. Sign, date, and post the certification in a conspicuous location on Project site.
- B. Product Test Reports: For each product, for tests performed by a qualified testing agency.
- C. Research Reports: For foam-plastic insulation, from ICC-ES.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect insulation materials from physical damage and from deterioration due to moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.
- B. Protect foam-plastic board insulation as follows:
  - 1. Do not expose to sunlight except to necessary extent for period of installation and concealment.
  - 2. Protect against ignition at all times. Do not deliver foam-plastic board materials to Project site until just before installation time.
  - 3. Quickly complete installation and concealment of foam-plastic board insulation in each area of construction.

PART 2 - PRODUCTS

2.1 EXTRUDED POLYSTYRENE FOAM-PLASTIC BOARD INSULATION

- A. Extruded Polystyrene Board Insulation, Type X R-3.8 minimum: ASTM C578, Type X, 15-psi (104-kPa) minimum compressive strength; unfaced.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Dow Chemical Company (The).
    - b. DuPont de Nemours, Inc.
    - c. Owens Corning.
  - 2. Flame-Spread Index: Not more than 25 when tested in accordance with ASTM E84.
  - 3. Smoke-Developed Index: Not more than 450 when tested in accordance with ASTM E84.

4. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.
5. Labeling: Provide identification of mark indicating R-value of each piece of insulation **12 inches (305 mm)** and wider in width.

## 2.2 LOOSE-FILL INSULATION

- A. Cellulosic-Fiber Loose-Fill Insulation: ASTM C739, chemically treated for flame-resistance, processing, and handling characteristics.
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. GreenFiber.
    - b. Hamilton Manufacturing Inc.
    - c. Nu-Wool Co., Inc.

## 2.3 ACCESSORIES

- A. Insulation for Miscellaneous Voids:
  1. Glass-Fiber Insulation: ASTM C764, Type II, loose fill; with maximum flame-spread and smoke-developed indexes of 5, per ASTM E84.
  2. Spray Polyurethane Foam Insulation: ASTM C1029, Type II, closed cell, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, per ASTM E84.
    - a. Manufacturers: Subject to compliance with requirements, provide products by the following:
      - 1) Demilec (USA) LLC.
- B. Adhesive for Bonding Insulation: Product compatible with insulation and air and water barrier materials, and with demonstrated capability to bond insulation securely to substrates without damaging insulation and substrates.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Clean substrates of substances that are harmful to insulation, including removing projections capable of puncturing insulation or vapor retarders, or that interfere with insulation attachment.

### 3.2 INSTALLATION, GENERAL

- A. Comply with insulation manufacturer's written instructions applicable to products and applications.
- B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.
- C. Install insulation with manufacturer's R-value label exposed after insulation is installed.
- D. Extend insulation to envelop entire area to be insulated. Fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.
- E. Provide sizes to fit applications and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units unless multiple layers are otherwise shown or required to make up total thickness or to achieve R-value.

### 3.3 INSTALLATION OF SLAB INSULATION

- A. On vertical slab edge and foundation surfaces, set insulation units using manufacturer's recommended adhesive according to manufacturer's written instructions.
  - 1. If not otherwise indicated, extend insulation a minimum of **24 inches (610 mm)** Insert dimension below exterior grade line.
- B. On horizontal surfaces, loosely lay insulation units according to manufacturer's written instructions. Stagger end joints and tightly abut insulation units.
  - 1. If not otherwise indicated, extend insulation a minimum of **24 inches (610 mm)** in from exterior walls.

### 3.4 INSTALLATION OF FOUNDATION WALL INSULATION

- A. Butt panels together for tight fit.
- B. Adhesive Installation: Install with adhesive or press into tacky waterproofing or dampproofing according to manufacturer's written instructions.

### 3.5 INSTALLATION OF CAVITY-WALL INSULATION

- A. Foam-Plastic Board Insulation: Install pads of adhesive spaced approximately **24 inches (610 mm)** o.c. both ways on inside face and as recommended by manufacturer.
  - 1. Fit courses of insulation between obstructions, with edges butted tightly in both directions, and with faces flush.
  - 2. Press units firmly against inside substrates.

3.6 INSTALLATION OF INSULATION IN FRAMED CONSTRUCTION

- A. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials:
  - 1. Glass-Fiber Insulation: Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5 lb/cu. ft. (40 kg/cu. m).
  - 2. Spray Polyurethane Insulation: Apply according to manufacturer's written instructions.
- B. Loose-Fill Insulation: Apply according to ASTM C1015 and manufacturer's written instructions.
  - 1. Level horizontal applications to uniform thickness as indicated, lightly settle to uniform density, but do not compact excessively.
  - 2. For cellulosic-fiber loose-fill insulation, comply with CIMA's Bulletin #2, "Standard Practice for Installing Cellulose Insulation."

3.7 PROTECTION

- A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes.
- B. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION 072100



## SECTION 072119 - FOAMED-IN-PLACE INSULATION

### PART 1 - GENERAL

#### 1.1 SUMMARY

A. Section Includes:

1. Closed-cell spray polyurethane foam.
2. Open-cell spray polyurethane foam.

B. Related Requirements:

1. Section 075700 "Coated Foamed Roofing" for spray polyurethane foam insulation used for roofing applications.

#### 1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

#### 1.3 INFORMATIONAL SUBMITTALS

- A. Product test reports.
- B. Research reports.

### PART 2 - PRODUCTS

#### 2.1 CLOSED-CELL SPRAY POLYURETHANE FOAM

- A. Closed-Cell Spray Polyurethane Foam: ASTM C1029, Type II, minimum density of 1.5 lb/cu. ft. (24 kg/cu. m) and minimum aged R-value at 1-inch (25.4-mm) thickness of 6.2 deg F x h x sq. ft./Btu at 75 deg F (25 mm of 43 K x sq. m/W at 24 deg C).

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. BASF Corporation.
- b. Carlisle Spray Foam Insulation.
- c. Demilec (USA) LLC.
- d. Johns Manville; a Berkshire Hathaway company.

2. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

- a. Flame-Spread Index: 25 or less.
  - b. Smoke-Developed Index: 450 or less.
- 3. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. Comply with insulation manufacturer's written instructions applicable to products and applications.
- B. Spray insulation to envelop entire area to be insulated and fill voids.
- C. Apply in multiple passes to not exceed maximum thicknesses recommended by manufacturer. Do not spray into rising foam.

**END OF SECTION 072119**



**SECTION 072726 - FLUID-APPLIED MEMBRANE AIR BARRIERS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Vapor-retarding, fluid-applied air barriers.
  - 2. Vapor-permeable, fluid-applied air barriers.

**1.2 PREINSTALLATION MEETINGS**

- A. Preinstallation Conference: Conduct conference at 1329 Tiffin St. Fremont, OH 43420.

**1.3 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Sustainable Design Submittals:
- C. Shop Drawings: For air-barrier assemblies.
  - 1. Include details for substrate joints and cracks, counterflashing strips, penetrations, inside and outside corners, terminations, and tie-ins with adjoining construction.

**1.4 INFORMATIONAL SUBMITTALS**

- A. Product certificates.
- B. Product test reports.
- C. Field quality-control reports.

**1.5 QUALITY ASSURANCE**

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
- B. Mockups: Build mockups to set quality standards for materials and execution.
  - 1. Build integrated mockups of exterior wall assembly as indicated on Drawings, incorporating backup wall construction, external cladding, window, storefront, door frame and sill, insulation, ties and other penetrations, and flashing to demonstrate surface preparation, crack and joint treatment, application of air

barriers, and sealing of gaps, terminations, and penetrations of air-barrier assembly.

- a. Coordinate construction of mockups to permit inspection and testing of air barrier before external insulation and cladding are installed.
- b. Include junction with roofing membrane.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. Air-Barrier Performance: Air-barrier assembly and seals with adjacent construction shall be capable of performing as a continuous air barrier. Air-barrier assemblies shall be capable of accommodating substrate movement and of sealing substrate expansion and control joints, construction material changes, penetrations, and transitions at perimeter conditions without deterioration and air leakage exceeding specified limits.
- B. Air-Barrier Assembly Air Leakage: Maximum **0.04 cfm/sq. ft. of surface area at 1.57 lbf/sq. ft. (0.2 L/s x sq. m of surface area at 75 Pa)**, when tested according to ASTM E2357.

### 2.2 HIGH-BUILD AIR BARRIERS, VAPOR RETARDING

- A. High-Build, Vapor-Retarding Air Barrier: synthetic polymer membrane with an installed dry film thickness, according to manufacturer's written instructions, of **35 mils (0.9 mm)** or thicker over smooth, void-free substrates.

#### 1. Synthetic Polymer Type:

- a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- 1) Carlisle Coatings & Waterproofing Inc.
- 2) GCP Applied Technologies Inc.
- 3) Sto Corp.
- 4) W.R. Meadows, Inc.

#### 2. Physical and Performance Properties:

- a. Air Permeance: Maximum **0.004 cfm/sq. ft. of surface area at 1.57-lbf/sq. ft. (0.02 L/s x sq. m of surface area at 75-Pa)** pressure difference; ASTM E2178.
- b. Vapor Permeance: Maximum **0.1 perm (5.8 ng/Pa x s x sq. m)**; ASTM E96/E96M, Desiccant Method.
- c. Ultimate Elongation: Minimum 500 percent; ASTM D412, Die C.
- d. Adhesion to Substrate: Minimum **16 lbf/sq. in. (110 kPa)** when tested according to ASTM D4541.
- e. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.

- f. UV Resistance: Can be exposed to sunlight for 30 days according to manufacturer's written instructions.

## 2.3 ACCESSORY MATERIALS

- A. Requirement: Provide primers, transition strips, termination strips, joint reinforcing fabric and strips, joint sealants, counterflashing strips, flashing sheets and metal termination bars, termination mastic, substrate patching materials, adhesives, tapes, foam sealants, lap sealants, and other accessory materials that are recommended in writing by air-barrier manufacturer to produce a complete air-barrier assembly and that are compatible with primary air-barrier material and adjacent construction to which they may seal.

## PART 3 - EXECUTION

### 3.1 SURFACE PREPARATION

- A. Clean, prepare, treat, fill, and seal substrate and joints and cracks in substrate according to manufacturer's written instructions and details. Provide clean, dust-free, and dry substrate for air-barrier application.
- B. Mask off adjoining surfaces not covered by air barrier to prevent spillage and overspray affecting other construction.
- C. Remove fins, ridges, mortar, and other projections and fill honeycomb, aggregate pockets, holes, and other voids in concrete with substrate-patching material.
- D. Remove excess mortar from masonry ties, shelf angles, and other obstructions.
- E. At changes in substrate plane, apply sealant or termination mastic beads at sharp corners and edges to form a smooth transition from one plane to another.
- F. Bridge discontinuous wall-to-wall, deck-to-wall, and deck-to-deck joints with air-barrier accessory material that accommodates joint movement according to manufacturer's written instructions and details.

### 3.2 INSTALLATION

- A. Install materials according to air-barrier manufacturer's written instructions and details to form a seal with adjacent construction and ensure continuity of air and water barrier.
  - 1. Coordinate the installation of air barrier with installation of roofing membrane and base flashing to ensure continuity of air barrier with roofing membrane.
  - 2. Install transition strip on roofing membrane or base flashing so that a minimum of **3 inches (75 mm)** of coverage is achieved over each substrate.
  - 3. Unless manufacturer recommends in writing against priming, apply primer to substrates at required rate and allow it to dry.

4. Apply primer to substrates at required rate and allow it to dry. Limit priming to areas that will be covered by air-barrier material on same day. Reprime areas exposed for more than 24 hours.
- B. Connect and seal exterior wall air-barrier material continuously to roofing-membrane air barrier, concrete below-grade structures, floor-to-floor construction, exterior glazing and window systems, glazed curtain-wall systems, storefront systems, exterior louvers, exterior door framing, and other construction used in exterior wall openings, using accessory materials.
- C. Wall Openings: Prime concealed, perimeter frame surfaces of windows, curtain walls, storefronts, and doors. Apply transition strip so that a minimum of **3 inches (75 mm)** of coverage is achieved over each substrate. Maintain **3 inches (75 mm)** of full contact over firm bearing to perimeter frames, with not less than **1 inch (25 mm)** of full contact.
- D. Repair punctures, voids, and deficient lapped seams in strips and transition strips. Slit and flatten fishmouths and blisters. Patch with transition strips extending **6 inches (150 mm)** beyond repaired areas in strip direction.
- E. High-Build Air Barriers: Apply continuous unbroken air-barrier material to substrates according to the following thickness. Apply air-barrier material in full contact around protrusions such as masonry ties.
  1. Vapor-Retarding, High-Build Air Barrier: Total dry film thickness as recommended in writing by manufacturer to comply with performance requirements, but not less than **35 mils (0.9 mm)**, applied in one coat.
- F. Do not cover air barrier until it has been tested and inspected by testing agency.
- G. Correct deficiencies in or remove air barrier that does not comply with requirements; repair substrates and reapply air-barrier components.

### 3.3 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- B. Tests: As determined by testing agency from among the following tests:
  1. Air-barrier dry film thickness.
- C. Air barriers will be considered defective if they do not pass tests and inspections.
  1. Apply additional air-barrier material, according to manufacturer's written instructions, where inspection results indicate insufficient thickness.
  2. Remove and replace deficient air-barrier components for retesting as specified above.
- D. Repair damage to air barriers caused by testing; follow manufacturer's written instructions.

- E. Prepare test and inspection reports.

3.4 CLEANING AND PROTECTION

- A. Protect air-barrier system from damage during application and remainder of construction period, according to manufacturer's written instructions.
- B. Remove masking materials after installation.

END OF SECTION 072726



**SECTION 074100 - METAL ROOF AND SIDING PANELS**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Structural metal roof panels.
- B. Architectural metal soffit panels.
- C. Gutters, underlayments, sealant for metal roofs, snow retention systems.

**1.2 RELATED SECTIONS**

- A. Section 05500 - Metal Fabrications.
- B. Section 06100 - Rough Carpentry.
- C. Section 06200 - Finish Carpentry.
- D. Section 07210 - Thermal Insulation.
- E. Section 07600 - Flashing and Sheet Metal Work.
- F. Section 07920 - Joint Sealants.

**1.3 REFERENCES**

- A. American Iron and Steel Institute (AISI), Specification for the Design of Cold-Formed Steel Structural Members (2008).
- B. American Institute of Steel Construction (AISC) Manual of Steel Construction (Current Edition).
- C. ASTM International (ASTM):
  - 1. ASTM A792 - Specification for Sheet Steel, Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
  - 2. ASTM E283 - Test Method for Rate of Air Leakage over Solid Substrate.
  - 3. ASTM E331 - Test Method for Rate of Water Penetration over Solid Substrate.
  - 4. ASTM E1680 - Test Method for Rate of Air Leakage over Open Framed Structure.
  - 5. ASTM E1646 - Test Method for Rate of Water Penetration over Open Framed Structure.
  - 6. ASTM E1592 - Standard Test Method for Structural Performance of Sheet Metal and Siding Systems by Uniform Static Air Pressure Difference.
  - 7. ASTM E 2140: Water Penetration - Standard Test Method for Water Penetration of Metal Roof Panel Systems by Static Water Pressure Head
  - 8. ASTM E 1996/E 1886 - Large Missile Impact Test.
- D. Sheet Metal and Air Conditioning Contractors National Association (SMACNA):
  - 1. Architectural Sheet Metal Manual.
- E. Underwriters Laboratory (UL) Roofing Materials and Systems Directory:
  - 1. Roofing Materials and Systems Directory listings and classifications of Underwriter's Laboratory roofing construction assemblies.

**1.4 SYSTEM DESCRIPTION:**

- A. The extent of each type of preformed metal roofing panel as indicated on the drawings shall include preformed metal roof panels, flashing required to weatherproof the system (ridge, hip, valley, cleat, eave, rake wall, rake edge, apron, inside corner, outside corner, gutter, downspout, drip sill, end wall, and other miscellaneous flashing), related accessories including but not limited to; underlayment, butyl tape, sealants used in conjunction with the roofing system, and necessary attachment hardware as required to meet the performance standards and complete the roofing system.
- B. Design Requirements:
  - 1. Continuous, one-piece, preformed, prefinished single length roof panels.
  - 2. Panels, clips, and other components required for specific project conditions.
  - 3. Manufacturer is responsible for providing evidence acceptable to Architect that manufacturer's specified roof system is capable of meeting thermal, wind uplift, and performance requirements specified.
- C. Thermal Movement:
  - 1. Complete metal roofing and flashing system shall be capable of withstanding expansion and contraction of components caused by changes in temperature without buckling, producing excess stress on structure, anchors or fasteners, or reducing performance ability.
  - 2. Interface between panel and expansion clip shall provide for applicable thermal movement in each direction along longitudinal direction.

**1.5 SUBMITTALS**

- A. Submit under provisions of Section 01300 – Submittals.
- B. Shop Drawings Submittals:
  - 1. Manufacturer of the metal roof system shall provide complete shop drawings.
  - 2. Shop drawings shall be submitted and returned as approved/approved as noted prior to the beginning of product production.
- C. Product Data Submittals:
  - 1. Submit manufacturer's detailed product literature including the system profile sheet, system description including: material base-sheet gauge, seam height, panel on-center, finish, and sealant as required.
  - 2. Submit manufacturer's installation guidelines of the specified product.
- D. Submit a sample of each type of roof panel profile and a color sample. In the case where custom color is specified, submit a custom color chip for written approval and a standard color product sample for finish system review.
  - 1. Color Selection Samples: For each finish product specified, supply manufacturer's standard color chart with a minimum of 32 standard colors.
  - 2. Product Samples: For each product specified, provide a full width sample, associated clip (if required) and actual color chip of selected color.

**1.6 QUALITY ASSURANCE**

- A. Qualification of the Product Manufacturer:
  - 1. Manufacturer shall be a company specializing in Architectural Sheet Metal Products with at least twenty (20) years experience. Listing as a prequalified manufacturer does not release manufacturer from providing complete, current and acceptable test data for each performance, thermal, and wind



- load requirement specified for specific profile proposed.
  - 2. Manufacturer shall operate a permanent, full-time, manufacturing facility where the metal roof panels are produced on fixed based multi-station roll forming machines that are included in the Underwriter's Laboratory field inspection services. These facilities shall be currently under inspection at least four times per year by Underwriter's Laboratory personnel to verify compliance with UL certification. Portable on-site roll formers may not be used unless roof panels exceed 90 feet (27.5 m) in length.
  - B. Qualification of Installers:
    - 1. Competent and skilled sheet metal applicators familiar with Manufacturer's products, standard details and recommendations. Applicator shall have at least two year experience applying these types of materials with successful completion of projects with similar scope. Applicator shall be a manufacturer approved installer with company issued documentation for review.
    - 2. Installers shall be thoroughly trained and experienced in the necessary crafts and completely familiar with and comply with the recommendations and details of the manufacturer and the "Architectural Sheet Metal Manual" published by SMACNA.
    - 3. Installers shall follow the manufacturers' installation details without exception unless written authorization from the manufacturer and architect are provided on an installation detail revision. Detail revision authorization shall be made in advance of product installation.
  - C. Mock-Up:
    - 1. The first 20 panels installed shall serve as a mock-up for A/E's approval of appearance. The sample area, when approved by A/E and Owner, shall become the project standard for appearance
- 1.7 PRE-INSTALLATION MEETINGS
- A. Convene minimum two weeks prior to starting work of this section.
- 1.8 DELIVERY, STORAGE, AND HANDLING
- A. Deliver roof system components to project site in manufacturer's unopened original containers.
  - B. Protect roof system components during shipment, storage, handling and erection from mechanical abuse, stains, discoloration and corrosion.
  - C. Provide strippable plastic film on all painted surfaces between contact areas to prevent abrasion during shipping, storage and handling.
  - D. Store materials off the ground, providing for drainage, under protective cover which allows for air circulation and protection from foreign material contamination, mechanical damage, cement, lime, or other corrosive materials
  - E. Handle materials to prevent damage to surfaces, edges and ends of roofing components. Damaged material shall be rejected and removed from site.
  - F. Examine materials upon delivery to jobsite. Reject and remove physically damaged, stained or marred material from project site.
  - G. Metal roof components with strippable film shall not be stored with exposure to direct sunlight.

- H. Stack material to prevent damage and allow for adequate ventilation and drainage.

#### 1.9 PROJECT CONDITIONS

- A. Determine that work of other trades will not hamper or conflict with necessary fabrication and storage requirements for preformed metal roofing system.
- B. Protection:
  - 1. Provide protection or avoid traffic on completed roof surfaces.
  - 2. Do not overload roof with stored materials.
  - 3. Support no roof-mounted equipment directly on roofing system.

#### 1.10 SEQUENCING

- A. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.
- B. Determine Work of other trades that penetrates the roof is coordinated by location, in place, and accepted prior to installation of roofing system.

#### 1.11 WARRANTY

- A. Furnish manufacturer's Non-prorated Twenty Year Finish Warranty stating that the architectural fluorocarbon coating will:
  - 1. Not crack, chip, peel or exhibit any other mechanical failure of paint to adhere to the substrate.
  - 2. Not exhibit fading or color change in excess of five hunter delta E units as determined by ASTM D2244-79.
  - 3. Not chalk in excess of a numerical rating of eight as determined by ASTM D4214-98.
- B. Substrate Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal roof panel assemblies that fail in materials or workmanship within specified warranty period:
  - 1. Failures include, but are not limited to, the following:
    - a. Structural failures, including rupturing, cracking, or penetrating.
    - b. Deterioration of metals and other materials beyond normal weathering.
  - 2. Warranty Period: 20 years, 6 months from Substantial Completion.
- C. Furnish Manufacturer's Standard Metal Roofing System Water Tightness Warranty:
  - 1. Warranty shall include all items supplied by manufacturer, including but not limited to insulation, felt underlayment, ice and water underlayment, vapor barrier, fasteners, trims, curb flashings and pipe flashings.
    - a. Warranties that hold installing contractor liable past initial 24 month period will not be acceptable.
  - 2. Warranty Period of twenty years after the date of substantial completion.
  - 3. The manufacturer's liability under the warranty shall be limited to the dollar amount of the original materials furnished by the manufacturer and the installation of those materials.
  - 4. Warranty coverage by the manufacturer shall not be pro-rated during the life of the warranty.
  - 5. Warranty shall include all materials supplied by manufacturer including but not limited to: insulation, synthetic underlayment, ice and water underlayment, vapor barrier, sealant and fasteners.
  - 6. Warranty shall be signed by the manufacturer of the metal roof system and his

authorized installer, agreeing at their option to replace or repair defective materials and workmanship as required maintaining the metal roof system in watertight condition.

7. Warranty shall not exclude any conditions such as flashing, valleys, penetrations, domes, tapered roof panels, ridge vents and curb flashings that are an integral part of the roof system.
8. Shop drawings shall be completed by manufacturer and approved by A/E prior to installation as a condition of the warranty. Contractor produced drawings will not be acceptable.
9. The manufacturer of the metal roof system shall review installation details and perform a minimum of two on-site inspections by manufacturer employed inspector as required to certify proper watertight roofing material installation. Inspections by sales personnel will not be acceptable

## **PART 2 PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Acceptable Manufacturer: Dimensional Metals Inc., which is located at: 58 Klema Dr. N.; Reynoldsburg, OH 43068; Toll Free Tel: 800-828-1510; Tel: 740-927-3633; Fax: 740-927-3319; Email:[info@dmimetals.com](mailto:info@dmimetals.com); Web:[www.dmimetals.com](http://www.dmimetals.com)
- B. Requests for substitutions will be considered in accordance with provisions of Section 01600 – Materials and Equipment, and must be submitted on the provided Substitution Request Form located within the Project Manual.

### **2.2 SHEET MATERIALS - GENERAL**

- A. Prefinished base sheet material shall be Galvalume Aluminum-Zinc (AZ50) Alloy Coated Steel Grade C meeting ASTM A792.
- B. Finish shall be 70% PVDF fluorocarbon coating, applied on a continuous coil coating line, with top side dry film thickness of 1.1 +/- .01 mil dry film thickness and on the reverse side a wash coat and primer of .04 +/- .01 mil total dry film thickness.
  1. Galvalume DynaClad: Consists of aluminum-zinc alloy coated (55% aluminum, 43.4% zinc, 1.6% silicon, nominal percentage by weight) carbon steel of commercial weight meeting ASTM 792.
  2. HDG90 DynaClad: Consists of hot-dipped galvanized steel base sheet of commercial weight (AISI G90 designation) meeting ASTM A653.
  3. Aluminum DynaClad: Consists of 3105 H14 alloy aluminum base sheet of commercial weight meeting ASTM B209.
  4. Substitutions are permitted and must be approved by architect, submit using the Substitution Request Form located within the Project Manual.
- C. Finish color shall be selected by the Architect from the manufacturer's standard colors and metallic finishes. Unless otherwise noted all products shall be of the same finish and color.
- D. Strippable film shall be applied to the topside of the painted coil to protect the finish during fabrication, shipping and field handling. This strippable film shall be removed during installation.

### **2.3 METAL ROOFING SYSTEMS - GENERAL**

- A. Standing seams shall incorporate a continuous engineered interlocking connection with concealed anchor clips

- B. Standing seams shall contain factory injected non-curing sealant that runs continuously throughout the panel length as job conditions dictate.
- C. Panel clips shall be as recommended by the manufacturer to meet the performance criteria of this specification.
- D. All exposed adjacent flashing shall be of the same material and finish as the roof panels.
- E. Fasteners:
  - 1. Exposed screw fasteners shall be 300 series alloy stainless steel with integrally bonded neoprene washers or Zinc Aluminum Cast head covers with integral neoprene gaskets. Exposed fasteners shall be pre-painted to match roof.
  - 2. Exposed pop rivets shall be stainless steel, rivet and mandrel, type #44 - 1/8 inch (3 mm) diameter 1/4 inch (6 mm) grip range minimum. Exposed pop rivets shall be pre-painted to match the metal roof system.
  - 3. Concealed fasteners for anchor clips shall be # 14-13 pancake head #2 square drive as required to meet the performance criteria in this specification.
  - 4. Concealed fasteners for flashing attachment shall be # 10-13 by 1 inch (25 mm) or #10-16 by 1 inch (25 mm) long truss head #2 square drive screw.
  - 5. There shall be no exposed fasteners except to fasten flashing at fixing points, or for panel attachment as dictated by warranty requirements for longitudinal thermal expansion and contraction, or as indicated on the shop drawings.

## 2.4 METAL ROOFING SYSTEMS - FABRICATION

- A. Panels shall be fabricated on fixed base machines located within a permanent fabrication facility in continuous lengths as required. No horizontal end lap joints will be accepted, unless panels exceed 90 feet (27.5 m) in length or jobsite conditions dictate.
- B. Panel design shall incorporate concealed clips and fasteners. Exposed fasteners in roofing panels will not be accepted unless indicated on shop drawings.
- C. Standing seam design shall prevent water infiltration by utilizing a capillary break or continuous non-curing sealant to prevent siphoning.
- D. Fabricate roofing and related sheet metal work in accordance with approved shop drawings and applicable standards set forth in the Sheet Metal and Air Conditioning Contractors National Association - Architectural Sheet Metal Manual (seventh edition, 2012)
- E. Roofing and sheet metal flashing shall be fabricated in minimum 10 feet (3048 mm) lengths except as noted otherwise. Flashing shall have a minimum 3/4 inch (19 mm) hemmed edges in exposed locations. Provide field fabricated miters for components that change direction on the project.

## 2.5 STRUCTURAL METAL ROOF PANELS

- A. Product Basis of Design: INTER-LOCK IL20 as manufactured by Dimensional Metals Inc.
  - 1. Performance Testing:
    - a. UL-90 580 class 90 rated assembly.
    - b. ASTM E 1592: Static Air Pressure Difference.
    - c. ASTM E 283: Air Leakage Test.
    - d. ASTM E 331: Water Penetration.

2. Seam Height: 1-3/4 inches (44 mm).
  3. Seam On-Center: (Model IL2018) 18 inches (457 mm).
  4. Panel Profile: Striated (standard).
  5. Material/Finish: 24 Gauge Galvalume with DynaClad PVDF finish.
  6. Color: As selected from manufacturer's standard material/finish colors.
- B. Substitutions are permitted and must be approved by architect, submit using the Substitution Request Form located within the Project Manual.

## 2.6 ARCHITECTURAL METAL SOFFIT PANELS

- A. Product Basis of Design: FLUSH-PANEL FP10 as manufactured by Dimensional Metals Inc.
1. Performance Testing:
    - a. ASTM E 283: Air Leakage Test.
    - b. ASTM E 331: Water Penetration.
    - c. ASTM E 1592: Static Air Pressure Difference.
  2. Seam Height: 1 inch (25 mm).
  3. Seam On-Center: (Model FP1012) 12 inches (305 mm).
  4. Panel Profile: Smooth (standard).
  5. Venting Panel: Provide venting perforated panel where indicated or required. Material shall be .032 Aluminum with 7.5% net free area with perforations.
  6. Material/Finish: .032 Aluminum with DynaClad PVDF finish.
  7. Color: To match existing standing seam metal roof.

## 2.7 UNDERLAYMENTS

- A. Product: DynaClad Premium Roofing Underlayment as supplied by Dimensional Metals Inc.
1. Fabric Specifications:
    - a. Weave: Woven white PP scrim (UV stabilized).
    - b. Coating: 1.5 mil/1.2 mil average (35/28 g/m2/side).
    - c. Color: Gray.
    - d. Weight: 4.30 oz/yd2 (146g/m2) +/- 5 %.
    - e. Thickness: 10 mil (0.25mm) ASTM D5199.
  2. Performance:
    - a. Grab Tensile: Warp 133 lb (592 N): Weft 114 lb (507 N): ASTM D5034.
    - b. Strip Tensile (N/5cm): Warp 94 lb/in (823): Weft 82 lb/in (718): ASTM D5035.
    - c. Tensile Elongation: Warp 20%: Weft 20%: ASTM D5035.
    - d. Tongue Tear: Warp 54 lb (240 N): Weft 46 lb (205 N): ASTM D2261.
    - e. Trapezoidal Tear: Warp 52 lb (231 N): Weft 43 lb (191 N): ASTM D4533.
    - f. Mullen Burst: 200 psi (1378 kPa): ASTM D376.
    - g. Moisture Vapor Transmission: less than 0.1 perms: ASTM E96.
    - h. UV Weathering: UV stabilizer added to coating for improved UV resistance, greater than 6 months exposure.
    - i. Coefficient of Friction: Warp 1.25: Weft 1.18 (DRY RUBBER). Warp 1.56: Weft 1.53 (WET RUBBER): CAN/CGSB-75.1-M88.
    - j. Class A Fire Resistance Rating: ASTM E 108 (2004), UL790 (1997), UBC 15-2 (1997).
    - k. Florida Building Code: ICC-ES, AC 188 "Acceptance Criteria for Roof Underlayments".
    - l. Miami-Dade County Product Control Approved NOA 07-0307.09 ep. May 24, 2012: Meets the requirements of CAN/CSA A220.1.

- B. Product: DynaClad Ultra HT Wind & Water Seal as supplied by Dimensional Metals Inc.
  - 1. Material Color: White.
  - 2. Maximum Service Temperature: 250 degree F (121 degree C).
  - 3. Material Thickness (ASTM D 5147): 45 Mils (1.1 mm) Nominal.
  - 4. Flexibility at -20 degree F (-28 degree C) (ASTM D 1970): Pass.
  - 5. Vapor Permeance (ASTM E 96): Less than 0.02.
  - 6. Nail Sealability (ASTM D 1970): Pass.
  - 7. Adhesion to Plywood at 75 degree F (24 degrees C) (ASTM D 903/1970): Greater than 12 lbs/ft.
  - 8. Adhesion to Plywood at 40 degree F (4 degrees C) (ASTM D 903/1970): Greater than 2 lbs/ft.
  - 9. Results based on modified ASTM standards:
- C. Substitutions are permitted and must be approved by architect, submit using the Substitution Request Form located within the Project Manual.

## 2.8 SEALANT FOR METAL ROOFS

- A. Product Basis of Design: Novaflex Metal Roof Sealant as supplied by Dimensional Metals Inc.
  - 1. Meets or exceeds ASTM C-920, TT-S-001543A and TT-S-230C.
- B. Substitutions are permitted and must be approved by architect, submit using the Substitution Request Form located within the Project Manual.
  - 1. Refer to Specification Section 07920 – Joint Sealant for requirements.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Examine alignment and placement of building roof structure before proceeding with installation of preformed metal roofing.
- B. Examine metal roof deck before starting installation. Deck shall be clear, clean and smooth, free of depressions, waves, or projections, dry and shall remain dry and free of ice and snow, after roofing application commences. Deck flutes shall be clean and dry.
- C. Field check dimensions and check support alignment with taut string or wire. Support misalignment may cause additional stresses in the panels and contribute to oil canning.
- D. Do not proceed with installation until conditions are satisfactory. Notify the architect in writing of unsatisfactory conditions.
- E. Underlayment Installation:
  - 1. Verify that underlayment has been installed over solid substrate.
  - 2. Ensure underlayment is installed horizontally, starting at the eave working to the ridge with a 6 inches (152 mm) minimum overlap.
  - 3. Ensure that all fasteners are totally flush with the substrate.

### 3.2 INSTALLATION

- A. General Requirements:
  - 1. Install roofing and flashing in accordance with approved shop drawings and manufacturer's product data, within specified tolerances.

2. Isolate dissimilar metals, masonry and concrete from metal roof system with bituminous coating.
  3. Anchorage shall allow for thermal expansion and contraction without stress or elongation of panels, clips or anchors.
  4. Coordinate flashing and sheet metal work to provide watertight conditions at roof terminations. Fabricate and install in accordance with standards set forth in the SMACNA Manual using continuous cleats at all exposed edges.
- B. Underlayment:
1. Install proper protection to finished substrate to prevent moisture infiltration to roofing assembly prior to placement of panels. Cover complete roof area to receive metal roof panels with DynaClad Ultra HT Wind & Water Seal (for roof slopes less than 3:12) or a combination of DynaClad Premium Roofing Underlayment and DynaClad Ultra HT Wind & Water Seal at the eaves, valleys, rake walls, rake edges, and around all penetrations as required (for roof slopes equal or greater than 3:12).
- C. Preformed Metal Panels:
1. Fasten anchor clips with fasteners as recommended by the manufacturer as required to meet the performance criteria specified.
  2. Install starter and edge trim before installing roof panels.
  3. Remove strippable plastic film prior to installation of roof panels.
  4. Erect metal roofing with lines, planes, rises and angles sharp and true, and plane surfaces free from objectionable warp, dents, buckle or other physical defects.
  5. Do not allow traffic on completed roof.
  6. Protect installed roof panels and trim from damage caused by adjacent construction until completion of installation.
  7. Remove and replace any panels or flashing components that are damaged beyond successful repair.
- D. Flashing:
1. Comply with SMACNA "Architectural Sheet Metal Manual" recommendations for installation work where the manufacturer's approved shop drawings do not define a specific detail.
  2. Conceal fasteners and expansion provisions wherever possible.
  3. Hem all exposed edges of sheet metal flashing that are exposed with at least 3/4 inch (19 mm) fold under.
  4. Insert metal flashing into reglets, anchor with wedges and seal all joints.
  5. Set sheet metal items level, true to line and plumb.
  6. Secure all metal flashing to wood nailers with screws as indicated on the approved shop drawings.
  7. Use cleats to keep flashing end laps closed when face width exceeds 8 inches (203 mm).

### 3.3 FIELD QUALITY CONTROL

- A. Tolerances:
1. Applicable erection tolerances: Maximum variation from true planes or lines shall be 1/4 inch (6 mm) in 20 feet (6.1 m) or 3/8 inch (9.5 mm) in 40 feet (12.2 m).
  2. Metal roof systems cannot correct any previously installed support or wood nailer problems that do not meet the above tolerances.
- B. Manufacturer's Field Service:

1. Manufacturer's representative shall inspect all Watertight Warranted projects during the installation of the metal roof system.
2. Inspections shall be scheduled as required by the manufacturer of the roofing system.
3. Two mandatory visits are required:
  - a. Inspection of proper panel and flashing installation.
  - b. Final inspection upon completion of the metal roof installation.
4. Upon final inspection a report will be issued to the installer of any discrepancies and requirements for additional work. If additional work required the manufacturer will provide another final inspection to verify acceptance of completed work.

#### **3.4 CLEANING**

- A. Clean exposed surfaces of work promptly after completion of installation. To prevent rust from staining the painted finish, immediately remove filings produced by drilling or cutting.
- B. Clean roof in accordance with manufacturer's recommendations.
- C. Touch up minor abrasions and scratches in finish with the manufacturer's supplied PVDF touch up paint.
- D. Remove all scrap and construction debris from the site.

#### **3.5 PROTECTION**

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION



**SECTION 074646 - FIBER-CEMENT SIDING**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section includes fiber-cement siding.

**1.2 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Samples: For fiber-cement siding including related accessories.

**1.3 INFORMATIONAL SUBMITTALS**

- A. Product certificates.
- B. Product test reports.
- C. Research/evaluation reports.
- D. Sample warranty.

**1.4 CLOSEOUT SUBMITTALS**

- A. Maintenance data.

**1.5 WARRANTY**

- A. Special Warranty: Manufacturer agrees to repair or replace products that fail in materials or workmanship within specified warranty period.
  - 1. Warranty Period: 30 years from date of Substantial Completion.

**PART 2 - PRODUCTS**

**2.1 FIBER-CEMENT SIDING**

- A. General: ASTM C1186, Type A, Grade II, fiber-cement board, noncombustible when tested according to ASTM E136; with a flame-spread index of 25 or less when tested according to ASTM E84.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. American Fiber Cement Corporation.
  - b. CertainTeed Corporation; Saint-Gobain North America.
  - c. James Hardie Building Products, Inc. Hardieplank HZ5 (BOD)
- B. Labeling: Provide fiber-cement siding that is tested and labeled according to ASTM C1186 by a qualified testing agency acceptable to authorities having jurisdiction.
- C. Nominal Thickness: Not less than **5/16 inch (8 mm)**.
- D. Horizontal Pattern: Boards **7-1/4 to 7-1/2 inches (184 to 190 mm)** wide in plain style.
  1. Texture: Wood grain.
  2. Color: Selected by Architect from manufacturers full range of colors.

## 2.2 ACCESSORIES

- A. Siding Accessories, General: Provide starter strips, edge trim, outside and inside corner caps, and other items as recommended by siding manufacturer for building configuration.
- B. Flashing: Provide aluminum flashing complying with Section 076200 "Sheet Metal Flashing and Trim" at window and door heads and where indicated.
  1. Finish for Aluminum Flashing: Siliconized polyester coating.
- C. Fasteners:
  1. For fastening to wood, use siding nails of sufficient length to penetrate a minimum of **1 inch (25 mm)** into substrate.
  2. For fastening to metal, use ribbed bugle-head screws of sufficient length to penetrate a minimum of **1/4 inch (6 mm)**, or three screw-threads, into substrate.
  3. For fastening fiber cement, use hot-dip galvanized fasteners.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. General: Comply with manufacturer's written installation instructions applicable to products and applications indicated unless more stringent requirements apply.
  1. Install fasteners no more than 16 inches o.c.
- B. Install joint sealants as specified in Section 079200 "Joint Sealants" and to produce a weathertight installation.

3.2 ADJUSTING AND CLEANING

- A. Remove damaged, improperly installed, or otherwise defective materials and replace with new materials complying with specified requirements.
- B. Clean finished surfaces according to manufacturer's written instructions and maintain in a clean condition during construction.

END OF SECTION 074646



**SECTION 07600**

**FLASHING AND SHEET METAL WORK**

**PART 1 GENERAL**

**1.1 SCOPE**

- A. This section covers sheet metal for flashings and moisture protection. The following sheet metal items are covered in other sections:
  - 1. Metal curbs for roof top mechanical equipment.
  - 2. Roof scuttle and access hatches.
  - 3. Ductwork, louvers, and other sheet metal for the heating, ventilating, and air conditioning system.

**1.2 GENERAL**

- A. Installation of wall and roof flashings shall be as indicated on the Drawings and as specified in the building masonry and roofing sections.
  - 1. Flashing members to be built into masonry, concrete, or roofing shall be delivered at the proper time for incorporation into the work.
- B. When installing sheet metal items, care shall be taken to avoid marring and improper bending.  
All components shall be stored in clean, dry storage areas. Contact with corrosive or staining materials shall be prevented. All damaged sections shall be replaced and only undamaged units shall be installed.

**1.3 SUBMITTALS**

- A. Complete specifications, data, and catalog cuts or drawings covering the items furnished under this section shall be submitted in accordance with the Submittals Procedures section.

**1.4 HANDLING AND STORAGE**

- A. Adequate protection shall be provided during shipment, site storage, and installation to prevent damage to materials or finished work.

**PART 2 PRODUCTS**

**2.1 MATERIALS**

- A. Sheet Aluminum: ASTM B209, Alloy 3003-H14, mill finish.
- B. Extruded Aluminum: ASTM B221, Alloy 6053 or 6063.
- C. Stainless Steel: ASTM A167, Type 302 or 304, AISI 2B finish unless otherwise specified.
- D. Solder: ASTM B32, Alloy Grade 50A (50-50).
- E. Soldering Flux:
  - 1. For Stainless Steel: Zinc chloride type, Fed Spec 0-F-506, Type II.

2. For Other Metals: Acid type, Fed Spec O-F-506, Type I, Form A.

F. Fasteners: Same metal as sheet metal being fastened.

G. Plastic Cement: Asphalt roof cement, asbestos free; ASTM D4586, Type 1.

H. Acrylic Sealant: Pecora "Unicrylic" or Tremco "Mono".

## **2.2 FLASHINGS**

A. All exposed or contacting flashings shall be of the same material.

B. Types:

1. Cap Flashing: Stainless steel, 26 gage.
2. Counterflashings: Stainless steel, 26 gage; Architectural Steel, Cheney, or Keystone, with wall flat and hook dam for masonry wall installation, with vertical receivers for surface- mounted installation, or with snap lock for reglet installation as indicated.
3. Miscellaneous Hidden Flashings: Stainless steel, 26 gage.
4. Miscellaneous Exposed Flashing: Prefinished metal flashing, 22 gage steel.
5. Scuppers and Downspouts: Prefinished aluminum 0.063 inch thickness.
6. Copings: 0.063 prefinished aluminum formed as indicated; Metal ERA "Perma-Tite" coping or approved equal.
7. Fascias: 0.040 Aluminum, color to match roof system.

## **2.3 CONFIGURATIONS.**

A. Cap Flashings.

1. Cap flashings shall be provided at all roof ventilators and elsewhere as indicated on the Drawings.
2. Cap flashings shall be fabricated in sections not exceeding 10 feet in length; sections shall overlap at least 3 inches and shall form a slip joint, but shall not be interlocked.
3. All corners and all joints other than slip joints shall be closed watertight as specified herein.

B. Scuppers And Downspouts.

1. Scuppers and downspouts shall be provided where and as detailed on the Drawings.
2. Scuppers and downspouts shall be constructed of the material specified.
3. Scuppers shall be configured as indicated with fully welded seam construction.
4. All details and construction shall be as recommended by the SMACNA "Architectural Sheet Metal Manual".

C. Counterflashings.

1. Counterflashings shall be provided, at the locations indicated on the Drawings, to overlap roof membrane base flashings and fit into flashing reglets or receivers.

2. Counterflashings shall be fabricated in sections not exceeding 10 feet in length; sections shall overlap at least 3 inches and shall form a slip joint, but shall not be interlocked.
  3. End joints between counterflashing sections shall be offset from underlying joints between reglet or receiver sections.
  4. Corners in counterflashings shall be closed watertight as specified herein.
- D. Miscellaneous Metal Flashings. Metal flashings shall be provided for vents, sleeves, and similar projections through the roof.

### **PART 3 EXECUTION**

#### **3.1 INSTALLATION.**

- A. Watertight Joints. Joints in sheet metal work shall be closed watertight unless slip joints are specifically required.
1. Watertight joints shall be mechanically interlocked and then thoroughly soldered for metals other than aluminum.
  2. Joints in aluminum or between aluminum and other metals shall be sealed with acrylic sealant.
  3. All joints shall be wiped clean of flux after soldering. Acid flux shall be neutralized by washing the joints with sodium bicarbonate.
- B. Cap Flashings.
1. Cap flashings shall be installed after membrane base flashings have been completed.
  2. Cap flashings shall be anchored in place as indicated on the Drawings.
- C. Counterflashings.
1. Counterflashings shall be installed after membrane base flashings have been completed.
  2. Counterflashings shall be fitted into reglets or receivers and securely locked in place in accordance with the manufacturer's recommendations.
- D. Miscellaneous Metal Flashings.
3. Metal flashings shall be installed as specified in the roofing section.

#### **3.2 PROTECTION**

- A. Adequate protection shall be provided during shipment, site storage and installation, to prevent damage to materials or finished work.
- B. Protection of Aluminum from Dissimilar Materials: Coat surfaces of aluminum in contact with dissimilar materials such as concrete, masonry, steel, and other metals in accordance with Section 09900, Painting.

END OF SECTION





SECTION 076300

GUTTERS AND DOWNSPOUTS

PART 1 GENERAL

1.01 SCOPE

- A. This Section includes furnishing and installing gutters and downspouts.
- B. All work performed under this Section shall comply with and be in accordance with all approved trade practices and manufacturers' recommendations.

1.02 SUBMITTALS

- A. Submittals shall be in accordance with the requirements of Section 01300 and shall include:
  - 1. Shop Drawings for Review:
    - a. Manufacturer's literature.
  - 2. Information for the Record:
    - a. Samples as requested by DESIGN PROFESSIONAL.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Aluminum gutter and downspout system shall meet the following thicknesses:
  - 1. Gutters 0.040-inch
  - 2. Downspouts 0.040-inch
- B. Sealing material shall be Alcoa Gutterseal, Reynolds Aluminum, or approved equal.
- C. Expansion joints: Provide manufacturer's standard expansion joint assemblies allowing for minimum  $\frac{3}{4}$ " thermal: spacing per manufacturer.
- D. Downspout anchors shall be aluminum die casting. Color to match finish of downspouts.
- E. Finishes shall be baked enamel; color selected by the Owner from manufacturer's standards.
- F. Cast Iron Boots
  - 1. As shown on Drawings
  - 2. Manufactured by Neenam Foundry or approved equal.
  - 3. Painted to match downspouts.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Installation shall be complete and in accordance with the manufacturer's recommendations, the Engineer's instructions, and the Contract Documents.

- B. Gutters and downspouts shall be installed in accordance with the International Building Code Chapter 15 and the International Plumbing Code Chapter 11.

3.02 ALUMINUM INSTALLATION

- A. Sealing joints and final cleaning shall be in accordance with Alcoa Architectural Aluminum Care During Construction, latest edition.

END OF SECTION

## **SECTION 079200 - JOINT SEALANTS**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

**A. Section Includes:**

1. Silicone joint sealants.
2. Nonstaining silicone joint sealants.
3. Urethane joint sealants.
4. Immersible joint sealants.
5. Mildew-resistant joint sealants.
6. Latex joint sealants.

#### **1.2 ACTION SUBMITTALS**

- A. Product Data:** For each joint-sealant product.
- 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.

#### **1.3 INFORMATIONAL SUBMITTALS**

- A. Product test reports.**
- B. Preconstruction laboratory test reports.**
- C. Preconstruction field-adhesion-test reports.**

#### **1.4 WARRANTY**

- A. Special Installer's Warranty:** 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:** Two years from date of Substantial Completion.

- B. Special Manufacturer's Warranty: Manufacturer agrees to furnish joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

- 1. Warranty Period: Five years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 JOINT SEALANTS, GENERAL

- A. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

### 2.2 SILICONE JOINT SEALANTS

- A. Silicone, S, NS, 50, NT: Single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 50, Use NT.

- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. Adfast.
    - b. GE Construction Sealants; Momentive Performance Materials Inc.
    - c. Pecora Corporation.
    - d. Sika Corporation; Joint Sealants.
    - e. The Dow Chemical Company.

- B. Silicone, S, NS, 50, T, NT: Single-component, nonsag, plus 50 percent and minus 50 percent movement capability, traffic- and nontraffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 50, Uses T and NT.

- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. Soudal USA.
    - b. The Dow Chemical Company.

### 2.3 NONSTAINING SILICONE JOINT SEALANTS

- A. Nonstaining Joint Sealants: No staining of substrates when tested according to ASTM C1248.

- B. Silicone, Nonstaining, S, NS, 50, NT: Nonstaining, single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 50, Use NT.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. GE Construction Sealants; Momentive Performance Materials Inc.
  - b. Sika Corporation; Joint Sealants.
  - c. The Dow Chemical Company.
  - d. Tremco Incorporated.

#### 2.4 URETHANE JOINT SEALANTS

- A. Urethane, M, NS, 25, NT: Multicomponent, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, urethane joint sealant; ASTM C920, Type M, Grade NS, Class 25, Use NT.
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. BASF Corporation.
    - b. Sherwin-Williams Company (The).
- B. Urethane, M, P, 25, T, NT: Multicomponent, pourable, plus 25 percent and minus 25 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C920, Type M, Grade P, Class 25, Uses T and NT.
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. BASF Corporation.
    - b. Pecora Corporation.
    - c. Sherwin-Williams Company (The).
    - d. Tremco Incorporated.

#### 2.5 MILDEW-RESISTANT JOINT SEALANTS

- A. Mildew-Resistant Joint Sealants: Formulated for prolonged exposure to humidity with fungicide to prevent mold and mildew growth.
- B. Silicone, Mildew Resistant, Acid Curing, S, NS, 25, NT: Mildew-resistant, single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, acid-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 25, Use NT.
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. GE Construction Sealants; Momentive Performance Materials Inc.
    - b. The Dow Chemical Company.
    - c. Tremco Incorporated.
- C. Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C834, Type OP, Grade NF.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Franklin International.
  - b. Sherwin-Williams Company (The).
  - c. Tremco Incorporated.

## 2.6 JOINT-SEALANT BACKING

- A. Cylindrical Sealant Backings: ASTM C1330, Type O (open-cell material) Type B (bicellular material with a surface skin), and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Alcot Plastics Ltd.
    - b. BASF Corporation.
    - c. Construction Foam Products; a division of Nomaco, Inc.
- B. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer.

## 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. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
  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.

- B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces.

### 3.2 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with ASTM C1193 and joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- 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.
- 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.
- E. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
  - 1. Provide concave joint profile per Figure 8A in ASTM C1193 unless otherwise indicated.

### 3.3 JOINT-SEALANT SCHEDULE

- A. Joint-Sealant Application: Exterior joints in horizontal traffic surfaces JS-1.
  - 1. Joint Locations:
    - a. Control and expansion joints in brick pavers.
    - b. Isolation and contraction joints in cast-in-place concrete slabs.
    - c. Tile control and expansion joints.
    - d. Joints between different materials listed above.
    - e. Other joints as indicated on Drawings.
  - 2. Joint Sealant: Urethane, M, P, 50, T, NT.

3. Joint-Sealant Color: As indicated by manufacturer's designations Match Architect's sample As selected by Architect from manufacturer's full range of colors.
- B. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces JS-2.
  1. Joint Locations:
    - a. Construction joints in cast-in-place concrete.
    - b. Joints between plant-precast architectural concrete units.
    - c. Control and expansion joints in unit masonry.
    - d. Insert other joints.
    - e. Other joints as indicated on Drawings.
  2. Joint Sealant: Silicone, nonstaining, S, NS, 50, NT.
  3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- C. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces not subject to significant movement JS-3.
  1. Joint Locations:
    - a. Control joints on exposed interior surfaces of exterior walls.
    - b. Perimeter joints between interior wall surfaces and frames of interior doors and windows.
    - c. Other joints as indicated on Drawings.
  2. Joint Sealant: Acrylic latex.
  3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- D. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces JS-4.
  1. Joint Locations:
    - a. Joints between plumbing fixtures and adjoining walls, floors, and counters.
    - b. Tile control and expansion joints where indicated.
    - c. Other joints as indicated on Drawings.
  2. Joint Sealant: Silicone, mildew resistant, acid curing, S, NS, 25, NT.
  3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

END OF SECTION 079200



## **SECTION 079219 - ACOUSTICAL JOINT SEALANTS**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. Section includes acoustical joint sealants.

#### **1.2 ACTION SUBMITTALS**

- A. Product Data: For each acoustical joint sealant.
- B. Samples: For each kind and color of acoustical joint sealant required.
- C. Acoustical-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.

#### **1.3 INFORMATIONAL SUBMITTALS**

- A. Product test reports.
- B. Sample warranties.

#### **1.4 WARRANTY**

- A. Special Installer's Warranty: Installer agrees to repair or replace acoustical joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
  - 1. Warranty Period: Two years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer agrees to furnish acoustical joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
  - 1. Warranty Period: 2 years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. Provide acoustical joint-sealant products that effectively reduce airborne sound transmission through perimeter joints and openings in building construction, as demonstrated by testing representative assemblies according to ASTM E90.

### 2.2 ACOUSTICAL JOINT SEALANTS

- A. Acoustical Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex acoustical sealant complying with ASTM C834.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. GE Construction Sealants; Momentive Performance Materials Inc.
    - b. Tremco Incorporated.
    - c. USG Corporation.
  - 2. Colors of Exposed Acoustical Joint Sealants: As selected by Architect from manufacturer's full range of colors.
- B. Primer: Material recommended by acoustical-joint-sealant manufacturer where required for adhesion of sealant to joint substrates.
- C. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials.
- D. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing acoustical joint sealants to comply with joint-sealant manufacturer's written instructions.
- B. Joint Priming: Prime joint substrates where recommended by acoustical-joint-sealant manufacturer.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces.

3.2 INSTALLATION OF ACOUSTICAL JOINT SEALANTS

- A. Comply with acoustical joint-sealant manufacturer's written installation instructions unless more stringent requirements apply.
- B. STC-Rated Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical joint sealant. Install acoustical joint sealants at both faces of partitions, at perimeters, and through penetrations. Comply with ASTM C919, ASTM C1193, and manufacturer's written recommendations for closing off sound-flanking paths around or through assemblies, including sealing partitions to underside of floor slabs above acoustical ceilings.
- C. Acoustical Ceiling Areas: Apply acoustical joint sealant at perimeter edge moldings of acoustical ceiling areas in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.

END OF SECTION 079219



**SECTION 081416 - FLUSH WOOD DOORS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

**A. Section Includes:**

1. Five-ply flush wood veneer-faced doors for transparent finish.
2. Five-ply flush wood doors for opaque finish.
3. Solid-core flush wood doors with plastic-laminate-faces.
4. Hollow-core flush wood veneer-faced doors for transparent finish.
5. Hollow-core flush wood doors for opaque finish.
6. Hollow-core flush wood doors with plastic-laminate faces.
7. Fire-rated wood door frames.
8. Factory finishing flush wood doors and frames.

**1.2 ACTION SUBMITTALS**

**A. Product Data:** For each type of product, including the following:

1. Door core materials and construction.
2. Door edge construction
3. Door face type and characteristics.
4. Door louvers.
5. Door trim for openings.
6. Door frame construction.
7. Factory-machining criteria.
8. Factory- finishing specifications.

**B. Shop Drawings:** Indicate location, size, and hand of each door; elevation of each type of door; construction details not covered in Product Data; and the following:

1. Door schedule indicating door and frame location, type, size, fire protection rating, and swing.
2. Door elevations, dimension and locations of hardware, lite and louver cutouts, and glazing thicknesses.
3. Details of frame for each frame type, including dimensions and profile.
4. Details of electrical raceway and preparation for electrified hardware, access control systems, and security systems.
5. Dimensions and locations of blocking for hardware attachment.
6. Clearances and undercuts.
7. Requirements for veneer matching.

**C. Samples:** For factory-finished doors and factory-finished door frames.

1.3 INFORMATIONAL SUBMITTALS

- A. Field quality-control reports.

1.4 QUALITY ASSURANCE

- A. Egress Door Inspector Qualifications: Inspector for field quality-control inspections of egress door assemblies shall comply with qualifications set forth in NFPA 101, Section 7.2.1.15.4 and the following:

PART 2 - PRODUCTS

2.1 FLUSH WOOD DOORS AND FRAMES, GENERAL

- A. Quality Standard: In addition to requirements specified, comply with ANSI/WDMA I.S. 1A.

2.2 SOLID-CORE, FIVE-PLY FLUSH WOOD VENEER-FACED DOORS FOR TRANSPARENT FINISH

- A. Interior Doors D1:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Lambton Doors.
  - b. Masonite Architectural.
  - c. Oshkosh Door Company.
  - d. VT Industries Inc.
  - e. Wilsonart LLC.
2. Performance Grade: ANSI/WDMA I.S. 1A Standard Duty.
3. ANSI/WDMA I.S. 1A Grade: Custom.
4. Faces: Single-ply wood veneer not less than **1/50 inch (0.508 mm)** thick.
  - a. Species: Natural Birch
  - b. Cut: Rift cut.
  - c. Match between Veneer Leaves: Book match.
  - d. Assembly of Veneer Leaves on Door Faces: Balance match.
5. Exposed Vertical Edges: Same species as faces - Architectural Woodwork Standards edge Type A.
  - a. Mineral-Core Doors: At hinge stiles, provide laminated-edge construction with improved screw-holding capability and split resistance. Comply with specified requirements for exposed edges.
6. Core for Non-Fire-Rated Doors:

- a. ANSI A208.1, Grade LD-1 particleboard.
    - 1) Provide doors with glued-wood-stave or WDMA I.S. 10 structural-composite-lumber cores instead of particleboard cores for doors scheduled to receive exit devices in Section 087100 "Door Hardware."
  - b. Glued wood stave.
  - c. WDMA I.S. 10 structural composite lumber.
  - d. Either glued wood stave or WDMA I.S. 10 structural composite lumber.
7. Construction: Five plies, hot-pressed bonded (vertical and horizontal edging is bonded to core), with entire unit abrasive planed before veneering.

## 2.3 LIGHT FRAMES AND LOUVERS

- A. Wood Beads for Light Openings in Wood Doors: Provide manufacturer's standard wood beads unless otherwise indicated.
  - 1. Wood Species: Same species as door faces.
  - 2. Profile: Flush rectangular beads.
- B. Wood Louvers: Door manufacturer's standard solid-wood louvers unless otherwise indicated.
  - 1. Wood Species: Same species as door faces.
  - 2. Profile: Flat.

## 2.4 FABRICATION

- A. Factory fit doors to suit frame-opening sizes indicated.
  - 1. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.
  - 2. Comply with NFPA 80 requirements for fire-rated doors.
- B. Factory machine doors for hardware that is not surface applied.
  - 1. Locate hardware to comply with DHI-WDHS-3.
  - 2. Comply with final hardware schedules, door frame Shop Drawings, ANSI/BHMA-156.115-W, and hardware templates.
  - 3. For doors scheduled to receive electrified locksets, provide factory-installed raceway and wiring to accommodate specified hardware.
- C. Openings: Factory cut and trim openings through doors.
  - 1. Light Openings: Trim openings with moldings of material and profile indicated.
  - 2. Louvers: Factory install louvers in prepared openings.

2.5 FACTORY FINISHING

- A. Comply with referenced quality standard for factory finishing.
  - 1. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.
  - 2. Finish faces, all four edges, edges of cutouts, and mortises.
  - 3. Stains and fillers may be omitted on top and bottom edges, edges of cutouts, and mortises.
- B. Factory finish doors.
- C. Transparent Finish:
  - 1. ANSI/WDMA I.S. 1A Grade: Custom.
  - 2. Staining: As selected by Architect from manufacturer's full range.
  - 3. Effect: Open-grain finish Semifilled finish, produced by applying an additional finish coat to partially fill the wood pores.
  - 4. Sheen: Satin.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Hardware: For installation, see Section 087100 "Door Hardware."
- B. Install doors and frames to comply with manufacturer's written instructions and referenced quality standard, and as indicated.
- C. Install frames level, plumb, true, and straight.
  - 1. Shim as required with concealed shims. Install level and plumb to a tolerance of **1/8 inch in 96 inches (3.2 mm in 2400 mm)**.
  - 2. Anchor frames to anchors or blocking built in or directly attached to substrates.
    - a. Secure with countersunk, concealed fasteners and blind nailing.
    - b. Use fine finishing nails for exposed fastening, countersunk and filled flush with woodwork.
      - 1) For factory-finished items, use filler matching finish of items being installed.
- D. Job-Fitted Doors:
  - 1. Align and fit doors in frames with uniform clearances and bevels as indicated below.
    - a. Do not trim stiles and rails in excess of limits set by manufacturer or permitted for fire-rated doors.



2. Machine doors for hardware.
  3. Seal edges of doors, edges of cutouts, and mortises after fitting and machining.
  4. Clearances:
    - a. Provide **1/8 inch (3.2 mm)** at heads, jambs, and between pairs of doors.
    - b. Provide **1/8 inch (3.2 mm)** from bottom of door to top of decorative floor finish or covering unless otherwise indicated on Drawings.
    - c. Where threshold is shown or scheduled, provide **1/4 inch (6.4 mm)** from bottom of door to top of threshold unless otherwise indicated.
  5. Bevel non-fire-rated doors **1/8 inch in 2 inches (3-1/2 degrees)** at lock and hinge edges.
- E. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.
- F. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

### 3.2 FIELD QUALITY CONTROL

- A. Inspection Agency: Engage a qualified inspector to perform inspections and to furnish reports to Architect.
- B. Repair or remove and replace installations where inspections indicate that they do not comply with specified requirements.
- C. Reinspect repaired or replaced installations to determine if replaced or repaired door assembly installations comply with specified requirements.

### 3.3 ADJUSTING

- A. Operation: Rehang or replace doors that do not swing or operate freely.
- B. Finished Doors: Replace doors that are damaged or that do not comply with requirements. Doors may be repaired or refinished if Work complies with requirements and shows no evidence of repair or refinishing.

END OF SECTION 081416



**SECTION 084113 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Aluminum-framed storefront systems.
  - 2. Aluminum-framed entrance door systems.

**1.2 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Shop Drawings: For aluminum-framed entrances and storefronts. Include plans, elevations, sections, full-size details, and attachments to other work.
  - 1. Show connection to and continuity with adjacent thermal, weather, air, and vapor barriers.
  - 2. Include point-to-point wiring diagrams.
- C. Samples: For each type of exposed finish required.
- D. Entrance Door Hardware Schedule: Prepared by or under supervision of supplier, detailing fabrication and assembly of entrance door hardware, as well as procedures and diagrams.

**1.3 INFORMATIONAL SUBMITTALS**

- A. Energy Performance Certificates: NFRC-certified energy performance values from manufacturer.
- B. Product test reports.
- C. Source quality-control reports.
- D. Field quality-control reports.
- E. Sample warranties.

**1.4 CLOSEOUT SUBMITTALS**

- A. Maintenance data.

1.5 QUALITY ASSURANCE

- A. Product Options: Information on Drawings and in Specifications establishes requirements for aesthetic effects and performance characteristics of assemblies. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction.
  - 1. Do not change intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If changes are proposed, submit comprehensive explanatory data to Architect for review.

1.6 WARRANTY

- A. Special Warranty: Installer agrees to repair or replace components of aluminum-framed entrances and storefronts that do not comply with requirements or that fail in materials or workmanship within specified warranty period.
  - 1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 STOREFRONT SYSTEMS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Kawneer North America, an Arconic company.
  - 2. Oldcastle BuildingEnvelope (OBE); CRH Americas.
  - 3. Tubelite Inc.
- B. Framing Members: Manufacturer's extruded- or formed-aluminum framing members of thickness required and reinforced as required to support imposed loads.
  - 1. Exterior Framing Construction: Thermally broken.
  - 2. Interior Vestibule Framing Construction: Thermally broken.
  - 3. Glazing System: Retained mechanically with gaskets on four sides.
  - 4. Finish: Clear anodic finish.
  - 5. Fabrication Method: Field-fabricated stick system.
  - 6. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
  - 7. Steel Reinforcement: As required by manufacturer.
- C. Backer Plates: Manufacturer's standard, continuous backer plates for framing members, if not integral, where framing abuts adjacent construction.
- D. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.

## 2.2 ENTRANCE DOOR SYSTEMS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Kawneer North America, an Arconic company.
  - 2. Oldcastle BuildingEnvelope (OBE); CRH Americas.
  - 3. Tubelite Inc.
- B. Entrance Doors: Manufacturer's standard glazed entrance doors for manual-swing or automatic operation.
  - 1. Door Construction: **1-3/4-inch (44.5-mm)** overall thickness, with minimum **0.125-inch- (3.2-mm-)** thick, extruded-aluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deeply penetrated and fillet welded or that incorporate concealed tie rods.
  - 2. Door Design: Wide stile; **5-inch (127-mm)** nominal width.
  - 3. Glazing Stops and Gaskets: Square, snap-on, extruded-aluminum stops and preformed gaskets.
    - a. Provide nonremovable glazing stops on outside of door.

## 2.3 ENTRANCE DOOR HARDWARE

- A. Entrance Door Hardware: Hardware not specified in this Section is specified in Section 087100 "Door Hardware."

## 2.4 GLAZING

- A. Glazing: Comply with Section 088000 "Glazing."
- B. Glazing Gaskets: Manufacturer's standard sealed-corner pressure-glazing system of black, resilient elastomeric glazing gaskets, setting blocks, and shims or spacers.
- C. Glazing Sealants: As recommended by manufacturer.

## 2.5 MATERIALS

- A. Sheet and Plate: **ASTM B209 (ASTM B209M).**
- B. Extruded Bars, Rods, Profiles, and Tubes: **ASTM B221 (ASTM B221M).**
- C. Structural Profiles: ASTM B308/B308M.

## 2.6 FABRICATION

- A. Form or extrude aluminum shapes before finishing.

- B. Fabricate components that, when assembled, have the following characteristics:
  - 1. Profiles that are sharp, straight, and free of defects or deformations.
  - 2. Accurately fitted joints with ends coped or mitered.
  - 3. Physical and thermal isolation of glazing from framing members.
  - 4. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
  - 5. Provisions for field replacement of glazing from exterior.
  - 6. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.
- C. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.
- D. Entrance Door Frames: Reinforce as required to support loads imposed by door operation and for installing entrance door hardware.
- E. Entrance Doors: Reinforce doors as required for installing entrance door hardware.
- F. Entrance Door Hardware Installation: Factory install entrance door hardware to the greatest extent possible. Cut, drill, and tap for factory-installed entrance door hardware before applying finishes.
- G. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

## 2.7 ALUMINUM FINISHES

- A. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker.

## PART 3 - EXECUTION

### 3.1 INSTALLATION, GENERAL

- A. Comply with manufacturer's written instructions.
- B. Do not install damaged components.
- C. Fit joints to produce hairline joints free of burrs and distortion.
- D. Rigidly secure nonmovement joints.
- E. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.
- F. Seal perimeter and other joints watertight unless otherwise indicated.
- G. Metal Protection:

1. Where aluminum is in contact with dissimilar metals, protect against galvanic action by painting contact surfaces with materials recommended by manufacturer for this purpose or by installing nonconductive spacers.
  2. Where aluminum is in contact with concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.
- H. Set continuous sill members and flashing in full sealant bed, as specified in Section 079200 "Joint Sealants," to produce weathertight installation.
- I. Install joint filler behind sealant as recommended by sealant manufacturer.
- J. Install components plumb and true in alignment with established lines and grades.

### 3.2 INSTALLATION OF GLAZING

- A. Install glazing as specified in Section 088000 "Glazing."

### 3.3 INSTALLATION OF ALUMINUM-FRAMED ENTRANCE DOORS

- A. Install entrance doors to produce smooth operation and tight fit at contact points.
1. Exterior Doors: Install to produce weathertight enclosure and tight fit at weather stripping.
  2. Field-Installed Entrance Door Hardware: Install surface-mounted entrance door hardware according to entrance door hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.

### 3.4 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- B. Field Quality-Control Testing: Perform the following test on representative areas of aluminum-framed entrances and storefronts.
1. Water-Spray Test: Before installation of interior finishes has begun, areas designated by Architect shall be tested according to AAMA 501.2 and shall not evidence water penetration.
    - a. Perform a minimum of two tests in areas as directed by Architect.
  2. Air Leakage: ASTM E783 at 1.5 times the rate specified for laboratory testing in "Performance Requirements" Article but not more than 0.09 cfm/sq. ft. (0.45 L/s per sq. m) at a static-air-pressure differential of 1.57 lbf/sq. ft. (75 Pa).
    - a. Perform a minimum of two tests in areas as directed by Architect.
  3. Water Penetration: ASTM E1105 at a minimum uniform static-air-pressure differential of 0.67 times the static-air-pressure differential specified for laboratory

testing in "Performance Requirements" Article, but not less than 6.24 lbf/sq. ft. (300 Pa), and shall not evidence water penetration.

- C. Aluminum-framed entrances and storefronts will be considered defective if they do not pass tests and inspections.
- D. Prepare test and inspection reports.

END OF SECTION 084113



**SECTION 085200 - WOOD WINDOWS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section includes aluminum-clad wood windows.

**1.2 PREINSTALLATION MEETINGS**

- A. Preinstallation Conference: Conduct conference at Project site 1329 Tiffin St Fremont, OH 43420.

**1.3 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Shop Drawings: Include plans, elevations, sections, hardware, accessories, insect screens, operational clearances, and details of installation, including anchor, flashing, and sealant installation.
- C. Samples: For each exposed product and for each color specified.

**1.4 INFORMATIONAL SUBMITTALS**

- A. Product test reports.
- B. Sample warranties.

**1.5 WARRANTY**

- A. Manufacturer's Warranty: Manufacturer agrees to repair or replace wood windows that fail in materials or workmanship within specified warranty period.
  - 1. Warranty Period:
    - a. Window: 10 years from date of Substantial Completion.
    - b. Glazing Units: 10 years from date of Substantial Completion.
    - c. Aluminum-Cladding Finish: 10 years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 WINDOW PERFORMANCE REQUIREMENTS

- A. Product Standard: Comply with AAMA/WDMA/CSA 101/I.S.2/A440 for definitions and minimum standards of performance, materials, components, accessories, and fabrication unless more stringent requirements are indicated.
  - 1. Window Certification: WDMA certified with label attached to each window.
- B. Performance Class and Grade: AAMA/WDMA/CSA 101/I.S.2/A440 as follows:
  - 1. Minimum Performance Class: LC.
  - 2. Minimum Performance Grade: 30.
- C. Thermal Transmittance: NFRC 100 maximum whole-window U-factor of 0.30 Btu/sq. ft. x h x deg F (1.71 W/sq. m x K).
- D. Solar Heat-Gain Coefficient (SHGC): NFRC 200 maximum whole-window SHGC of 0.40.
- E. Windborne-Debris Impact Resistance: Passes ASTM E1886 missile-impact and cyclic-pressure tests in accordance with ASTM E1996 for Wind Zone 4 for basic protection.
  - 1. Large-Missile Test: For glazing located within 30 feet (9.1 m) of grade.
  - 2. Small-Missile Test: For glazing located between 30 feet (9.1 m) and 60 feet (18.3 m) above grade.

### 2.2 WOOD WINDOWS

- A. Aluminum-Clad Wood Windows:
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Andersen Windows; Andersen Corporation.
    - b. Marvin Windows and Doors.
    - c. Pella Corporation.
- B. Operating Types: As indicated on Drawings.
- C. Frames and Sashes: Fine-grained wood lumber complying with AAMA/WDMA/CSA 101/I.S.2/A440; kiln dried to a moisture content of not more than 12 percent at time of fabrication; free of visible finger joints, blue stain, knots, pitch pockets, and surface checks larger than 1/32 inch (0.8 mm) deep by 2 inches (51 mm) wide; water-repellent preservative treated.
  - 1. Exterior Finish: Aluminum-clad wood.
    - a. Aluminum Finish: Manufacturer's standard baked-on enamel finish.

2. Interior Finish: Manufacturer's standard factory-prime coat.
- D. Glass: Clear annealed glass, ASTM C1036, Type 1, Class 1, q3.
  1. Kind: Fully tempered where indicated on Drawings.
- E. Insulating-Glass Units: ASTM E2190.
  1. Glass: ASTM C1036, Type 1, Class 1, q3.
    - a. Tint: Clear.
    - b. Kind: Fully tempered where indicated on Drawings.
  2. Lites: Two.
  3. Filling: Fill space between glass lites with air.
  4. Low-E Coating: Sputtered on second surface.
- F. Glazing System: Manufacturer's standard factory-glazing system that produces weathertight seal.
- G. Hardware, General: Provide manufacturer's standard corrosion-resistant hardware sized to accommodate sash weight and dimensions.
  1. Exposed Hardware Color and Finish: As selected by Architect from manufacturer's full range.
- H. Projected Window Hardware:
  1. Gear-Type Rotary Operators: Complying with AAMA 901 when tested according to ASTM E405, Method A. Provide operators that function without requiring the removal of interior screens or using screen wickets.
    - a. Type and Style: As selected by Architect from manufacturer's full range of types and styles.
  2. Hinges: Manufacturer's standard type for sash weight and size indicated.
  3. Single-Handle Locking System: Operates positive-acting arms that pull sash into locked position. Provide one arm on sashes up to **29 inches (735 mm)** tall and two arms on taller sashes.
- I. Hung Window Hardware:
  1. Counterbalancing Mechanism: AAMA 902.
  2. Locks and Latches: Operated from the inside only.
  3. Tilt Hardware: Releasing tilt latch allows sash to pivot about horizontal axis.
- J. Horizontal-Sliding Window Hardware:
  1. Sill Cap/Track: Designed to comply with performance requirements indicated and to drain to the exterior.
  2. Locks and Latches: Operated from the inside only.
  3. Roller Assemblies: Low-friction design.

- K. Weather Stripping: Provide full-perimeter weather stripping for each operable sash unless otherwise indicated.
- L. Fasteners: Noncorrosive and compatible with window members, trim, hardware, anchors, and other components.
  - 1. Exposed Fasteners: Do not use exposed fasteners to greatest extent possible. For application of hardware, use fasteners that match finish hardware being fastened.

## 2.3 INSECT SCREENS

- A. General: Fabricate insect screens to integrate with window frame. Provide screen for each operable exterior sash. Screen wickets are not permitted.
  - 1. Type and Location: Full, inside for project-out sashes.
- B. Aluminum Frames: Complying with SMA 1004 or SMA 1201.
  - 1. Finish for Interior Screens: Baked-on organic coating in color selected by Architect from manufacturer's full range.
  - 2. Finish for Exterior Screens: Baked-on organic coating in color selected by Architect from manufacturer's full range.
- C. Glass-Fiber Mesh Fabric: 18-by-14 (1.1-by-1.4-mm) or 18-by-16 (1.0-by-1.1-mm) mesh of PVC-coated, glass-fiber threads; woven and fused to form a fabric mesh resistant to corrosion, shrinkage, stretch, impact damage, and weather deterioration. Comply with ASTM D3656/D3656M.
  - 1. Mesh Color: Manufacturer's standard.

## 2.4 FABRICATION

- A. Fabricate wood windows in sizes indicated. Include a complete system for installing and anchoring windows.
- B. Glaze wood windows in the factory.
- C. Weather strip each operable sash to provide weathertight installation.
- D. Mullions: Provide mullions and cover plates, matching window units, complete with anchors for support to structure and installation of window units. Allow for erection tolerances and provide for movement of window units due to thermal expansion and building deflections. Provide mullions and cover plates capable of withstanding design wind loads of window units.
- E. Complete fabrication, assembly, finishing, hardware application, and other work in the factory to greatest extent possible. Disassemble components only as necessary for shipment and installation. Allow for scribing, trimming, and fitting at Project site.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with manufacturer's written instructions for installing windows, hardware, accessories, and other components. For installation procedures and requirements not addressed in manufacturer's written instructions, comply with installation requirements in ASTM E2112.
- B. Install windows level, plumb, square, true to line, without distortion, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction to produce weathertight construction.
- C. Adjust operating sashes and hardware for a tight fit at contact points and weather stripping for smooth operation and weathertight closure.
- D. Clean exposed surfaces immediately after installing windows. Remove excess sealants, glazing materials, dirt, and other substances.
- E. Remove and replace sashes if glass has been broken, chipped, cracked, abraded, or damaged during construction period.

END OF SECTION 085200



## **SECTION 088000 - GLAZING**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

**A. Section Includes:**

1. Glass products.
2. Laminated glass.
3. Insulating glass.
4. Glazing sealants.
5. Glazing tapes.
6. Miscellaneous glazing materials.

#### **1.2 COORDINATION**

- A.** Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances to achieve proper safety margins for glazing retention under each design load case, load case combination, and service condition.

#### **1.3 ACTION SUBMITTALS**

- A.** Product Data: For each type of product.
- B.** Glass Samples: For each type of glass product other than clear monolithic vision glass; **12 inches (300 mm)** square.

#### **1.4 INFORMATIONAL SUBMITTALS**

- A.** Product Certificates: For glass.
- B.** Product test reports.
- C.** Preconstruction adhesion and compatibility test report.
- D.** Sample warranties.

#### **1.5 QUALITY ASSURANCE**

- A.** Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C1021 to conduct the testing indicated.

1.6 WARRANTY

- A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer agrees to replace coated-glass units that deteriorate within specified warranty period. Deterioration of coated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in coating.
  - 1. Warranty Period: 10 years from date of Substantial Completion.
- B. Manufacturer's Special Warranty for Laminated Glass: Manufacturer agrees to replace laminated-glass units that deteriorate within specified warranty period. Deterioration of laminated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.
  - 1. Warranty Period: Five years from date of Substantial Completion.
- C. Manufacturer's Special Warranty for Insulating Glass: Manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is obstruction of vision by dust, moisture, or film on interior surfaces of glass.
  - 1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Glazing shall withstand the following design loads within limits and under conditions indicated determined in accordance with the IBC and ASTM E1300:
  - 1. Design Wind Pressures: As indicated on Drawings.
  - 2. Design Snow Loads: As indicated on Drawings.
  - 3. Thermal Loads: Design glazing to resist thermal stress breakage induced by differential temperature conditions and limited air circulation within individual glass lites and insulated glazing units.
- B. Windborne-Debris-Impact Resistance: Exterior glazing shall pass ASTM E1886 missile-impact and cyclic-pressure tests in accordance with ASTM E1996 for Wind Zone 4 for basic protection.
  - 1. Large-Missile Test: For glazing located within 30 feet (9.1 m) of grade.



2. Small-Missile Test: For glazing located between 30 feet (9.1 m) and 60 feet (18.3 m) above grade.
- C. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II.
- D. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:
  1. U-Factors: Center-of-glazing values, in accordance with NFRC 100 and based on most current non-beta version of LBL's WINDOW computer program, expressed as Btu/sq. ft. x h x deg F (W/sq. m x K).
  2. SHGC and Visible Transmittance: Center-of-glazing values, in accordance with NFRC 200 and based on most current non-beta version of LBL's WINDOW computer program.
  3. Visible Reflectance: Center-of-glazing values, in accordance with NFRC 300.

## 2.2 GLASS PRODUCTS, GENERAL

- A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below unless more stringent requirements are indicated. See these publications for glazing terms not otherwise defined in this Section or in referenced standards.
  1. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."
- B. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction or manufacturer. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.
- C. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of the IGCC.
- D. Thickness: Where glass thickness is indicated, it is a minimum. **[Provide glass that complies with performance requirements and is not less than thickness indicated.]**
- E. Strength: Where annealed float glass is indicated, provide annealed float glass, heat-strengthened float glass, or fully tempered float glass **[as needed to comply with "Performance Requirements" Article]**. Where heat-strengthened float glass is indicated, provide heat-strengthened float glass or fully tempered float glass **[as needed to comply with "Performance Requirements" Article]**. Where fully tempered float glass is indicated, provide fully tempered float glass.

## 2.3 GLASS PRODUCTS

- A. Ultraclear Annealed Float Glass: ASTM C1036, Type I, Class I (clear), Quality-Q3; and with visible light transmission of not less than 91 percent and SHGC of not less than 0.87.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. AGC Glass Company North America, Inc.
  - b. Guardian Glass; SunGuard.
  - c. Pilkington North America.
  - d. Vitro Architectural Glass.
- B. Fully Tempered Float Glass: ASTM C1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.

## 2.4 INSULATING GLASS

- A. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified in accordance with ASTM E2190.
  1. Sealing System: Dual seal, with manufacturer's standard primary and secondary sealants.
  2. Perimeter Spacer: Manufacturer's standard spacer material and construction.
    - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      - 1) Technoform.
      - 2) Thermix; a brand of Ensinger USA.
  3. Desiccant: Molecular sieve or silica gel, or a blend of both.

## 2.5 GLAZING SEALANTS

- A. General:
  1. Compatibility: Compatible with one another and with other materials they contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
  2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
  3. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range of industry colors.
- B. Neutral-Curing Silicone Glazing Sealant, Class 100/50: Complying with ASTM C920, Type S, Grade NS, Use NT.
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. GE Construction Sealants; Momentive Performance Materials Inc.

- b. [Sika Corporation.](#)
- c. [The Dow Chemical Company.](#)
- d. [Tremco Incorporated.](#)

## 2.6 GLAZING TAPES

- A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C1281 and AAMA 800 for products indicated below:
  - 1. AAMA 804.3 tape, where indicated.
- B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:
  - 1. AAMA 810.1, Type 1, for glazing applications in which tape acts as primary sealant.
  - 2. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

## 2.7 MISCELLANEOUS GLAZING MATERIALS

- A. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
- B. Setting Blocks:
  - 1. EPDM with Shore A durometer hardness of 85, plus or minus 5.
  - 2. Type recommended in writing by sealant or glass manufacturer.
- C. Spacers:
  - 1. Insert type blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
  - 2. Type recommended in writing by sealant or glass manufacturer.
- D. Edge Blocks:
  - 1. EPDM with Shore A durometer hardness per manufacturer's written instructions.
  - 2. Type recommended in writing by sealant or glass manufacturer.

PART 3 - EXECUTION

3.1 GLAZING, GENERAL

- A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.
- B. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass includes glass with edge damage or other imperfections that, when installed, could weaken glass, impair performance, or impair appearance.
- C. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.
- D. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- F. Provide spacers for glass lites where length plus width is larger than 50 inches (1270 mm).
- G. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and in accordance with requirements in referenced glazing publications.

3.2 TAPE GLAZING

- A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.
- B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.
- C. Cover vertical framing joints by applying tapes to heads and sills first, then to jambs. Cover horizontal framing joints by applying tapes to jambs, then to heads and sills.
- D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.
- E. Center glass lites in openings on setting blocks, and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.

### 3.3 GASKET GLAZING (DRY)

- A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.
- B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.
- C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended in writing by gasket manufacturer.
- D. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended in writing by gasket manufacturer.
- E. Install gaskets so they protrude past face of glazing stops.

### 3.4 SEALANT GLAZING (WET)

- A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.
- B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.
- C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

### 3.5 CLEANING AND PROTECTION

- A. Immediately after installation, remove nonpermanent labels and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.
  - 1. If, despite such protection, contaminating substances do contact with glass, remove substances immediately as recommended in writing by glass manufacturer. Remove and replace glass that cannot be cleaned without damage to coatings.

- C. Remove and replace glass that is damaged during construction period.

### 3.6 INSULATING GLASS SCHEDULE

#### A. Low-E-Coated, Clear Insulating Glass Type G1:

1. Basis-of-Design Product: Solarban 70 (2) + Clear.
2. Overall Unit Thickness: 1 inch (25 mm).
3. Minimum Thickness of Each Glass Lite: 6 mm .
4. Outdoor Lite: Fully tempered float glass.
5. Interspace Content: Air.
6. Indoor Lite: Fully tempered float glass.
7. Low-E Coating: Sputtered on second surface.
8. Safety glazing required.

#### B. Low-E-Coated, Clear Insulating Glass Type G3:

1. See 085200 – Wood Windows

END OF SECTION 088000

**SECTION 092900 - GYPSUM BOARD**

**PART 1 - GENERAL**

**1.1 SUMMARY**

**A. Section Includes:**

1. Interior gypsum board.
2. Exterior gypsum board for ceilings and soffits.
3. Tile backing panels.
4. Texture finishes.

**1.2 ACTION SUBMITTALS**

**A. Product Data: For the following:**

1. Gypsum wallboard.
2. Gypsum board, Type X.
3. Flexible gypsum board.
4. Gypsum ceiling board.
5. Foil-backed gypsum board.
6. Abuse-resistant gypsum board.
7. Impact-resistant gypsum board.
8. Mold-resistant gypsum board.
9. Gypsum board, Type C.
10. Exterior gypsum soffit board.
11. Glass-mat gypsum sheathing board.
12. Glass-mat, water-resistant backing board.
13. Cementitious backer units.
14. Interior trim.
15. Exterior trim.
16. Joint treatment materials.
17. Laminating adhesive.
18. Sound-attenuation blankets.
19. Acoustical sealant.
20. Textured finishes.

**B. Samples: For each texture finish indicated on same backing indicated for Work.**

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E90 and classified according to ASTM E413 by an independent testing agency.

2.2 GYPSUM BOARD, GENERAL

- A. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.3 INTERIOR GYPSUM BOARD

- A. Gypsum Wallboard: ASTM C1396/C1396M.

- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. CertainTeed Corporation; Saint-Gobain North America.
  - b. Continental Building Products, LLC.
  - c. National Gypsum Company.
  - d. USG Corporation.
- 2. Thickness: **5/8 inch (15.9 mm).**
- 3. Long Edges: Tapered.

- B. Gypsum Ceiling Board: ASTM C1396/C1396M.

- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. CertainTeed Corporation; Saint-Gobain North America.
  - b. Continental Building Products, LLC.
  - c. National Gypsum Company.
  - d. USG Corporation.
- 2. Thickness: **5/8 inch (15.9 mm).**
- 3. Long Edges: Tapered.

2.4 TILE BACKING PANELS

- A. Cementitious Backer Units: ANSI A118.9 and ASTM C1288 or ASTM C1325, with manufacturer's standard edges.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:



- a. [CertainTeed Corporation; Saint-Gobain North America.](#)
  - b. [James Hardie Building Products, Inc.](#)
  - c. [National Gypsum Company.](#)
  - d. [USG Corporation.](#)
2. Thickness: **5/8 inch (15.9 mm)**.
3. Mold Resistance: ASTM D3273, score of 10 as rated according to ASTM D3274.

## 2.5 TRIM ACCESSORIES

### A. Interior Trim: ASTM C1047.

1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized-steel sheet.
2. Shapes:
  - a. Cornerbead.
  - b. Bullnose bead.
  - c. LC-Bead: J-shaped; exposed long flange receives joint compound.
  - d. L-Bead: L-shaped; exposed long flange receives joint compound.
  - e. U-Bead: J-shaped; exposed short flange does not receive joint compound.
  - f. Expansion (control) joint.
  - g. Curved-Edge Cornerbead: With notched or flexible flanges.

## 2.6 JOINT TREATMENT MATERIALS

### A. General: Comply with ASTM C475/C475M.

### B. Joint Tape:

1. Interior Gypsum Board: Paper.
2. Exterior Gypsum Soffit Board: Paper.
3. Glass-Mat Gypsum Sheathing Board: 10-by-10 glass mesh.
4. Tile Backing Panels: As recommended by panel manufacturer.

### C. Joint Compound for Interior Gypsum Board: For each coat, use formulation that is compatible with other compounds applied on previous or for successive coats.

1. Prefilling: At open joints and damaged surface areas, use setting-type taping compound.
2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping compound.
  - a. Use setting-type compound for installing paper-faced metal trim accessories.
3. Fill Coat: For second coat, use drying-type, all-purpose compound.
4. Finish Coat: For third coat, use drying-type, all-purpose compound.
5. Skim Coat: For final coat of Level 5 finish, use drying-type, all-purpose compound.

D. Joint Compound for Exterior Applications:

1. Exterior Gypsum Soffit Board: Use setting-type taping compound and setting-type, sandable topping compound.
2. Glass-Mat Gypsum Sheathing Board: As recommended by sheathing board manufacturer.

E. Joint Compound for Tile Backing Panels:

1. Glass-Mat, Water-Resistant Backing Panel: As recommended by backing panel manufacturer.
2. Cementitious Backer Units: As recommended by backer unit manufacturer.

2.7 AUXILIARY MATERIALS

- A. Provide auxiliary materials that comply with referenced installation standards and manufacturer's written instructions.
- B. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.
- C. Steel Drill Screws: ASTM C1002 unless otherwise indicated.
  1. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.
- D. Sound-Attenuation Blankets: ASTM C665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.
  1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.
- E. Acoustical Sealant: As specified in Section 079219 "Acoustical Joint Sealants."
- F. Thermal Insulation: As specified in Section 072100 "Thermal Insulation."
- G. Vapor Retarder: As specified in Section 072600 "Vapor Retarders."

PART 3 - EXECUTION

3.1 INSTALLATION AND FINISHING OF PANELS

- A. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.
- B. Comply with ASTM C840.
- C. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments. Provide 1/4- to 1/2-inch- (6.4- to 12.7-mm-) wide spaces at these locations

and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

- D. For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
- E. Prefill open joints and damaged surface areas.
- F. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.
- G. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C840:
  - 1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
  - 2. Level 2: Panels that are substrate for tile.
  - 3. Level 3: Where indicated on Drawings.
  - 4. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated.
    - a. Primer and its application to surfaces are specified in Section 099123 "Interior Painting."
  - 5. Level 5: Where indicated on Drawings.
    - a. Primer and its application to surfaces are specified in Section 099123 "Interior Painting."
- H. Glass-Mat Gypsum Sheathing Board: Finish according to manufacturer's written instructions for use as exposed soffit board.
- I. Glass-Mat Faced Panels: Finish according to manufacturer's written instructions.
- J. Cementitious Backer Units: Finish according to manufacturer's written instructions.

### 3.2 PROTECTION

- A. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- B. Remove and replace panels that are wet, moisture damaged, and mold damaged.

END OF SECTION 092900



**SECTION 096519 - RESILIENT TILE FLOORING**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Solid vinyl floor tile.
  - 2. Rubber floor tile.
  - 3. Vinyl composition floor tile.

**1.2 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
  - 1.
- B. Samples: For each exposed product and for each color and pattern specified.

**1.3 CLOSEOUT SUBMITTALS**

- A. Maintenance data.

**1.4 QUALITY ASSURANCE**

- A. Installer Qualifications: An entity that employs installers and supervisors who are competent in techniques required by manufacturer for floor tile installation.

**PART 2 - PRODUCTS**

**2.1 PERFORMANCE REQUIREMENTS**

- A. Fire-Test-Response Characteristics: For resilient floor tile, as determined by testing identical products according to ASTM E648 or NFPA 253 by a qualified testing agency.
  - 1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

**2.2 SOLID VINYL FLOOR TILE LVT-1**

- A. Interface
- B. Tile Standard: ASTM F1700.

1. Class: III Printed Vinyl Tile
  2. Type: A, Smooth Surface.
- C. Thickness: 4.5mm.
- D. Size: 50 by 50 cm.
- E. Colors and Patterns: Native Fabric, A00806 Twine.

## 2.3 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by floor tile manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by floor tile and adhesive manufacturers to suit floor tile and substrate conditions indicated.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Prepare substrates according to floor tile manufacturer's written instructions to ensure adhesion of resilient products.
- B. Concrete Substrates: Prepare according to ASTM F710.
1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
  2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by floor tile manufacturer. Do not use solvents.
  3. Alkalinity and Adhesion Testing: Perform tests recommended by floor tile manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 5 or more than 10 pH.
  4. Moisture Testing: Perform tests so that each test area does not exceed **200 sq. ft. (18.6 sq. m)**, and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.
    - a. Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of **3 lb of water/1000 sq. ft. (1.36 kg of water/92.9 sq. m)** in 24 hours.
    - b. Relative Humidity Test: Using in-situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.
- C. Access Flooring Panels: Remove protective film of oil or other coating using method recommended by access flooring manufacturer.

- D. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
- E. Do not install floor tiles until materials are the same temperature as space where they are to be installed.
  - 1. At least 48 hours in advance of installation, move resilient floor tile and installation materials into spaces where they will be installed.
- F. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient floor tile.

### 3.2 FLOOR TILE INSTALLATION

- A. Comply with manufacturer's written instructions for installing floor tile.
- B. Lay out floor tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.
  - 1. Lay tiles square with room axis.
- C. Match floor tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.
  - 1. Lay tiles with grain direction alternating in adjacent tiles (basket-weave pattern).
- D. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.
- E. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.
- F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent marking device.
- G. Install floor tiles on covers for telephone and electrical ducts, building expansion-joint covers, and similar items in installation areas. Maintain overall continuity of color and pattern between pieces of tile installed on covers and adjoining tiles. Tightly adhere tile edges to substrates that abut covers and to cover perimeters.
- H. Adhere floor tiles to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

END OF SECTION 096519





**SECTION 096813 - TILE CARPETING**

**PART 1 - GENERAL**

**1.1 SUMMARY**

**A. Section Includes:**

1. Modular carpet tile.

**1.2 PREINSTALLATION MEETINGS**

- A. Preinstallation Conference: Conduct conference at 1329 Tiffin St. Fremont, OH 43420.

**1.3 ACTION SUBMITTALS**

- A. Product Data: For each type of product.

- B. Shop Drawings: For carpet tile installation, plans showing the following:

1. Columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet tiles.
2. Carpet tile type, color, and dye lot.
3. Type of subfloor.
4. Type of installation.
5. Pattern of installation.
6. Pattern type, location, and direction.
7. Pile direction.
8. Type, color, and location of insets and borders.
9. Type, color, and location of edge, transition, and other accessory strips.
10. Transition details to other flooring materials.

- C. Samples: For each exposed product and for each color and texture required.

**1.4 INFORMATIONAL SUBMITTALS**

- A. Product test reports.

- B. Sample warranty.

**1.5 CLOSEOUT SUBMITTALS**

- A. Maintenance data.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Certified by the International Certified Floorcovering Installers Association at the Commercial II certification level.

1.7 WARRANTY

- A. Special Warranty for Carpet Tiles: Manufacturer agrees to repair or replace components of carpet tile installation that fail in materials or workmanship within specified warranty period.

- 1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 CARPET TILE CP-1

- A. Manufacturers: Subject to compliance with requirements, provide products by the following:
  - 1. Interface, LLC.
- B. Color: 102407 Purl.
- C. Pattern: Sew Straight 1462002500.
- D. Fiber Content: 100 percent nylon.
- E. Pile Characteristic: Tufted Textured Loop.
- F. Density: 6,835.
- G. Pile Thickness: 2.0mm for finished carpet tile according to ASTM D6859].
- H. Primary Backing/Backcoating: Manufacturer's standard composite materials.
- I. Secondary Backing: Manufacturer's standard material.
- J. Backing System: GlasBac Tile.
- K. Size: 50 x 50 cm.
- L. Applied Treatments:
  - 1. Soil-Resistance Treatment: Manufacturer's standard treatment.
  - 2. Antimicrobial Treatment: Manufacturer's standard treatment that protects carpet tiles as follows:

- a. Antimicrobial Activity: Not less than 2-mm halo of inhibition for gram-positive bacteria, not less than 1-mm halo of inhibition for gram-negative bacteria, and no fungal growth, according to AATCC 174.

M. Performance Characteristics:

- 1. Appearance Retention Rating: Moderate traffic, 2.5 minimum according to ASTM D7330.
- 2. Critical Radiant Flux Classification: Not less than 0.45 W/sq. cm according to NFPA 253.
- 3. Dry Breaking Strength: Not less than 100 lbf (445 N) according to ASTM D2646.
- 4. Tuft Bind: Not less than 3 lbf (13 N) according to ASTM D1335.
- 5. Delamination: Not less than 3.5 lbf/in. (0.6 N/mm) according to ASTM D3936.
- 6. Dimensional Tolerance: Within 1/32 inch (0.8 mm) of specified size dimensions, as determined by physical measurement.
- 7. Dimensional Stability: 0.2 percent or less according to ISO 2551 (Aachen Test).
- 8. Colorfastness to Light: Not less than 4 after 40 AFU (AATCC fading units) according to AATCC 16, Option E.
- 9. Electrostatic Propensity: Less than 3.5 kV according to AATCC 134.

2.2 CARPET TILE CP-2

- A. Interface, LLC.
- B. Color: As indicated by manufacturer's designations Match Architect's samples As selected by Architect from manufacturer's full range 104912 Sable.
- C. Pattern: Step Repeat / SR699.
- D. Fiber Content: 100 percent nylon 6.
- E. Pile Characteristic: Tufted Textured Loop.
- F. Density: 6,612.
- G. Pile Thickness: 3.7mm for finished carpet tile.
- H. Primary Backing/Backcoating: Manufacturer's standard composite materials.
- I. Secondary Backing: Manufacturer's standard material.
- J. Backing System: GlasBac Tile.
- K. Size: 50 x 50 cm.
- L. Applied Treatments:
  - 1. Soil-Resistance Treatment: Manufacturer's standard treatment.
  - 2. Antimicrobial Treatment: Manufacturer's standard treatment that protects carpet tiles as follows:

- a. Antimicrobial Activity: Not less than 2-mm halo of inhibition for gram-positive bacteria, not less than 1-mm halo of inhibition for gram-negative bacteria, and no fungal growth, according to AATCC 174.

M. Performance Characteristics:

1. Appearance Retention Rating: Severe traffic, 3.5 minimum according to ASTM D7330.
2. Critical Radiant Flux Classification: Not less than 0.45 W/sq. cm according to NFPA 253.
3. Dry Breaking Strength: Not less than 100 lbf (445 N) according to ASTM D2646.
4. Delamination: Not less than 3.5 lbf/in. (0.6 N/mm) according to ASTM D3936.
5. Dimensional Tolerance: Within 1/32 inch (0.8 mm) of specified size dimensions, as determined by physical measurement.
6. Dimensional Stability: 0.2 percent or less according to ISO 2551 (Aachen Test).
7. Colorfastness to Light: Not less than 4 after [40] [60] <Insert number> AFU (AATCC fading units) according to AATCC 16, Option E.
8. Electrostatic Propensity: Less than 3.5 kV according to AATCC 134.

2.3 INSTALLATION ACCESSORIES

- A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet tile manufacturer.
- B. Adhesives: Water-resistant, mildew-resistant, nonstaining, pressure-sensitive type to suit products and subfloor conditions indicated, that comply with flammability requirements for installed carpet tile, and are recommended by carpet tile manufacturer for releasable installation.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Concrete Slabs:

1. Moisture Testing: Perform tests so that each test area does not exceed 200 sq. ft. (18.6 sq. m), and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.
  - a. Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. (1.36 kg of water/92.9 sq. m) in 24 hours.
  - b. Relative Humidity Test: Using in situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.
  - c. Perform additional moisture tests recommended in writing by adhesive and carpet tile manufacturers. Proceed with installation only after substrates pass testing.

- B. Wood Subfloors: Verify that underlayment surface is free of irregularities and substances that may interfere with adhesive bond or show through surface.
- C. Metal Subfloors: Verify that underlayment surface is free of irregularities and substances that may interfere with adhesive bond or show through surface.
- D. Painted Subfloors: Perform bond test recommended in writing by adhesive manufacturer.
  - 1. Access Flooring Systems: Verify access floor substrate is compatible with carpet tile and adhesive, if any, and underlayment surface is gaps greater than **1/8 inch (3 mm)** and protrusions more than **1/32 inch (0.8 mm)**.

### 3.2 PREPARATION

- A. General: Comply with the Carpet and Rug Institute's CRI 104 and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile.
- B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions **1/8 inch (3 mm)** wide or wider, and protrusions more than **1/32 inch (0.8 mm)** unless more stringent requirements are required by manufacturer's written instructions.
- C. Concrete Substrates: Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by adhesive and carpet tile manufacturers.
- D. Metal Substrates: Clean grease, oil, soil and rust, and prime if recommended in writing by adhesive manufacturer. Rough sand painted metal surfaces and remove loose paint. Sand aluminum surfaces, to remove metal oxides, immediately before applying adhesive.
- E. Broom and vacuum clean substrates to be covered immediately before installing carpet tile.

### 3.3 INSTALLATION

- A. General: Comply with the Carpet and Rug Institute's CRI 104, Section 10, "Carpet Tile," and with carpet tile manufacturer's written installation instructions.
- B. Installation Method: As recommended in writing by carpet tile manufacturer.
- C. Maintain dye-lot integrity. Do not mix dye lots in same area.
- D. Maintain pile-direction patterns recommended in writing by carpet tile manufacturer.

- E. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet tile manufacturer.
- F. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- G. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on carpet tile as marked on subfloor. Use nonpermanent, nonstaining marking device.
- H. Install pattern parallel to walls and borders.
- I. Access Flooring: Stagger joints of carpet tiles so carpet tile grid is offset from access flooring panel grid. Do not fill seams of access flooring panels with carpet adhesive; keep seams free of adhesive.
- J. Protect carpet tile against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet tile manufacturer.

END OF SECTION 096813

## SECTION 099123 - INTERIOR PAINTING

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Primers.
  - 2. Water-based finish coatings.
  - 3. Solvent-based finish coatings.
  - 4. Floor sealers and paints.
  - 5. Dry fall coatings.

#### 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each type of topcoat product.
- C. Product Schedule: Use same designations indicated on Drawings and in the Interior Painting Schedule to cross-reference paint systems specified in this Section. Include color designations.

#### 1.3 QUALITY ASSURANCE

- A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Benjamin Moore & Co.
  - 2. PPG Paints.
  - 3. Sherwin-Williams Company (The).

#### 2.2 PAINT PRODUCTS, GENERAL

- A. Material Compatibility:

1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
  2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.
- B. Colors: As indicated in a color schedule.

## 2.3 PRIMERS

- A. Interior Latex Primer Sealer: Water-based latex sealer used on new interior plaster, concrete, and gypsum wallboard surfaces.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Benjamin Moore & Co.
    - b. PPG Paints.
    - c. Sherwin-Williams Company (The).
- B. Interior Latex Primer for Wood: Waterborne-emulsion primer formulated for resistance to extractive bleeding, mold, and microbes; for hiding stains; and for use on interior wood subject to extractive bleeding.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Benjamin Moore & Co.
    - b. PPG Paints.
    - c. Sherwin-Williams Company (The).
- C. Water-Based Rust-Inhibitive Primer: Corrosion-resistant, water-based-emulsion primer formulated for resistance to flash rusting when applied to cleaned, interior ferrous metals subject to mildly corrosive environments.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Benjamin Moore & Co.
    - b. PPG Paints.
    - c. Sherwin-Williams Company (The).
- D. Water-Based Bonding Primer: Water-based-emulsion primer formulated to promote adhesion of subsequent specified coatings.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Benjamin Moore & Co.
    - b. PPG Paints.
    - c. Sherwin-Williams Company (The).



2.4 WATER-BASED FINISH COATS

- A. Interior, Latex, Flat: Pigmented, water-based paint for use on primed/sealed interior plaster and gypsum board, and on primed wood and metals.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Benjamin Moore & Co.
    - b. PPG Paints.
    - c. Sherwin-Williams Company (The).
- B. Interior, Latex, Institutional Low Odor/VOC, Eggshell: White or colored latex paint with low-odor characteristics and a VOC of less than 10 grams per liter, for use in areas, such as hospitals and other occupied buildings, where the odor and VOC levels of conventional latex products would preclude their use.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Benjamin Moore & Co.
    - b. PPG Paints.
    - c. Sherwin-Williams Company (The).
  - 2. Gloss and Sheen Level: Manufacturer's standard eggshell finish.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.
- B. Proceed with coating application only after unsatisfactory conditions have been corrected.
  - 1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations applicable to substrates and paint systems indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
- C. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

### 3.3 INSTALLATION

- A. Apply paints according to manufacturer's written instructions.
- B. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
- C. Painting Fire-Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:
  - 1. Paint the following work where exposed in equipment rooms:
    - a. Equipment, including panelboards.
    - b. Uninsulated metal piping.
    - c. Uninsulated plastic piping.
    - d. Pipe hangers and supports.
    - e. Metal conduit.
    - f. Plastic conduit.
    - g. Tanks that do not have factory-applied final finishes.
    - h. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
    - i. .
  - 2. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces.

### 3.4 CLEANING AND PROTECTION

- A. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- B. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- C. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

### 3.5 INTERIOR PAINTING SCHEDULE

- A. Gypsum Board Substrates:
  - 1. Latex over Latex Sealer System PT-1: (BOD Promar 200)
    - a. Prime Coat: Interior latex primer sealer.
    - b. Intermediate Coat: Matching topcoat.
    - c. Topcoat: Interior, latex, flat.

2. Latex over Latex Sealer System PT-2: (BOD Promar 200)
  - a. Prime Coat: Interior latex primer sealer.
  - b. Intermediate Coat: Matching topcoat.
  - c. Topcoat: Interior, latex, eggshell.
3. Latex over Latex Sealer System PT-3: (BOD Promar 200)
  - a. Prime Coat: Interior latex primer sealer.
  - b. Intermediate Coat: Matching topcoat.
  - c. Topcoat: Interior, latex, eggshell.
4. High-Performance Architectural Latex System EPT-1:
  - a. Prime Coat: Interior latex primer sealer.
  - b. Intermediate Coat: Matching topcoat.
  - c. Topcoat: Interior, latex, high-performance architectural coating, low sheen.
5. High-Performance Architectural Latex System EPT-2:
  - a. Prime Coat: Interior latex primer sealer.
  - b. Intermediate Coat: Matching topcoat.
  - c. Topcoat: Interior, latex, high-performance architectural coating, satin.

END OF SECTION 099123



**SECTION 102800 - TOILET, BATH, AND LAUNDRY ACCESSORIES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

**A. Section Includes:**

1. Public-use washroom accessories.
2. Public-use shower room accessories.
3. Private-use bathroom accessories.
4. Healthcare accessories.
5. Hand dryers.
6. Childcare accessories.
7. Underlavatory guards.
8. Custodial accessories.

**1.2 ACTION SUBMITTALS**

- A. Product Data:** For each type of product.
- B. Samples:** For each exposed product and for each finish specified, full size.
1. Approved full-size Samples will be returned and may be used in the Work.

**1.3 INFORMATIONAL SUBMITTALS**

- A. Sample warranties.**

**1.4 CLOSEOUT SUBMITTALS**

- A. Maintenance data.**

**1.5 WARRANTY**

- A. Manufacturer's Special Warranty for Mirrors:** Manufacturer agrees to repair or replace mirrors that fail in materials or workmanship within specified warranty period.
1. Warranty Period: 10 years from date of Substantial Completion.
- B. Manufacturer's Special Warranty for Hand Dryers:** Manufacturer agrees to repair or replace hand dryers that fail in materials or workmanship within specified warranty period.
1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Structural Performance: Design accessories and fasteners to comply with the following requirements:
  - 1. Grab Bars: Installed units are able to resist 250 lbf (1112 N) concentrated load applied in any direction and at any point.

2.2 PUBLIC-USE WASHROOM ACCESSORIES

- A. Toilet Tissue (Roll) Dispenser TD: Owner provided and installed.
- B. Soap Dispenser SD: Owner provided and installed.
- C. Paper Towel Dispenser PD: Owner provided and installed.
- D. Grab Bar GB:
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. American Specialties, Inc.
    - b. Bobrick Washroom Equipment, Inc.
    - c. Bradley Corporation.
  - 2. Mounting: Flanges with concealed fasteners.
  - 3. Material: Stainless steel, 0.05 inch (1.3 mm) thick.
    - a. Finish: Smooth, ASTM A480/A480M No. 4 finish (satin).
  - 4. Outside Diameter: 1-1/4 inches (32 mm).
  - 5. Configuration and Length: As indicated on Drawings.
- E. Mirror Unit MI:
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. American Specialties, Inc.
    - b. Bobrick Washroom Equipment, Inc.
    - c. Bradley Corporation.
  - 2. Frame: Stainless steel angle, 0.05 inch (1.3 mm) thick.
    - a. Corners: Manufacturer's standard.

3. Size: As indicated on Drawings.
4. Hangers: Manufacturer's standard rigid, tamper and theft resistant.

## 2.3 UNDERLAVATORY GUARDS

### A. Underlavatory Guard:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Buckaroos, Inc.
  - b. Plumberex Specialty Products, Inc.
  - c. Truebro by IPS Corporation.
2. Description: Insulating pipe covering for supply and drain piping assemblies that prevents direct contact with and burns from piping; allow service access without removing coverings.
3. Material and Finish: Antimicrobial, molded plastic, white.

## 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.
  1. Remove temporary labels and protective coatings.
- B. Grab Bars: Install to comply with specified structural-performance requirements.
- C. Shower Seats: Install to comply with specified structural-performance requirements.

END OF SECTION 102800





## SECTION 104413 - FIRE PROTECTION CABINETS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Fire-protection cabinets for portable fire extinguishers.

#### 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For fire-protection cabinets.
- C. Samples: For each type of exposed finish required.

#### 1.3 CLOSEOUT SUBMITTALS

- A. Maintenance data.

### PART 2 - PRODUCTS

#### 2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Rated Fire-Protection Cabinets: Listed and labeled to comply with requirements in ASTM E814 for fire-resistance rating of walls where they are installed.

#### 2.2 FIRE-PROTECTION CABINET: FEC

- A. Cabinet Type: Suitable for fire extinguisher.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Babcock-Davis.
    - b. Guardian Fire Equipment, Inc.
    - c. Nystrom.
    - d. Potter Roemer LLC; a Division of Morris Group International.
- B. Cabinet Construction: Nonrated.
- C. Cabinet Material: Cold-rolled steel sheet.

- D. Semirecessed Cabinet: One-piece combination trim and perimeter door frame overlapping surrounding wall surface, with exposed trim face and wall return at outer edge (backbend).
  - 1. Square-Edge Trim: 1-1/4- to 1-1/2-inch (32- to 38-mm) backbend depth.
  - 2. Rolled-Edge Trim: 2-1/2-inch (64-mm) backbend depth.
- E. Cabinet Trim Material: Steel sheet.
- F. Door Material: Steel sheet.
- G. Door Style: Fully glazed, frameless, backless, acrylic panel.
- H. Door Glazing: Acrylic sheet.
  - 1. Acrylic Sheet Color: Clear transparent acrylic sheet.
- I. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.
- J. Accessories:
  - 1. Mounting Bracket: Manufacturer's standard steel, designed to secure fire extinguisher to fire-protection cabinet, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.
  - 2. Door Lock: Cylinder lock, keyed alike to other cabinets.
  - 3. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated.
    - a. Identify fire extinguisher in fire-protection cabinet with the words "FIRE EXTINGUISHER."
      - 1) Location: Applied to cabinet door.
      - 2) Application Process: Decals.
      - 3) Lettering Color: Red.
      - 4) Orientation: Horizontal.
- K. Materials:
  - 1. Cold-Rolled Steel: ASTM A1008/A1008M, Commercial Steel (CS), Type B.
    - a. Finish: Factory primed for field painting.
    - b. Color: As selected by Architect from manufacturer's full range.
  - 2. Transparent Acrylic Sheet: ASTM D4802, Category A-1 (cell-cast sheet), 1.5 mm thick, with Finish 1 (smooth or polished).

## 2.3 FABRICATION

- A. Fire-Protection Cabinets: Provide manufacturer's standard box (tub) with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Prepare recesses for semirecessed fire-protection cabinets as required by type and size of cabinet and trim style.
- B. Install fire-protection cabinets in locations and at mounting heights indicated.
- C. Fire-Protection Cabinets: Fasten cabinets to structure, square and plumb.
- D. Identification: Apply decals at locations indicated.
- E. Adjust fire-protection cabinet doors to operate easily without binding. Verify that integral locking devices operate properly.

END OF SECTION 104413



## **SECTION 104416 - FIRE EXTINGUISHERS**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. Section includes portable, hand-carried fire extinguishers.

#### **1.2 ACTION SUBMITTALS**

- A. Product Data: For each type of product.

#### **1.3 INFORMATIONAL SUBMITTALS**

- A. Warranty: Sample of special warranty.

#### **1.4 CLOSEOUT SUBMITTALS**

- A. Operation and maintenance data.

#### **1.5 COORDINATION**

- A. Coordinate type and capacity of fire extinguishers with fire-protection cabinets to ensure fit and function.

#### **1.6 WARRANTY**

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace fire extinguishers that fail in materials or workmanship within specified warranty period.

- 1. Warranty Period: Six years from date of Substantial Completion.

### **PART 2 - PRODUCTS**

#### **2.1 PERFORMANCE REQUIREMENTS**

- A. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."
- B. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.

2.2 PORTABLE, HAND-CARRIED FIRE EXTINGUISHERS

- A. Fire Extinguishers: Type, size, and capacity for each fire-protection cabinet indicated.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Ansul by Johnson Controls Company.
    - b. Babcock-Davis.
    - c. Buckeye Fire Equipment Company.
    - d. Kidde Residential and Commercial Division.
    - e. Larsens Manufacturing Company.
  - 2. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B.
- A. Stored-Pressure Antifreeze Water Type FE: UL-rated 2-A, 2.5-gal. (9.5-L) nominal capacity, with water and approved antifreeze solution mixed for temperatures as low as minus 40 deg F (minus 40 deg C) in stainless-steel container; with pressure-indicating gage.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Examine fire extinguishers for proper charging and tagging.
  - 1. Remove and replace damaged, defective, or undercharged fire extinguishers.
- B. Install fire extinguishers and mounting brackets in locations indicated and in compliance with requirements of authorities having jurisdiction.
  - 1. Mounting Brackets: Top of fire extinguisher to be at 42 inches (1067 mm) above finished floor.
- C. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.

END OF SECTION 104416

## **SECTION 122413 - ROLLER WINDOW SHADES**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

**A. Section Includes:**

1. Manually operated roller shades with single rollers.
2. Manually operated roller shades for skylights.
3. Motor-operated roller shades with single rollers.
4. Motor-operated roller shades for skylights.

#### **1.2 ACTION SUBMITTALS**

- A. Product Data:** For each type of product.
- B. Shop Drawings:** Show fabrication and installation details for roller shades, including shadeband materials, their orientation to rollers, and their seam and batten locations.
1. Motor-Operated Shades: Include details of installation and diagrams for power, signal, and control wiring.
- C. Samples:** For each exposed product and for each color and texture specified.

#### **1.3 INFORMATIONAL SUBMITTALS**

- A. Product certificates.**
- B. Product test reports.**

#### **1.4 CLOSEOUT SUBMITTALS**

- A. Operation and maintenance data.**

#### **1.5 QUALITY ASSURANCE**

- A. Installer Qualifications:** Fabricator of products.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain roller shades from single source from single manufacturer.

2.2 MANUALLY OPERATED SHADES WITH SINGLE ROLLERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Levolor.
  2. Lutron Electronics Co., Inc.
  3. MechoShade Systems, Inc.
- B. Chain-and-Clutch Operating Mechanisms: With continuous-loop bead chain and clutch that stops shade movement when bead chain is released; permanently adjusted and lubricated.
1. Chain-Retainer Type: Clip, jamb mount Chain tensioner, jamb mounted.
- C. Rollers: Corrosion-resistant steel or extruded-aluminum tubes of diameters and wall thicknesses required to accommodate operating mechanisms and weights and widths of shadebands indicated without deflection. Provide with permanently lubricated drive-end assemblies and idle-end assemblies designed to facilitate removal of shadebands for service.
1. Roller Drive-End Location: Right side of interior face of shade.
  2. Direction of Shadeband Roll: Regular, from back (exterior face) of roller.
- D. Mounting Hardware: Brackets or endcaps, corrosion resistant and compatible with roller assembly, operating mechanism, installation accessories, and mounting location and conditions indicated.
- E. Shadebands:
1. Shadeband Material: Light-filtering fabric.
  2. Shadeband Bottom (Hem) Bar: Steel or extruded aluminum.
    - a. Type: Exposed with endcaps.
    - b. Color and Finish: As selected by Architect from manufacturer's full range.
- F. Installation Accessories:
1. Front Fascia: Aluminum extrusion that conceals front and underside of roller and operating mechanism and attaches to roller endcaps without exposed fasteners.
  2. Endcap Covers: To cover exposed endcaps.
  3. Installation Accessories Color and Finish: As selected from manufacturer's full range.



## 2.3 SHADEBAND MATERIALS

- A. Shadeband Material Flame-Resistance Rating: Comply with NFPA 701. Testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
- B. Light-Filtering Fabric: Woven fabric, stain and fade resistant.
  - 1. Source: Roller shade manufacturer.
  - 2. Type: PVC-coated polyester.
  - 3. Weave: Basketweave.
  - 4. Thickness: 0.024.
  - 5. Weight: 12.68 oz/yd.
  - 6. Roll Width: 60 inches (1524 mm).
  - 7. Orientation on Shadeband: Up the bolt.
  - 8. Openness Factor: 5 percent.
  - 9. Color: As selected by Architect from manufacturer's full range.

## 2.4 ROLLER SHADE FABRICATION

- A. Product Safety Standard: Fabricate roller shades to comply with WCMA A 100.1
- B. Unit Sizes: Fabricate units in sizes to fill window and other openings as follows, measured at 74 deg F (23 deg C):
  - 1. Outside of Jamb Installation: Width and length as indicated, with terminations between shades of end-to-end installations at centerlines of mullion or other defined vertical separations between openings.
- C. Shadeband Fabrication: Fabricate shadebands without battens or seams to extent possible, except as follows:
  - 1. Vertical Shades: Where width-to-length ratio of shadeband is equal to or greater than 1:4, provide battens and seams at uniform spacings along shadeband length to ensure shadeband tracking and alignment through its full range of movement without distortion of the material.
  - 2. Skylight Shades: Provide battens and seams at uniform spacings along shadeband as required to ensure shadeband tracking and alignment through its full range of movement without distortion or sag of material.
  - 3. Railroaded Materials: Railroad material where material roll width is less than the required width of shadeband and where indicated. Provide battens and seams as required by railroaded material to produce shadebands with full roll-width panel(s) plus, if required, one partial roll-width panel located at top of shadeband.

PART 3 - EXECUTION

3.1 ROLLER SHADE INSTALLATION

- A. Install roller shades level, plumb, and aligned with adjacent units according to manufacturer's written instructions.
  - 1. Opaque Shadebands: Located so shadeband is not closer than **2 inches (51 mm)** to interior face of glass. Allow clearances for window operation hardware.
- B. Electrical Connections: Connect motor-operated roller shades to building electrical system.
- C. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.
- D. Clean roller shade surfaces, after installation, according to manufacturer's written instructions.
- E. Replace damaged roller shades that cannot be repaired, in a manner approved by Architect, before time of Substantial Completion.

END OF SECTION 122413

## **SECTION 123661.19 - QUARTZ AGGLOMERATE COUNTERTOPS**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Quartz agglomerate countertops.
  - 2. Quartz agglomerate backsplashes.
  - 3. Quartz agglomerate end splashes.
  - 4. Quartz agglomerate apron fronts.

#### **1.2 ACTION SUBMITTALS**

- A. Product Data: For countertop materials.
- B. Shop Drawings: For countertops. Show materials, finishes, edge and backsplash profiles, methods of joining, and cutouts for plumbing fixtures.
- C. Samples: For each type of material exposed to view.

### **PART 2 - PRODUCTS**

#### **2.1 QUARTZ AGGLOMERATE COUNTERTOP MATERIALS**

- A. Quartz Agglomerate: Solid sheets consisting of quartz aggregates bound together with a matrix of filled plastic resin and complying with ICPA SS-1, except for composition.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. Cambria.
  - 2. Colors and Patterns: As selected by Architect from manufacturer's full range.
- B. Particleboard: ANSI A208.1, Grade M-2.
- C. Plywood: Exterior softwood plywood complying with DOC PS 1, Grade C-C Plugged, touch sanded.

#### **2.2 COUNTERTOP FABRICATION**

- A. Fabricate countertops according to quartz agglomerate manufacturer's written instructions and the AWI/AWMAC/WI's "Architectural Woodwork Standards."

1. Grade: Custom.
- B. Countertops: 1/2-inch- (12.7-mm-) thick, quartz agglomerate with front edge built up with same material.
- C. Backsplashes: 1/2-inch- (12.7-mm-) thick, quartz agglomerate with wood-trimmed edges.
- D. Joints: Fabricate countertops in sections for joining in field, with joints at locations indicated.
- E. Cutouts and Holes:
  1. Undercounter Plumbing Fixtures: Make cutouts for fixtures in shop using template or pattern furnished by fixture manufacturer. Form cutouts to smooth, even curves.

## 2.3 INSTALLATION MATERIALS

- A. Adhesive: Product recommended by quartz agglomerate manufacturer.
- B. Sealant for Countertops: Comply with applicable requirements in Section 079200 "Joint Sealants."

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Fasten countertops by screwing through corner blocks of base units into underside of countertop. Predrill holes for screws as recommended by manufacturer.
- B. Bond joints with adhesive and draw tight as countertops are set. Mask areas of countertops adjacent to joints to prevent adhesive smears.
- C. Install backsplashes and end splashes by adhering to wall and countertops with adhesive.
- D. Install aprons to backing and countertops with adhesive.
- E. Complete cutouts not finished in shop. Mask areas of countertops adjacent to cutouts to prevent damage while cutting. Make cutouts to accurately fit items to be installed, and at right angles to finished surfaces unless beveling is required for clearance. Ease edges slightly to prevent snipping.
- F. Apply sealant to gaps at walls; comply with Section 079200 "Joint Sealants."

END OF SECTION 123661.19

