SPECIFICATION MANUAL

THE CARVER COMMUNITY CENTER EXPANSION PROJECT AT

207 MADISON STREET

FOR THE HOUSING AUTHORITY OF THE CITY OF FREDERICK

October 12th, 2022

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HOUSING AUTHORITY OF THE CITY OF FREDERICK 209 MADISON STREET FREDERICK, MD 21701 301-662-8173 www.hacfrederick.org

The Carver Community Center Expansion Project at 207 Madison Street for the Housing Authority of The City Of Frederick

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Pre-Bid Conference:	Thursday, December 15 th , 2022 at 11:00 a.m. at the Carver Community Room, 207 Madison St., Frederick, MD 21701
Bid Opening:	Friday, January 13 th , 2023 at 2:00 p.m. at the HACF main office, 209 Madison St., Frederick, MD 21701

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*If there is a conflict between the requirements in the HACF/HUD specifications and the Architect's technical specifications, drawings, etc., the specifications set forth by the Housing Authority of the City of Frederick shall govern.

INVITATION TO BIDDERS

The Housing Authority of the City of Frederick will receive bids for <u>THE CARVER COMMUNITY</u> <u>CENTER EXPANSION PROJECT AT 207 MADISON STREET FOR THE HOUSING AUTHORITY</u> <u>OF THE CITY OF FREDERICK</u>, Frederick, Maryland, Modernization for the Housing Authority of the City of Frederick (HACF) until **Friday**, **January 13th**, **2023 at 2:00 p.m.** at the main office of HACF, 209 Madison Street, Frederick, Maryland 21701, at which time and place bids will be opened and publicly read aloud. All bids submitted will be considered in accordance with criteria set forth herein.

Proposed forms of contract documents including plans and specifications are on file at the HACF main office, 209 Madison Street, Frederick, Maryland 21701.

A certified check or bank draft, payable to "Housing Authority of the City of Frederick", U.S. Government Bond, or a bid bond submitted on the enclosed Bid Bond form, executed by the bidder and acceptable sureties in the amount equal to five percent (5%) of the bid shall be submitted with each bid.

The successful bidder will be required to furnish and pay for performance and payment bond or bonds, submitted on the enclosed Performance and Payment Bond forms.

A Pre-Bid Conference will be held on **Thursday, December 15th, 2022 at 11:00 a.m**. at the Carver Community Center, 207 Madison Street, Frederick, Maryland 21701. Prospective bidders should attend this meeting. Failure to attend this meeting may be reason for HACF not to accept the Contractor's bid. If Contractor is not present for Pre-Bid Conference, he or she will be held responsible for all items discussed and reviewed at that time.

Attention is called to the provisions for equal employment opportunity, and payment of not less than the prevailing salaries and wages as set forth in the Specifications must be paid on this project.

HACF reserves the right to reject any and all bids or to waive any informalities in the bidding.

Specification Manuals & drawings are available in both hard & digital formats; hard copies may be obtained by General Contractors for bidding purposes at the main office of HACF, 209 Madison Street, Frederick, MD 21701; digital format by request to <u>sau@hacfrederick.org</u>.

General Contractor shall make a good faith effort to award 20% of their Bid Amount to Minority Contractors. A Minority Contractor is where 51% of the company is owned by a Minority. Definition of minority is by race, as defined by HUD (see section 00200-2).

HOUSING AUTHORITY OF THE CITY OF FREDERICK 209 MADISON STREET FREDERICK, MD 21701 (301) 662-8173

U.S. Department of Housing and Urban Development

Office of Public and Indian Housing

Instructions to Bidders for Contracts Public and Indian Housing Programs

Instructions to Bidders for Contracts

Public and Indian Housing Programs

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1. Bid Preparation and Submission

(a) Bidders are expected to examine the specifications, drawings, all instructions, and, if applicable, the construction site (see also the contract clause entitled **Site Investigation and Conditions Affect-***ing the Work* of the *General Conditions of the Contract for Construc-tion*). Failure to do so will be at the bidders' risk.

(b) All bids must be submitted on the forms provided by the Public Housing Agency/Indian Housing Authority (PHA/IHA). Bidders shall furnish all the information required by the solicitation. Bids must be signed and the bidder's name typed or printed on the bid sheet and each continuation sheet which requires the entry of information by the bidder. Erasures or other changes must be initialed by the person signing the bid. Bids signed by an agent shall be accompanied by evidence of that agent's authority. (Bidders should retain a copy of their bid for their records.)

(c) Bidders must submit as part of their bid a completed form HUD-5369-A, "Representations, Certifications, and Other Statements of Bidders."

(d) All bid documents shall be sealed in an envelope which shall be clearly marked with the words "Bid Documents," the Invitation for Bids (IFB) number, any project or other identifying number, the bidder's name, and the date and time for receipt of bids.

(e) If this solicitation requires bidding on all items, failure to do so will disqualify the bid. If bidding on all items is not required, bidders should insert the words "No Bid" in the space provided for any item on which no price is submitted.

(f) Unless expressly authorized elsewhere in this solicitation, alternate bids will not be considered.

(g) Unless expressly authorized elsewhere in this solicitation, bids submitted by telegraph or facsimile (fax) machines will not be considered.

(h) If the proposed contract is for a Mutual Help project (as described in 24 CFR Part 905, Subpart E) that involves Mutual Help contributions of work, material, or equipment, supplemental information regarding the bid advertisement is provided as an attachment to this solicitation.

2. Explanations and Interpretations to Prospective Bidders

(a) Any prospective bidder desiring an explanation or interpretation of the solicitation, specifications, drawings, etc., must request it at least 7 days before the scheduled time for bid opening. Requests may be oral or written. Oral requests must be confirmed in writing. The only oral clarifications that will be provided will be those clearly related to solicitation procedures, i.e., not substantive technical information. No other oral explanation or interpretation will be provided. Any information given a prospective bidder concerning this solicitation will be furnished promptly to all other prospective bidders as a written amendment to the solicitation, if that information is necessary in submitting bids, or if the lack of it would be prejudicial to other prospective bidders.

(b) Any information obtained by, or provided to, a bidder other than by formal amendment to the solicitation shall not constitute a change to the solicitation.

3. Amendments to Invitations for Bids

(a) If this solicitation is amended, then all terms and conditions which are not modified remain unchanged.

(b) Bidders shall acknowledge receipt of any amendment to this solicitation (1) by signing and returning the amendment, (2) by identifying the amendment number and date on the bid form, or (3) by letter, telegram, or facsimile, if those methods are authorized in the solicitation. The PHA/IHA must receive acknowledgement by the time and at the place specified for receipt of bids. Bids which fail to acknowledge the bidder's receipt of any amendment will result in the rejection of the bid if the amendment(s) contained information which substantively changed the PHA's/IHA's requirements.

(c) Amendments will be on file in the offices of the PHA/IHA and the Architect at least 7 days before bid opening.

4. Responsibility of Prospective Contractor

(a) The PHA/IHA will award contracts only to responsible prospective contractors who have the ability to perform successfully under the terms and conditions of the proposed contract. In determining the responsibility of a bidder, the PHA/IHA will consider such matters as the bidder's:

- (1) Integrity;
- (2) Compliance with public policy;
- (3) Record of past performance; and
- (4) Financial and technical resources (including construction and technical equipment).

(b) Before a bid is considered for award, the bidder may be requested by the PHA/IHA to submit a statement or other documentation regarding any of the items in paragraph (a) above. Failure by the bidder to provide such additional information shall render the bidder nonresponsible and ineligible for award.

5. Late Submissions, Modifications, and Withdrawal of Bids

(a) Any bid received at the place designated in the solicitation after the exact time specified for receipt will not be considered unless it is received before award is made and it:

(1) Was sent by registered or certified mail not later than the fifth calendar day before the date specified for receipt of offers (e.g., an offer submitted in response to a solicitation requiring receipt of offers by the 20th of the month must have been mailed by the 15th);

(2) Was sent by mail, or if authorized by the solicitation, was sent by telegram or via facsimile, and it is determined by the PHA/IHA that the late receipt was due solely to mishandling by the PHA/IHA after receipt at the PHA/IHA; or

(3) Was sent by U.S. Postal Service Express Mail Next Day Service - Post Office to Addressee, not later than 5:00 p.m. at the place of mailing two working days prior to the date specified for receipt of proposals. The term "working days" excludes weekends and observed holidays.

(b) Any modification or withdrawal of a bid is subject to the same conditions as in paragraph (a) of this provision.

(c) The only acceptable evidence to establish the date of mailing of a late bid, modification, or withdrawal sent either by registered or certified mail is the U.S. or Canadian Postal Service postmark both on the envelope or wrapper and on the original receipt from the U.S. or Canadian Postal Service. Both postmarks must show a legible date or the bid, modification, or withdrawal shall be processed as if mailed late. "Postmark" means a printed, stamped, or otherwise placed impression (exclusive of a postage meter machine impression) that is readily identifiable without further action as having been supplied and affixed by employees of the U.S. or Canadian Postal Service on the date of mailing. Therefore, bidders should request the postal clerk to place a hand cancellation bull's-eye postmark on both the receipt and the envelope or wrapper.

(d) The only acceptable evidence to establish the time of receipt at the PHA/IHA is the time/date stamp of PHA/IHA on the proposal wrapper or other documentary evidence of receipt maintained by the PHA/IHA.

(e) The only acceptable evidence to establish the date of mailing of a late bid, modification, or withdrawal sent by Express Mail Next Day Service-Post Office to Addressee is the date entered by the post office receiving clerk on the "Express Mail Next Day Service-Post Office to Addressee" label and the postmark on both the envelope or wrapper and on the original receipt from the U.S. Postal Service. "Postmark" has the same meaning as defined in paragraph (c) of this provision, excluding postmarks of the Canadian Postal Service. Therefore, bidders should request the postal clerk to place a legible hand cancellation bull's eye postmark on both the receipt and Failure by a bidder to acknowledge receipt of the envelope or wrapper.

(f) Notwithstanding paragraph (a) of this provision, a late modification of an otherwise successful bid that makes its terms more favorable to the PHA/IHA will be considered at any time it is received and may be accepted.

(g) Bids may be withdrawn by written notice, or if authorized by this solicitation, by telegram (including mailgram) or facsimile machine transmission received at any time before the exact time set for opening of bids; provided that written confirmation of telegraphic or facsimile withdrawals over the signature of the bidder is mailed and postmarked prior to the specified bid opening time. A bid may be withdrawn in person by a bidder or its authorized representative if, before the exact time set for opening of bids, the identity of the person requesting withdrawal is established and the person signs a receipt for the bid.

6. Bid Opening

All bids received by the date and time of receipt specified in the solicitation will be publicly opened and read. The time and place of opening will be as specified in the solicitation. Bidders and other interested persons may be present.

7. Service of Protest

(a) Definitions. As used in this provision:

"Interested party" means an actual or prospective bidder whose direct economic interest would be affected by the award of the contract.

"Protest" means a written objection by an interested party to this solicitation or to a proposed or actual award of a contract pursuant to this solicitation.

(b) Protests shall be served on the Contracting Officer by obtaining written and dated acknowledgement from —

[Contracting Officer designate the official or location where a protest may be served on the Contracting Officer]

(c) All protests shall be resolved in accordance with the PHA's/ IHA's protest policy and procedures, copies of which are maintained at the PHA/IHA.

8. Contract Award

(a) The PHA/IHA will evaluate bids in response to this solicitation without discussions and will award a contract to the responsible bidder whose bid, conforming to the solicitation, will be most advantageous to the PHA/IHA considering only price and any price-related factors specified in the solicitation.

(b) If the apparent low bid received in response to this solicitation exceeds the PHA's/IHA's available funding for the proposed contract work, the PHA/IHA may either accept separately priced items (see 8(e) below) or use the following procedure to determine contract award. The PHA/IHA shall apply in turn to each bid (proceeding in order from the apparent low bid to the high bid) each of the separately priced bid deductible items, if any, in their priority order set forth in this solicitation. If upon the application of the first deductible item to all initial bids, a new low bid is within the PHA's/IHA's available funding, then award shall be made to that bidder. If no bid is within the available funding amount, then the PHA/IHA shall apply the second deductible item. The PHA/IHA shall continue this process until an evaluated low bid, if any, is within the PHA's/IHA's available funding. If upon the application of all deductibles, no bid is within the PHA's/IHA's available funding, or if the solicitation does not request separately priced deductibles, the PHA/IHA shall follow its written policy and procedures in making any award under this solicitation.

(c) In the case of tie low bids, award shall be made in accordance with the PHA's/IHA's written policy and procedures.

(d) The PHA/IHA may reject any and all bids, accept other than the lowest bid (e.g., the apparent low bid is unreasonably low), and waive informalities or minor irregularities in bids received, in accordance with the PHA's/IHA's written policy and procedures.

(e) Unless precluded elsewhere in the solicitation, the PHA/IHA may accept any item or combination of items bid.

(f) The PHA/IHA may reject any bid as nonresponsive if it is materially unbalanced as to the prices for the various items of work to be performed. A bid is materially unbalanced when it is based on prices significantly less than cost for some work and prices which are significantly overstated for other work.

(g) A written award shall be furnished to the successful bidder within the period for acceptance specified in the bid and shall result in a binding contract without further action by either party.

9. Bid Guarantee (applicable to construction and equipment contracts exceeding \$25,000)

All bids must be accompanied by a negotiable bid guarantee which shall not be less than five percent (5%) of the amount of the bid. The bid guarantee may be a certified check, bank draft, U.S. Government Bonds at par value, or a bid bond secured by a surety company acceptable to the U.S. Government and authorized to do business in the state where the work is to be performed. In the case where the work under the contract will be performed on an Indian reservation area, the bid guarantee may also be an irrevocable Letter of Credit (see provision 10, Assurance of Completion, below). Certified checks and bank drafts must be made payable to the order of the PHA/IHA. The bid guarantee shall insure the execution of the contract and the furnishing of a method of assurance of completion by the successful bidder as required by the solicitation. Failure to submit a bid guarantee with the bid shall result in the rejection of the bid. Bid guarantees submitted by unsuccessful bidders will be returned as soon as practicable after bid opening.

10. Assurance of Completion

(a) Unless otherwise provided in State law, the successful bidder shall furnish an assurance of completion prior to the execution of any contract under this solicitation. This assurance may be [Contracting Officer check applicable items] —

[] (1) a performance and payment bond in a penal sum of 100 percent of the contract price; or, as may be required or permitted by State law;

[] (2) separate performance and payment bonds, each for 50 percent or more of the contract price;

[] (3) a 20 percent cash escrow;

[] (4) a 25 percent irrevocable letter of credit; or,

[] (5) an irrevocable letter of credit for 10 percent of the total contract price with a monitoring and disbursements agreement with the IHA (applicable only to contracts awarded by an IHA under the Indian Housing Program).

(b) Bonds must be obtained from guarantee or surety companies acceptable to the U.S. Government and authorized to do business in the state where the work is to be performed. Individual sureties will not be considered. U.S. Treasury Circular Number 570, published annually in the Federal Register, lists companies approved to act as sureties on bonds securing Government contracts, the maximum underwriting limits on each contract bonded, and the States in which the company is licensed to do business. Use of companies listed in this circular is mandatory. Copies of the circular may be downloaded on the U.S. Department of Treasury website http://www.fms.treas.gov/c570/index.html, or ordered for a minimum fee by contacting the Government Printing Office at (202) 512-2168.

(c) Each bond shall clearly state the rate of premium and the total amount of premium charged. The current power of attorney for the person who signs for the surety company must be attached to the bond. The effective date of the power of attorney shall not precede the date of the bond. The effective date of the bond shall be on or after the execution date of the contract.

(d) Failure by the successful bidder to obtain the required assurance of completion within the time specified, or within such extended period as the PHA/IHA may grant based upon reasons determined adequate by the PHA/IHA, shall render the bidder ineligible for award. The PHA/IHA may then either award the contract to the next lowest responsible bidder or solicit new bids. The PHA/IHA may retain the ineligible bidder's bid guarantee.

11. Preconstruction Conference (applicable to construction contracts)

After award of a contract under this solicitation and prior to the start of work, the successful bidder will be required to attend a preconstruction conference with representatives of the PHA/IHA and its architect/engineer, and other interested parties convened by the PHA/IHA. The conference will serve to acquaint the participants with the general plan of the construction operation and all other requirements of the contract (e.g., Equal Employment Opportunity, Labor Standards). The PHA/IHA will provide the successful bidder with the date, time, and place of the conference.

12. Indian Preference Requirements (applicable only if this solicitation is for a contract to be performed on a project for an Indian Housing Authority)

(a) HUD has determined that the contract awarded under this solicitation is subject to the requirements of section 7(b) of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450e(b)). Section 7(b) requires that any contract or subcontract entered into for the benefit of Indians shall require that, to the greatest extent feasible

(1) Preferences and opportunities for training and employment (other than core crew positions; see paragraph (h) below) in connection with the administration of such contracts or subcontracts be given to qualified "Indians." The Act defines "Indians" to mean persons who are members of an Indian tribe and defines "Indian tribe" to mean any Indian tribe, band, nation, or other organized group or community, including any Alaska Native village or regional or village corporation as defined in or established pursuant to the Alaska Native Claims Settlement Act, which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians; and,

(2) Preference in the award of contracts or subcontracts in connection with the administration of contracts be given to Indian organizations and to Indian-owned economic enterprises, as defined in section 3 of the Indian Financing Act of 1974 (25 U.S.C. 1452). That Act defines "economic enterprise" to mean any Indianowned commercial, industrial, or business activity established or organized for the purpose of profit, except that the Indian ownership must constitute not less than 51 percent of the enterprise; "Indian organization" to mean the governing body of any Indian tribe or entity established or recognized by such governing body; "Indian" to mean any person who is a member of any tribe, band, group, pueblo, or community which is recognized by the Federal Government as eligible for services from the Bureau of Indian Affairs and any "Native" as defined in the Alaska Native Claims Settlement Act: and Indian "tribe" to mean any Indian tribe, band, group, pueblo, or community including Native villages and Native groups (including corporations organized by Kenai, Juneau, Sitka, and Kodiak) as defined in the Alaska Native Claims Settlement Act, which is recognized by the Federal Government as eligible for services from the Bureau of Indian Affairs.

(b) (1) The successful Contractor under this solicitation shall comply with the requirements of this provision in awarding all subcontracts under the contract and in providing training and employment opportunities.

(2) A finding by the IHA that the contractor, either (i) awarded a subcontract without using the procedure required by the IHA, (ii) falsely represented that subcontracts would be awarded to Indian enterprises or organizations; or, (iii) failed to comply with the contractor's employment and training preference bid statement shall be grounds for termination of the contract or for the assessment of penalties or other remedies.

(c) If specified elsewhere in this solicitation, the IHA may restrict the solicitation to qualified Indian-owned enterprises and Indian organizations. If two or more (or a greater number as specified elsewhere in the solicitation) qualified Indian-owned enterprises or organizations submit responsive bids, award shall be made to the qualified enterprise or organization with the lowest responsive bid. If fewer than the minimum required number of qualified Indian-owned enterprises or organizations submit responsive bids, the IHA shall reject all bids and readvertise the solicitation in accordance with paragraph (d) below.

(d) If the IHA prefers not to restrict the solicitation as described in paragraph (c) above, or if after having restricted a solicitation an insufficient number of qualified Indian enterprises or organizations submit bids, the IHA may advertise for bids from non-Indian as well as Indian-owned enterprises and Indian organizations. Award shall be made to the qualified Indian enterprise or organization with the lowest responsive bid if that bid is -

(1) Within the maximum HUD-approved budget amount established for the specific project or activity for which bids are being solicited; and

(2) No more than the percentage specified in 24 CFR 905.175(c) higher than the total bid price of the lowest responsive bid from any qualified bidder. If no responsive bid by a qualified Indian-owned economic enterprise or organization is within the stated range of the total bid price of the lowest responsive bid from any qualified enterprise, award shall be made to the bidder with the lowest bid.

(e) Bidders seeking to qualify for preference in contracting or subcontracting shall submit proof of Indian ownership with their bids. Proof of Indian ownership shall include but not be limited to:

(1) Certification by a tribe or other evidence that the bidder is an Indian. The IHA shall accept the certification of a tribe that an individual is a member.

(2) Evidence such as stock ownership, structure, management, control, financing and salary or profit sharing arrangements of the enterprise.

(f) (1) All bidders must submit with their bids a statement describing how they will provide Indian preference in the award of subcontracts. The specific requirements of that statement and the factors to used by the IHA in determining the statement's adequacy are included as an attachment to this solicitation. Any bid that fails to include the required statement shall be rejected as nonresponsive. The IHA may require that comparable statements be provided by subcontractors to the successful Contractor, and may require the Contractor to reject any bid or proposal by a subcontractor that fails to include the statement.

(2) Bidders and prospective subcontractors shall submit a certification (supported by credible evidence) to the IHA in any instance where the bidder or subcontractor believes it is infeasible to provide Indian preference in subcontracting. The acceptance or rejection by the IHA of the certification shall be final. Rejection shall disqualify the bid from further consideration.

(g) All bidders must submit with their bids a statement detailing their employment and training opportunities and their plans to provide preference to Indians in implementing the contract; and the number or percentage of Indians anticipated to be employed and trained. Comparable statements from all proposed subcontractors must be submitted. The criteria to be used by the IHA in determining the statement(s)'s adequacy are included as an attachment to this solicitation. Any bid that fails to include the required statement(s), or that includes a statement that does not meet minimum standards required by the IHA shall be rejected as nonresponsive.

(h) Core crew employees. A core crew employee is an individual who is a bona fide employee of the contractor at the time the bid is submitted; or an individual who was not employed by the bidder at the time the bid was submitted, but who is regularly employed by the bidder in a supervisory or other key skilled position when work is available. Bidders shall submit with their bids a list of all core crew employees.

(i) Preference in contracting, subcontracting, employment, and training shall apply not only on-site, on the reservation, or within the IHA's jurisdiction, but also to contracts with firms that operate outside these areas (e.g., employment in modular or manufactured housing construction facilities).

(j) Bidders should contact the IHA to determine if any additional local preference requirements are applicable to this solicitation.

(k) The IHA [] does [] does not [Contracting Officer check applicable box] maintain lists of Indian-owned economic enterprises and Indian organizations by specialty (e.g., plumbing, electrical, foundations), which are available to bidders to assist them in meeting their responsibility to provide preference in connection with the administration of contracts and subcontracts.

U.S. Department of Housing and Urban Development

Office of Public and Indian Housing

Representations, Certifications, and Other Statements of Bidders Public and Indian Housing Programs

Representations, Certifications, and Other Statements of Bidders

Public and Indian Housing Programs

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1. Certificate of Independent Price Determination

(a) The bidder certifies that--

(1) The prices in this bid have been arrived at independently, without, for the purpose of restricting competition, any consultation, communication, or agreement with any other bidder or competitor relating to (i) those prices, (ii) the intention to submit a bid, or (iii) the methods or factors used to calculate the prices offered;

(2) The prices in this bid have not been and will not be knowingly disclosed by the bidder, directly or indirectly, to any other bidder or competitor before bid opening (in the case of a sealed bid solicitation) or contract award (in the case of a competitive proposal solicitation) unless otherwise required by law; and

(3) No attempt has been made or will be made by the bidder to induce any other concern to submit or not to submit a bid for the purpose of restricting competition.

(b) Each signature on the bid is considered to be a certification by the signatory that the signatory--

(1) Is the person in the bidder's organization responsible for determining the prices being offered in this bid or proposal, and that the signatory has not participated and will not participate in any action contrary to subparagraphs (a)(l) through (a)(3) above; or

(2) (i) Has been authorized, in writing, to act as agent for the following principals in certifying that those principals have not participated, and will not participate in any action contrary to subparagraphs (a)(I) through (a)(3) above.

[insert full name of person(s) in the bidder's organization responsible for determining the prices offered in this bid or proposal, and the title of his or her position in the bidder's organization];

(ii) As an authorized agent, does certify that the principals named in subdivision (b)(2)(i) above have not participated, and will not participate, in any action contrary to subparagraphs (a)(1) through (a)(3) above; and

(iii) As an agent, has not personally participated, and will not participate in any action contrary to subparagraphs (a)(1) through (a)(3) above.

(c) If the bidder deletes or modifies subparagraph (a)2 above, the bidder must furnish with its bid a signed statement setting forth in detail the circumstances of the disclosure.

[] [Contracting Officer check if following paragraph is applicable](d) Non-collusive affidavit. (applicable to contracts for construction and equipment exceeding \$50,000)

(1) Each bidder shall execute, in the form provided by the PHA/ IHA, an affidavit to the effect that he/she has not colluded with any other person, firm or corporation in regard to any bid submitted in response to this solicitation. If the successful bidder did not submit the affidavit with his/her bid, he/she must submit it within three (3) working days of bid opening. Failure to submit the affidavit by that date may render the bid nonresponsive. No contract award will be made without a properly executed affidavit.

(2) A fully executed "Non-collusive Affidavit" $\circle{1}$ is, $\circle{1}$ is not included with the bid.

2. Contingent Fee Representation and Agreement

(a) Definitions. As used in this provision:

"Bona fide employee" means a person, employed by a bidder and subject to the bidder's supervision and control as to time, place, and manner of performance, who neither exerts, nor proposes to exert improper influence to solicit or obtain contracts nor holds out as being able to obtain any contract(s) through improper influence.

"Improper influence" means any influence that induces or tends to induce a PHA/IHA employee or officer to give consideration or to act regarding a PHA/IHA contract on any basis other than the merits of the matter.

(b) The bidder represents and certifies as part of its bid that, except for full-time bona fide employees working solely for the bidder, the bidder:

(1) [] has, [] has not employed or retained any person or company to solicit or obtain this contract; and

(2) [] has, [] has not paid or agreed to pay to any person or company employed or retained to solicit or obtain this contract any commission, percentage, brokerage, or other fee contingent upon or resulting from the award of this contract.

(c) If the answer to either (a)(1) or (a)(2) above is affirmative, the bidder shall make an immediate and full written disclosure to the PHA/IHA Contracting Officer.

(d) Any misrepresentation by the bidder shall give the PHA/IHA the right to (1) terminate the contract; (2) at its discretion, deduct from contract payments the amount of any commission, percentage, brokerage, or other contingent fee; or (3) take other remedy pursuant to the contract.

3. Certification and Disclosure Regarding Payments to Influence Certain Federal Transactions (applicable to contracts exceeding \$100,000)

(a) The definitions and prohibitions contained in Section 1352 of title 31, United States Code, are hereby incorporated by reference in paragraph (b) of this certification.

(b) The bidder, by signing its bid, hereby certifies to the best of his or her knowledge and belief as of December 23, 1989 that:

(1) No Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress on his or her behalf in connection with the awarding of a contract resulting from this solicitation;

(2) If any funds other than Federal appropriated funds (including profit or fee received under a covered Federal transaction) have been paid, or will be paid, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress on his or her behalf in connection with this solicitation, the bidder shall complete and submit, with its bid, OMB standard form LLL, "Disclosure of Lobbying Activities;" and

(3) He or she will include the language of this certification in all subcontracts at any tier and require that all recipients of subcontract awards in excess of \$100,000 shall certify and disclose accordingly.

(c) Submission of this certification and disclosure is a prerequisite for making or entering into this contract imposed by section 1352, title 31, United States Code. Any person who makes an expenditure prohibited under this provision or who fails to file or amend the disclosure form to be filed or amended by this provision, shall be subject to a civil penalty of not less than \$10,000, and not more than \$100,000, for each such failure.

(d) Indian tribes (except those chartered by States) and Indian organizations as defined in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450B) are exempt from the requirements of this provision.

4. Organizational Conflicts of Interest Certification

The bidder certifies that to the best of its knowledge and belief and except as otherwise disclosed, he or she does not have any organizational conflict of interest which is defined as a situation in which the nature of work to be performed under this proposed contract and the bidder's organizational, financial, contractual, or other interests may, without some restriction on future activities:

(a) Result in an unfair competitive advantage to the bidder; or,

(b) Impair the bidder's objectivity in performing the contract work.

[] In the absence of any actual or apparent conflict, I hereby certify that to the best of my knowledge and belief, no actual or apparent conflict of interest exists with regard to my possible performance of this procurement.

5. Bidder's Certification of Eligibility

(a) By the submission of this bid, the bidder certifies that to the best of its knowledge and belief, neither it, nor any person or firm which has an interest in the bidder's firm, nor any of the bidder's subcontractors, is ineligible to:

(1) Be awarded contracts by any agency of the United States Government, HUD, or the State in which this contract is to be performed; or,

(2) Participate in HUD programs pursuant to 24 CFR Part 24.

(b) The certification in paragraph (a) above is a material representation of fact upon which reliance was placed when making award. If it is later determined that the bidder knowingly rendered an erroneous certification, the contract may be terminated for default, and the bidder may be debarred or suspended from participation in HUD programs and other Federal contract programs.

6. Minimum Bid Acceptance Period

(a) "Acceptance period," as used in this provision, means the number of calendar days available to the PHA/IHA for awarding a contract from the date specified in this solicitation for receipt of bids.

(b) This provision supersedes any language pertaining to the acceptance period that may appear elsewhere in this solicitation.

(c) The PHA/IHA requires a minimum acceptance period of [Contracting Officer insert time period] calendar days.

(d) In the space provided immediately below, bidders may specify a longer acceptance period than the PHA's/IHA's minimum requirement. The bidder allows the following acceptance period: calendar days.

(e) A bid allowing less than the PHA's/IHA's minimum acceptance period will be rejected.

(f) The bidder agrees to execute all that it has undertaken to do, in compliance with its bid, if that bid is accepted in writing within (1) the acceptance period stated in paragraph (c) above or (2) any longer acceptance period stated in paragraph (d) above.

7. Small, Minority, Women-Owned Business Concern Representation

The bidder represents and certifies as part of its bid/ offer that it --

(a) [] is, [] is not a small business concern. "Small business concern," as used in this provision, means a concern, including its affiliates, that is independently owned and operated, not dominant in the field of operation in which it is bidding, and qualified as a small business under the criteria and size standards in 13 CFR 121.

(b) [] is, [] is not a women-owned business enterprise. "Womenowned business enterprise," as used in this provision, means a business that is at least 51 percent owned by a woman or women who are U.S. citizens and who also control and operate the business.

(c) [] is, [] is not a minority business enterprise. "Minority business enterprise," as used in this provision, means a business which is at least 51 percent owned or controlled by one or more minority group members or, in the case of a publicly owned business, at least 51 percent of its voting stock is owned by one or more minority group members, and whose management and daily operations are controlled by one or more such individuals. For the purpose of this definition, minority group members are:

(Check the block applicable to you)

- [] Black Americans
- [] Hispanic Americans
- [] Asian Pacific Americans
- [] Asian Indian Americans
- [] Native Americans
- [] Hasidic Jewish Americans
- 8. Indian-Owned Economic Enterprise and Indian Organization Representation (applicable only if this solicitation is for a contract to be performed on a project for an Indian Housing Authority)

The bidder represents and certifies that it:

(a) [] is, [] is not an Indian-owned economic enterprise. "Economic enterprise," as used in this provision, means any commercial, industrial, or business activity established or organized for the purpose of profit, which is at least 51 percent Indian owned. "Indian," as used in this provision, means any person who is a member of any tribe, band, group, pueblo, or community which is recognized by the Federal Government as eligible for services from the Bureau of Indian Affairs and any "Native" as defined in the Alaska Native Claims Settlement Act.

(b) [] is, [] is not an Indian organization. "Indian organization," as used in this provision, means the governing body of any Indian tribe or entity established or recognized by such governing body. Indian "tribe" means any Indian tribe, band, group, pueblo, or community including Native villages and Native groups (including corporations organized by Kenai, Juneau, Sitka, and Kodiak) as defined in the Alaska Native Claims Settlement Act, which is recognized by the Federal Government as eligible for services from the Bureau of Indian Affairs.

9. Certification of Eligibility Under the Davis-Bacon Act (applicable to construction contracts exceeding \$2,000)

(a) By the submission of this bid, the bidder certifies that neither it nor any person or firm who has an interest in the bidder's firm is a person or firm ineligible to be awarded contracts by the United States Government by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(b) No part of the contract resulting from this solicitation shall be subcontracted to any person or firm ineligible to be awarded contracts by the United States Government by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(c) The penalty for making false statements is prescribed in the U. S. Criminal Code, 18 U.S.C. 1001.

10. Certification of Nonsegregated Facilities (applicable to contracts exceeding \$10,000)

(a) The bidder's attention is called to the clause entitled **Equal Employment Opportunity** of the General Conditions of the Contract for Construction.

(b) "Segregated facilities," as used in this provision, means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees, that are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin because of habit, local custom, or otherwise.

(c) By the submission of this bid, the bidder certifies that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The bidder agrees that a breach of this certification is a violation of the Equal Employment Opportunity clause in the contract.

(d) The bidder further agrees that (except where it has obtained identical certifications from proposed subcontractors for specific time periods) prior to entering into subcontracts which exceed \$10,000 and are not exempt from the requirements of the Equal Employment Opportunity clause, it will:

(1) Obtain identical certifications from the proposed subcontractors;

(2) Retain the certifications in its files; and

(3) Forward the following notice to the proposed subcontractors (except if the proposed subcontractors have submitted identical certifications for specific time periods):

Notice to Prospective Subcontractors of Requirement for Certifications of Nonsegregated Facilities

A Certification of Nonsegregated Facilities must be submitted before the award of a subcontract exceeding \$10,000 which is not exempt from the provisions of the Equal Employment Opportunity clause of the prime contract. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semiannually, or annually).

Note: The penalty for making false statements in bids is prescribed in 18 U.S.C. 1001.

11. Clean Air and Water Certification (applicable to contracts exceeding \$100,000)

The bidder certifies that:

(a) Any facility to be used in the performance of this contract [] is, [] is not listed on the Environmental Protection Agency List of Violating Facilities:

(b) The bidder will immediately notify the PHA/IHA Contracting Officer, before award, of the receipt of any communication from the Administrator, or a designee, of the Environmental Protection Agency, indicating that any facility that the bidder proposes to use for the performance of the contract is under consideration to be listed on the EPA List of Violating Facilities; and,

(c) The bidder will include a certification substantially the same as this certification, including this paragraph (c), in every nonexempt subcontract.

12. Previous Participation Certificate (applicable to construction and equipment contracts exceeding \$50,000)

(a) The bidder shall complete and submit with his/her bid the Form HUD-2530, "Previous Participation Certificate." If the successful bidder does not submit the certificate with his/her bid, he/she must submit it within three (3) working days of bid opening. Failure to submit the certificate by that date may render the bid nonresponsive. No contract award will be made without a properly executed certificate.

(b) A fully executed "Previous Participation Certificate"

[] is, [] is not included with the bid.

13. Bidder's Signature

The bidder hereby certifies that the information contained in these certifications and representations is accurate, complete, and current.

(Signature and Date)

(Typed or Printed Name)

(Title)

(Company Name)

(Company Address)

To the: The Housing Authority of the City of Frederick 209 Madison Street Frederick, MD 21701

Prospective Bidders:

The undersigned, having familiarized themselves with the local conditions affecting the cost of the work, and with the Specifications, (including Invitation for Bids, Instructions to Bidders, this Bid Form, the form of Bid Bond, the form of Non-Collusive Affidavit, the form of Contract, the form of Performance and Payment Bond, the General Conditions, extent of work, the Technical Specifications and Drawings,) and Addenda (if any thereto) as issued by the Housing Authority of the City of Frederick (HACF), 209 Madison Street, Frederick, Maryland, 21701 hereby proposes to furnish all labor, materials, equipment, and services necessary and reasonable for the *THE CARVER COMMUNITY CENTER EXPANSION PROJECT AT 207 MADISON STREET FOR THE HOUSING AUTHORITY OF THE CITY OF FREDERICK*, Modernization for the Housing Authority of the City of Frederick, for the Sum of

Dollars \$_____

(with the divisional cost breakdown attached on page 00300-2).

The award shall be made on a lump sum contract price basis. The lump sum price stated shall therefore include all costs for furnishing and installing all labor, materials, equipment, rentals, overhead and profit, bond costs, mobilization, stakeout, permit or license fees, providing sanitary facilities, contract administration, and all incidentals necessary to complete all work. The lump sum price stated above is for completion of all work as described in the Specification Manual and Drawings (if any).

<u>Bid Opening and Award</u>. Bids shall be opened publicly and in the presence of at least one (1) witness. An abstract of bids shall be recorded and the bids shall be available for public inspection. Award shall be made as provided in the Invitation for Bids by written notice to the successful Bidder. If equal low bids are received from responsible Bidders, the determination of the lowest Bidder shall be made by drawing lots or similar random method. Prior to the awarding of any contract, the bid proposals are submitted to the Board of Commissioners of the Housing Authority for approval. If only one (1) responsive bid is received from a responsible Bidder, award, in addition to the above, shall not be made unless a cost or price analysis verifies the reasonableness of the price.

BID FORM - BREAKDOWN

Cost breakdown below shall be completed for each responsive bidder. Should a tabulation of the enumerated divisions produce a different total from the Lump Sum amount certified elsewhere in the bid, the Lump Sum submitted on the Bid Form shall take precedence.

Division 01 - General Requirements	<u>\$</u>
Division 02 - Existing Conditions	<u></u> \$
Division 03 - Concrete	\$
Division 04 - Masonry	\$
Division 05 - Metals	\$
Division 06 - Wood, Plastics, And Composites	\$
Division 07 - Thermal and Moisture Protection	\$
Division 08 - Openings	\$
Division 09 - Finishes	\$
Division 10 - Specialties	\$
Division 11 - Equipment	\$
Division 12 - Furnishings	\$
Division 21 - Fire Suppression	\$
Division 22 - Plumbing	\$
Division 23 - Heating, Ventilating, And Air Conditioning	\$
Division 26 - Electrical	\$
Division 27 - Communications	\$
Division 28 - Electronic Safety and Security	\$
Division 31 - Earthwork	<u></u>
Division 32 - Exterior Improvements	<u> </u>
Division 33 - Utilities	<u>\$</u>

TOTAL LUMP SUM BASE BID_____\$_____

2. The undersigned acknowledges receipt of the following Addenda:

- 3. In submitting this bid, it is understood that the right is reserved by HACF to reject any and all bids. If written notice of acceptance of this bid is mailed, telegraphed, or delivered to the undersigned within <u>ninety (90)</u> days after the opening thereof, or at any time thereafter before this bid is withdrawn, the undersigned agrees to execute and deliver a contract in the prescribed form and furnish the required bonds, cash escrow or irrevocable letter of credit within ten (10) days after the contract is presented to them for signature.
- 4. Attached hereto is an affidavit in proof that the undersigned has not entered into any collusion with any person in respect to this proposal or any other proposal or the submitting of proposals for the contract for which this proposal is submitted.
- 5. The Bidder presents that they () have, () have not, participated in a previous contract or subcontract subject to the equal opportunity clause prescribed in Executive Order 11246 of the Secretary of Labor; that they () have, () have not, filed all required compliance reports; and that representations indicating submission of required compliance reports, signed by proposed sub-contractors, shall be obtained prior to sub-contract awards. (The above representation need not be submitted in connection with Contractors or sub-contractors which are exempt from the clause).
- Certification of Nonsegregated Facilities: By signing this bid, the Bidder certifies that they do not 6. maintain or provide for their employees any segregated facilities at any of their establishments and that they do not permit their employees to perform their services at any location, under their control, where segregated facilities are maintained. The Bidder certifies further that they will not maintain or provide for their employees any segregated facilities at any of their establishments, and that they will not permit their employees to perform their services at any location, under their control, where segregated facilities are maintained. The Bidder agrees that a breach of this certification is a violation of the Equal Opportunity clause in this contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms, washrooms, restaurants and other eating areas, time clock, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin, because of habit, local custom, or otherwise. The Bidder further agrees that (except where they have obtained identical certifications from proposed sub-contractors prior to the award of the sub-contracts exceeding \$10,000, which are not exempt from the provisions of the Equal Opportunity Clause) that they shall retain such certifications in their files, and that they shall forward a notice to their proposed sub-contractors as provided in the Instructions to Bidders.

7. Liquidated Damages: Although it is difficult to determine the actual daily amount of Liquidated Damages which occur, all parties agree that there are damages on a daily basis if this project is not completed on time as specified. The Contractor and their sureties shall be liable for and shall pay to HACF the sum hereinafter stipulated as fixed and agreed Liquidated Damages for each calendar day of delay until the work is completed and accepted. See Item #9 below for required time of completion.

<u>\$ 100.00</u> per calendar day.

Refer to General Conditions, section 00700, page 12, paragraph 33, and section 00800, page 2, item 1.7.

- Prevailing Salaries or Wages: HACF shall submit to the Contractor a copy of the latest prevailing wage and salary schedule in accordance with the Supplementary Conditions (section 00800) to the General Conditions for Construction Contracts-Public Housing Programs, section 00700, page 15, paragraph 46, Labor Standards-Davis Bacon and Other Related Acts. (Note: The Penalty for making false statements in offers is prescribed in U.S.C. 1001.)
- 9. Time of Completion: The undersigned agrees to execute a contract for the above stated compensation and to guarantee the completion of the project within <u>three hundred (300)</u> calendar days after commencement of work as established in the Notice to Proceed. Completion is to be defined as the date of any and all final acceptance certificates as is required by the City of Frederick Department of Permits and Inspections and all punch list items are satisfactorily completed and accepted by HACF.

Name of Company

Date: _____, 20____

____SEAL

Individual Principal - Signature & Seal

Official Address:

HOUSING AUTHORITY OF THE CITY OF FREDERICK 209 Madison Street Frederick, MD 21701

BID BOND

KNOW ALL MEN BY THESE PRESENT, that we the Undersigned, as Principal, and (Name of Surety), as Surety are held and firmly bound unto the Housing Authority of the City of Frederick hereinafter referred to as the HACF, in the penal sum of ______ Dollars, plus reasonable attorney's fees and court costs that may be incurred by the HACF to enforce provisions of this Bid Bond, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these present.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT WHEREAS the Principal has submitted the accompanying bid, dated ______, 20___, for the *THE CARVER* COMMUNITY CENTER EXPANSION PROJECT AT 207 MADISON STREET FOR THE HOUSING AUTHORITY OF THE CITY OF FREDERICK, Frederick, Maryland 21701, Modernization for the Housing Authority of the City of Frederick.

NOW, THEREFORE, if the Principal shall not withdraw said bid within the period specified therein after the opening of the same or, if no period be specified, within sixty (60) days after the said opening, and shall within ten (10) days after the prescribed forms are presented to him for signature, enter into a written contract with the HACF in accordance with the bid as accepted, and give bond with good and sufficient surety or sureties, as may be required, for the faithful performance and proper fulfillment of such contract; or in the event of the withdrawal of said bid within the period specified, or the failure to enter into such contract and give such bond within the time specified, if the Principal shall pay the HACF the difference between the amount specified in said bid and the amount for which the HACF may procure the required work or supplies or both, if the latter amount be in excess of the former; then the above obligation shall be void and of no effect, otherwise to remain in full force and virtue, and upon the expiration of ten (10) days after the prescribed forms are presented to the Principal for signature, the penal sum stated herein above shall be due and owing to the HACF.

IN WITNESS WHEREOF, the above bounden parties have executed this instrument under their several seals this ______ day of ______, 20___, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

IN THE PRESENCE OF:

Seal

(Individual Principal)

(Business Address)

S<u>eal</u>

(Individual Principal)

(Business Address)

ATTEST:

(Corporate Principal)

(Business Address)

By: _____ (Affix Corporate Seal)

ATTEST:

(Power of Attorney for person signing for surety company must be attached to bond).

CERTIFICATE AS TO CORPORATE PRINCIPAL

I,	, certify that I am the	, Secretary of
the corporation r	named as Principal in the within bond, that	·
who signed the	said bond on behalf of the Principal was the	en
of said corporation	on; that I know his signature, and his signate	ure thereto is genuine; and
that said bond	was duly signed, sealed, and attested to	for and in behalf of said
corporation by au	uthority of its governing body.	

Signature_____

BIDDER'S QUALIFICATION FORM

All questions must be answered. The data given must be clear and comprehensive. This statement must be notarized.

1.	Name of Bidder:
2.	Business Address:
3.	When Organized:
4.	Where Incorporated:
5.	How many years have you been engaged in the contracting business under present firm or trading name?
5.	Financial statement: Attach letter separately
7.	Credit available for this contract:\$(attach letter)
3.	Contracts now on hand (gross amount):\$
Э.	Plan of Organization:
10.	Personnel of Organization:
11.	
12.	Have you ever defaulted on a contract?
13.	Will you, upon request, furnish any other information that the HACF may require?
14.	The undersigned hereby authorizes and requests any person to furnish any information requested by the HACF
	in verification of the recitals comprising this Bidder's Qualification Form.
	Dated this day of 20
	Dated this day of, 20
	Name of Bidder
	Ву:
	Title:
	State of:
	County of:
	, being duly sworn, deposes and says that s/he is
	of and that the
ä	answers to the foregoing questions and all statements therein contained are true and correct.
	Sworn before me this day of 20
	3worn before the this day of, 20, 20
	My commission expires:
	Notary Public

NONCOLLUSIVE AFFIDAVIT

State of _____

County of _____

_____, being first duly sworn, deposes and says:

That he/she is ______ the party making the foregoing proposal or bid, that such proposal or bid is genuine and not collusive or sham; and that said Bidder has not colluded, conspired, connived or agreed, directly or indirectly, with any bidder or person, to put in a sham bid or to refrain from bidding, and has not in any manner, directly or indirectly, sought by agreement or collusion, or communication or conference, with any person, to fix any overhead, profit or cost element of said bid price, or that of any other bidder, or to secure any advantage against the <u>HACF</u> or any person interested in the proposed contract; and that all statements in said proposal and/or bid are true.

Bv	
~	

Date _____

Subscribed and sworn to before me this _____ day of _____, 20____.

My commission expires _____, 20____.

NOTICE TO PROCEED

Name of Contractor

Address

Date

MD003000001 Project No.

Carver Community Room, 207 Madison St., Frederick, MD 21701 Location

City/State/Zip

Pursuant to the terms of contract dated ______, to perform and complete all work required for the <u>THE</u> <u>CARVER COMMUNITY CENTER EXPANSION PROJECT AT 207 MADISON STREET FOR THE HOUSING</u> <u>AUTHORITY OF THE CITY OF FREDERICK</u> in Frederick, Maryland you are hereby notified to commence work thereunder at the start of business on ______. The time for completion set forth is <u>three hundred (300)</u> calendar days, including the starting day, which establishes______, as the completion date. It is the responsibility of the contractor to meet the schedule as set forth and in accordance with the terms and conditions of the contract. Failure to comply with the schedule will result in the enforcement of the liquidated damages stated in the contract (Section 00300, pages 2 and 3, item 7; Section 00700, page 12, paragraph 33; and Section 00800, page 2, item 1.7).

Please note carefully and fulfill the requirements of the contract regarding the submittal and approval of required Insurance, in strict accordance with the General Conditions, section 00700, pages 12 & 13, paragraph 36.

The contractor shall also contact the HACF in writing within three (3) days prior to mobilization on the project to enable the PHA to coordinate this work with others.

The contractor shall after receipt of this notice send to the HACF copies of all required permits (if any) for work to be performed under this contract. Failure to comply with these instructions shall constitute a breach of contract.

You are informed that <u>Mr. E. Kevin Lollar</u> has been appointed Contracting Officer and is duly authorized to administer your contract for and in the name of the Housing Authority of the City of Frederick.

Please acknowledge receipt of this Notice by signing, dating, and returning all copies promptly to this office.

ACCEPTED:

THE HOUSING AUTHORITY OF THE CITY OF FREDERICK

By:		
•		

Date:	

By: _____ E. Kevin Lollar

Title: <u>Executive Director</u>

Date: _____

CONTRACT FORM

This Agreement, made this ______ day of ______ in the year Two Thousand and ______,

by and between ______, a corporation organized and existing under the

laws of the State of Maryland, hereinafter referred to as the "Contractor", and the Housing Authority of

the City of Frederick, hereinafter referred to as the "HACF."

WITNESSETH, that the Contractor and the HACF for the consideration stated herein must mutually agree as follows:

<u>ARTICLE 1:</u> Statement of Work: The Contractor shall furnish all labor, materials, equipment, and services, and perform and complete all work required for the <u>The Carver Community Center Expansion</u> <u>Project at 207 Madison Street for the Housing Authority of The City Of Frederick</u>, Frederick, Maryland, Modernization for the Housing Authority of the City of Frederick in strict accordance with the Specifications, Drawings, and Addenda (if any thereto), referred to therein, all as prepared by (<u>contractor here</u>), which said Specifications, Drawings, and Addenda are incorporated herein by reference and made a part thereof.

<u>ARTICLE 2: The Contract Price</u>: The HACF shall pay the contractor for the performance of the Contract, in current funds, subject to additions and deductions as provided in the Specifications, the sum of

_____dollars (\$______).

ARTICLE 3: The Contract Documents: The Contract shall consist of the following component parts:

- a. This Instrument
- b. General Conditions
- c. Special Conditions
- d. Drawings
- e. Specification for Construction/Project Manual
- f. Addenda, if any
- g. Executive Order 11246, Equal Employment Opportunity
- h. Notice of Requirements of Affirmative Action to ensure Equal Employment Opportunity
- i. Employment and Business Opportunity HUD title 24, Part 135, Section 3
- j. Minority Business Clause

This instrument, together with the other documents enumerated in this Article 3, which said other documents are as fully a part of the Contract as if hereto attached or herein repeated, form the Contract. In the event that any provision in any component part of this Contract conflicts with any provision of any other component part, the provision of the component part first enumerated in this Article 3 shall govern, except as otherwise specifically stated. The various provisions in Addenda shall be construed in the order or preference of the component part of the Contract each modified.

IN WITNESS THEREOF, the parties hereto have caused This Instrument to be executed in <u>3</u> original counterparts as of the day and year first above written.

Attest:

Signature of Witness	(Contractor)	
	Ву	
Printed Name of Witness	Title	
	Business Address:	
	Street	-
	City/State/Zip	-
Signature of Witness	Housing Authority of the City of Frede	<u>erick</u>
Printed Name of Witness	By	
	Title <u>Executive Director</u>	
	Business Address:	
	209 Madison Street Street	
	<u>Frederick, MD 21701</u> City/State/Zip	
Certifications:		
l,	, certify that I am the	
of the corporation/company named as Contracto	or herein, that	who
signed this Contract on behalf of the Contractor, was then		
corporation/company; that said Contract was du	Ily signed for and in behalf of said corporation	ı/company
by authority of its governing body, and is within	the scope of its corporate powers.	

_ Corporate/Company Seal

HOUSING AUTHORITY OF THE CITY OF FREDERICK 209 Madison Street Frederick, MD 21701

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENT, that we,

_____, as Principal, and

are held and firmly bound unto the Housing Authority of the City of Frederick, the penal sum of ______ Dollars, (\$), plus reasonable attorney's fees and court costs that may be

incurred by the Housing Authority of the City of Frederick to enforce the provisions of this Performance Bond, for the payment of which sum well and truly to be made we bond ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT WHEREAS the Principal has submitted the accompanying bid, dated ______, 20____, for the THE CARVER COMMUNITY CENTER EXPANSION PROJECT AT 207 MADISON STREET FOR THE HOUSING AUTHORITY OF THE CITY OF FREDERICK, in Frederick, Marvland, Modernization for the Housing Authority of the City of Frederick.

NOW, THEREFORE, if the principal shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term of said contract and any extensions thereof that may be granted by the Housing Authority of the City of Frederick with or without notice to the surety, and shall also well and truly perform and fulfill all undertakings, covenants, terms, conditions, and agreements of any and all duly authorized modifications of said Contract, notice to surety being hereby waived, then this obligation to be void, otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above bounden parties have executed this instrument under their several seals this _____ day of _____, 20__, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

ATTEST:

(Corporation)

By____ (Corporate Principal)

(Business Address)

(Affix Corporate Seal)

ATTEST:

(Corporate Surety)

(Business Address)

By _____

(Affix Corporate/Company Seal)

The rate of the premium on this bond is \$_____ per thousand on the Contract Price. (The above must be filled in by the corporate surety.)

CERTIFICATE AS TO CORPORATE/COMPANY PRINCIPAL

I,	certify that I am the	
	of the corporation/company named as principal in	
the within bond, that	who signed the said bond on behalf of	
the principal was then	of said corporation/company; that I know	
his signature and his signature thereto is g	enuine and that said bond was duly signed, sealed, and	
attested to for and in behalf of said corpora	ation/company by authority of its governing body.	

Signature

HOUSING AUTHORITY OF THE CITY OF FREDERICK 209 Madison Street Frederick, MD 21701

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS, That We, ______as Surety, are held and firmly bound unto the Housing Authority of the City of Frederick, as Obligee, in the penal sum of ______Dollars (\$_____), plus reasonable attorney's fees and court costs that may be incurred by the Obligee to enforce the provisions of this Payment bond for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, and firmly be these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT WHEREAS the Principal has submitted the accompanying bid, dated _______, 20____, for THE CARVER COMMUNITY CENTER EXPANSION PROJECT AT 207 MADISON STREET FOR THE HOUSING AUTHORITY OF THE CITY OF FREDERICK, Frederick, Maryland, Modernization for the Housing Authority of the City of Frederick.

NOW, THEREFORE, the condition of this obligation is such that if the Principal shall promptly make payment to all claimants, for all labor and material used in the performance of the building contract, and any and all modifications of said contract that may hereafter be made, notice to the surety of modifications being hereby waived, before any liens therefor shall accrue or be filed according to law, and shall pay and discharge of record all such liens which may accrue and be filed, and shall pay all costs, expenses, damages, and attorney's fees which the Obligee may incur with respect to any such liens, and shall indemnify the Obligee against all liability by reason of such liens, then this obligation shall be void; otherwise this obligation shall remain in full force.

IN WITNESS WHEREOF, the above bounden parties have executed this instrument under their several seals this _____ day of _____, 20__, in the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

IN THE PRESENCE OF:		
		(Seal)
	Individual Principal	
	Business Address	
Corporate Principal		
Business Address		
	Affix Corporate Seal	
*****	*****	*****
ATTEST:		
Corporate Surety		
Business Address		
By Affix Corporate Seal		
The rate of premium of this bond is \$		_per thousand.
Total amount of premium charged \$ (The above must be filled in by corpora	ate surety)	

CERTIFICATE AS TO CORPORATE PRINCIPAL

I,certify that I am t		
	of the corporation/company named as	
principal in the within bond, that	who signed the	
said bond on behalf of the principal was	thenof said	
corporation/company; that I know his signa	ture and his signature thereto is genuine and	
that said bond was duly signed, sealed,	and attested to for and in behalf of said	
corporation/company by authority of its gov	erning body.	

Signature

General Conditions for Construction Contracts - Public Housing Programs

U.S. Department of Housing and UrbanDev elopment Office of Public and Indian Housing OMB Approval No. 2577-0157 (exp. 11/30/2023)

Applicability. This form is applicable to any construction/development contract greater than \$150,000.

Public reporting burden for this collection of information is estimated to average 1 hour. This includes the time for collecting, reviewing, and reporting the data. The information requested is required to obtain a benefit. This form includes those clauses required by OMB's common rule on grantee procurement, implemented at HUD in 2 CFR 200, and those requirements set forth in Section 3 of the Housing and Urban Development Act of 1968 and its amendment by the Housing and Community Development Act of 1992, implemented by HUD at 24 CFR Part 135. The form is required for construction contracts awarded by Public Housing Agencies (PHAs). The form is used by Housing Authorities in solicitations to provide necessary contract clauses. If the form were not used, PHAs would be unable to enforce their contracts... There are no assurances of confidentiality. HUD may not conduct or sponsor, and an applicant is not required to respond to a collection of information unless it displays a currently valid OMB control number.

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1. Definitions

- (a) "Architect" means the person or other entity engaged by the PHA to perform architectural, engineering, design, and other services related to the work as provided for in the contract. When a PHA uses an engineer to act in this capacity, the terms "architect" and "engineer" shall be synonymous. The Architect shall serve as a technical representative of the Contracting Officer. The Architect's authority is as set forth elsewhere in this contract.
- (b) "Contract" means the contract entered into between the PHA and the Contractor. It includes the forms of Bid, the Bid Bond, the Performance and Payment Bond or Bonds or other assurance of completion, the Certifications, Representations, and Other Statements of Bidders (form HUD-5370), these General Conditions of the Contract for Construction (form HUD-5370), the applicable wage rate determinations from the U.S. Department of Labor, any special conditions included elsewhere in the contract, the specifications, and drawings. It includes all formal changes to any of those documents by addendum, change order, or other modification.
- (c) "Contracting Officer" means the person delegated the authority by the PHA to enter into, administer, and/or terminate this contract and designated as such in writing to the Contractor. The term includes any successor Contracting Officer and any duly authorized representative of the Contracting Officer also designated in writing. The Contracting Officer shall be deemed the authorized agent of the PHA in all dealings with the Contractor.
- (d) "Contractor" means the person or other entity entering into the contract with the PHA to perform all of the work required under the contract.
- (e) "Drawings" means the drawings enumerated in the schedule of drawings contained in the Specifications and as described in the contract clause entitled Specifications and Drawings for Construction herein.
- (f) "HUD" means the United States of America acting through the Department of Housing and Urban Development including the Secretary, or any other person designated to act on its behalf. HUD has agreed, subject to the provisions of an Annual Contributions Terms and Conditions (ACC), to provide financial assistance to the PHA, which includes assistance in financing the work to be performed under this contract. As defined elsewhere in these General Conditions or the contract documents, the determination of HUD may be required to authorize changes in the work or for release of funds to the PHA for payment to the Contractor. Notwithstanding HUD's role, nothing in this contract shall be construed to create any contractual relationship between the Contractor and HUD.
- (g) "Project" means the entire project, whether construction or rehabilitation, the work for which is provided for in whole or in part under this contract.
- (h) "PHA" means the Public Housing Agency organized under applicable state laws which is a party to this contract.
- (j) "Specifications" means the written description of the technical requirements for construction and includes the criteria and tests for determining whether the requirements are met.
- (I) "Work" means materials, workmanship, and manufacture and fabrication of components.

2. Contractor's Responsibility for Work

- (a) The Contractor shall furnish all necessary labor, materials, tools, equipment, and transportation necessary for performance of the work. The Contractor shall also furnish all necessary water, heat, light, and power not made available to the Contractor by the PHA pursuant to the clause entitled Availability and Use of Utility Services herein.
- (b) The Contractor shall perform on the site, and with its own organization, work equivalent to at least [] (12 percent unless otherwise indicated) of the total amount of work to be performed under the order. This percentage may be reduced by a supplemental agreement to this order if, during performing the work, the Contractor requests a reduction and the Contracting Officer determines that the reduction would be to the advantage of the PHA.
- (c) At all times during performance of this contract and until the work is completed and accepted, the Contractor shall directly superintend the work or assign and have on the work site a competent superintendent who is satisfactory to the Contracting Officer and has authority to act for the Contractor.
- (d) The Contractor shall be responsible for all damages to persons or property that occur as a result of the Contractor's fault or negligence, and shall take proper safety and health precautions to protect the work, the workers, the public, and the property of others. The Contractor shall hold and save the PHA, its officers and agents, free and harmless from liability of any nature occasioned by the Contractor's performance. The Contractor shall also be responsible for all materials delivered and work performed until completion and acceptance of the entire work, except for any completed unit of work which may have been accepted under the contract.
- (e) The Contractor shall lay out the work from base lines and bench marks indicated on the drawings and be responsible for all lines, levels, and measurements of all work executed under the contract. The Contractor shall verify the figures before laying out the work and will be held responsible for any error resulting from its failure to do so.
- (f) The Contractor shall confine all operations (including storage of materials) on PHA premises to areas authorized or approved by the Contracting Officer.
- (g) The Contractor shall at all times keep the work area, including storage areas, free from accumulations of waste materials. After completing the work and before final inspection, the Contractor shall (1) remove from the premises all scaffolding, equipment, tools, and materials (including rejected materials) that are not the property of the PHA and all rubbish caused by its work; (2) leave the work area in a clean, neat, and orderly condition satisfactory to the Contracting Officer; (3) perform all specified tests; and, (4) deliver the installation in complete and operating condition.
- (h) The Contractor's responsibility will terminate when all work has been completed, the final inspection made, and the work accepted by the Contracting Officer. The Contractor will then be released from further obligation except as required by the warranties specified elsewhere in the contract.

3. Architect's Duties, Responsibilities, and Authority

(a) The Architect for this contract, and any successor, shall be designated in writing by the Contracting Officer.

- (b) The Architect shall serve as the Contracting Officer's technical representative with respect to architectural, engineering, and design matters related to the work performed under the contract. The Architect may provide direction on contract performance. Such direction shall be within the scope of the contract and may not be of a nature which: (1) institutes additional work outside the scope of the contract; (2) constitutes a change as defined in the Changes clause herein; (3) causes an increase or decrease in the cost of the contract; (4) alters the Construction Progress Schedule; or (5) changes any of the other express terms or conditions of the contract.
- (c) The Architect's duties and responsibilities may include but shall not be limited to:
 - (1) Making periodic visits to the work site, and on the basis of his/her on-site inspections, issuing written reports to the PHA which shall include all observed deficiencies. The Architect shall file a copy of the report with the Contractor's designated representative at the site;
 - (2) Making modifications in drawings and technical specifications and assisting the Contracting Officer in the preparation of change orders and other contract modifications for issuance by the Contracting Officer;
 - (3) Reviewing and making recommendations with respect to - (i) the Contractor's construction progress schedules; (ii) the Contractor's shop and detailed drawings; (iii) the machinery, mechanical and other equipment and materials or other articles proposed for use by the Contractor; and, (iv) the Contractor's price breakdown and progress payment estimates; and,
 - (4) Assisting in inspections, signing Certificates of Completion, and making recommendations with respect to acceptance of work completed under the contract.

4. Other Contracts

The PHA may undertake or award other contracts for additional work at or near the site of the work under this contract. The Contractor shall fully cooperate with the other contractors and with PHA employees and shall carefully adapt scheduling and performing the work under this contract to accommodate the additional work, heeding any direction that may be provided by the Contracting Officer. The Contractor shall not commit or permit any act that will interfere with the performance of work by any other contractor or by PHA employees

Construction Requirements

5. Pre-construction Conference and Notice to Proceed

- (a) Within ten calendar days of contract execution, and prior to the commencement of work, the Contractor shall attend a preconstruction conference with representatives of the PHA, its Architect, and other interested parties convened by the PHA. The conference will serve to acquaint the participants with the general plan of the construction operation and all other requirements of the contract. The PHA will provide the Contractor with the date, time, and place of the conference.
- (b) The contractor shall begin work upon receipt of a written Notice to Proceed from the Contracting Officer or designee. The Contractor shall not begin work prior to receiving such notice.

6. Construction Progress Schedule

- (a) The Contractor shall, within five days after the work commences on the contract or another period of time determined by the Contracting Officer, prepare and submit to the Contracting Officer for approval three copies of a practicable schedule showing the order in which the Contractor proposes to perform the work, and the dates on which the Contractor contemplates starting and completing the several salient features of the work (including acquiring labor, materials, and equipment). The schedule shall be in the form of a progress chart of suitable scale to indicate appropriately the percentage of work scheduled for completion by any given date during the period. If the Contractor fails to submit a schedule within the time prescribed, the Contracting Officer may withhold approval of progress payments or take other remedies under the contract until the Contractor submits the required schedule.
- (b) The Contractor shall enter the actual progress on the chart as required by the Contracting Officer, and immediately deliver three copies of the annotated schedule to the Contracting Officer. If the Contracting Officer determines, upon the basis of inspection conducted pursuant to the clause entitled Inspection and Acceptance of Construction, herein that the Contractor is not meeting the approved schedule, the Contractor shall take steps necessary to improve its progress, including those that may be required by the Contracting Officer, without additional cost to the PHA. In this circumstance, the Contracting Officer may require the Contractor to increase the number of shifts, overtime operations, days of work, and/or the amount of construction plant, and to submit for approval any supplementary schedule or schedules in chart form as the Contracting Officer deems necessary to demonstrate how the approved rate of progress will be regained.
- (c) Failure of the Contractor to comply with the requirements of the Contracting Officer under this clause shall be grounds for a determination by the Contracting Officer that the Contractor is not prosecuting the work with sufficient diligence to ensure completion within the time specified in the Contract. Upon making this determination, the Contracting Officer may terminate the Contractor's right to proceed with the work, or any separable part of it, in accordance with the Default clause of this contract.

7. Site Investigation and Conditions Affecting the Work

(a) The Contractor acknowledges that it has taken steps reasonably necessary to ascertain the nature and location of the work, and that it has investigated and satisfied itself as to the general and local conditions which can affect the work or its cost, including but not limited to, (1) conditions bearing upon transportation, disposal, handling, and storage of materials; (2) the availability of labor, water, electric power, and roads;(3) uncertainties of weather, river stages, tides, or similar physical conditions at the site; (4) the conformation and conditions of the ground; and (5) the character of equipment and facilities needed preliminary to and during work performance. The Contractor also acknowledges that it has satisfied itself as to the character, quality, and quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is

reasonably ascertainable from an inspection of the site, including all exploratory work done by the PHA, as well as from the drawings and specifications made a part of this contract. Any failure of the Contractor to take the actions described and acknowledged in this paragraph will not relieve the Contractor from responsibility for estimating properly the difficulty and cost of successfully performing the work, or for proceeding to successfully perform the work without additional expense to the PHA.

(b) The PHA assumes no responsibility for any conclusions or interpretations made by the Contractor based on the information made available by the PHA. Nor does the PHA assume responsibility for any understanding reached or representation made concerning conditions which can affect the work by any of its officers or agents before the execution of this contract, unless that understanding or representation is expressly stated in this contract.

8. Differing Site Conditions

- (a) The Contractor shall promptly, and before the conditions are disturbed, give a written notice to the Contracting Officer of (1) subsurface or latent physical conditions at the site which differ materially from those indicated in this contract, or (2) unknown physical conditions at the site(s), of an unusual nature, which differ materially from those ordinarily encountered and generally recognized as inhering in work of the character provided for in the contract.
- (b) The Contracting Officer shall investigate the site conditions promptly after receiving the notice. Work shall not proceed at the affected site, except at the Contractor's risk, until the Contracting Officer has provided written instructions to the Contractor. If the conditions do materially so differ and cause an increase or decrease in the Contractor's cost of, or the time required for, performing any part of the work under this contract, whether or not changed as a result of the conditions, the Contractor shall file a claim in writing to the PHA within ten days after receipt of such instructions and, in any event, before proceeding with the work. An equitable adjustment in the contract price, the delivery schedule, or both shall be made under this clause and the contract modified in writing accordingly.
- (c) No request by the Contractor for an equitable adjustment to the contract under this clause shall be allowed, unless the Contractor has given the written notice required; provided, that the time prescribed in (a) above for giving written notice may be extended by the Contracting Officer.
- (d) No request by the Contractor for an equitable adjustment to the contract for differing site conditions shall be allowed if made after final payment under this contract.

9. Specifications and Drawings for Construction

(a) The Contractor shall keep on the work site a copy of the drawings and specifications and shall at all times give the Contracting Officer access thereto. Anything mentioned in the specifications and not shown on the drawings, or shown on the drawings and not mentioned in the specifications, shall be of like effect as if shown or mentioned in both. In case of difference between drawings and specifications, the specifications shall govern. In case of discrepancy in the figures, in the drawings, or in the specifications, the matter shall be promptly submitted to the Contracting Officer, who shall promptly make a determination in writing. Any adjustment by the Contractor without such a determination shall be at its own risk and expense. The Contracting Officer shall furnish from time to time such detailed drawings and other information as considered necessary, unless otherwise provided.

- (b) Wherever in the specifications or upon the drawings the words "directed", "required", "ordered", "designated", "prescribed", or words of like import are used, it shall be understood that the "direction", "requirement", "order", "designation", or "prescription", of the Contracting Officer is intended and similarly the words "approved", "acceptable", "satisfactory", or words of like import shall mean "approved by", or "acceptable to", or "satisfactory to" the Contracting Officer, unless otherwise expressly stated.
- (c) Where "as shown" "as indicated", "as detailed", or words
- of similar import are used, it shall be understood that the reference is made to the drawings accompanying this contract unless stated otherwise. The word "provided" as used herein shall be understood to mean "provide complete in place" that is "furnished and installed".
- (d) "Shop drawings" means drawings, submitted to the PHA by the Contractor, subcontractor, or any lower tier subcontractor, showing in detail (1) the proposed fabrication and assembly of structural elements and (2) the installation (i.e., form, fit, and attachment details) of materials of equipment. It includes drawings, diagrams, layouts, schematics, descriptive literature, illustrations, schedules, performance and test data, and similar materials furnished by the Contractor to explain in detail specific portions of the work required by the contract. The PHA may duplicate, use, and disclose in any manner and for any purpose shop drawings delivered under this contract.
- (e) If this contract requires shop drawings, the Contractor shall coordinate all such drawings, and review them for accuracy, completeness, and compliance with other contract requirements and shall indicate its approval thereon as evidence of such coordination and review. Shop drawings submitted to the Contracting Officer without evidence of the Contractor's approval may be returned for resubmission. The Contracting Officer will indicate an approval or disapproval of the shop drawings and if not approved as submitted shall indicate the PHA's reasons therefore. Any work done before such approval shall be at the Contractor's risk. Approval by the Contracting Officer shall not relieve the Contractor from responsibility for any errors or omissions in such drawings, nor from responsibility for complying with the requirements of this contract, except with respect to variations described and approved in accordance with (f) below.
- (f) If shop drawings show variations from the contract requirements, the Contractor shall describe such variations in writing, separate from the drawings, at the time of submission. If the Architect approves any such variation and the Contracting Officer concurs, the Contracting Officer shall issue an appropriate modification to the contract, except that, if the variation is minor or does not involve a change in price or in time of performance, a modification need not be issued.
- (g) It shall be the responsibility of the Contractor to make timely requests of the PHA for such large scale and full size drawings, color schemes, and other additional information, not already in his possession, which shall be

required in the planning and production of the work. Such requests may be submitted as the need arises, but each such request shall be filed in ample time to permit appropriate action to be taken by all parties involved so as to avoid delay.

- (h) The Contractor shall submit to the Contracting Officer for approval four copies (unless otherwise indicated) of all shop drawings as called for under the various headings of these specifications. Three sets (unless otherwise indicated) of all shop drawings, will be retained by the PHA and one set will be returned to the Contractor. As required by the Contracting Officer, the Contractor, upon completing the work under this contract, shall furnish a complete set of all shop drawings as finally approved. These drawings shall show all changes and revisions made up to the time the work is completed and accepted.
- (i) This clause shall be included in all subcontracts at any tier. It shall be the responsibility of the Contractor to ensure that all shop drawings prepared by subcontractors are submitted to the Contracting Officer.
- 10. As-Built Drawings
- (a) "As-built drawings," as used in this clause, means drawings submitted by the Contractor or subcontractor at any tier to show the construction of a particular structure or work as actually completed under the contract. "As-built drawings" shall be synonymous with "Record drawings."
- (b) As required by the Contracting Officer, the Contractor shall provide the Contracting Officer accurate information to be used in the preparation of permanent as-built drawings. For this purpose, the Contractor shall record on one set of contract drawings all changes from the installations originally indicated, and record final locations of underground lines by depth from finish grade and by accurate horizontal offset distances to permanent surface improvements such as buildings, curbs, or edges of walks.
- (c) This clause shall be included in all subcontracts at any tier. It shall be the responsibility of the Contractor to ensure that all as-built drawings prepared by subcontractors are submitted to the Contracting Officer.
- 11. Material and Workmanship
- (a) All equipment, material, and articles furnished under this contract shall be new and of the most suitable grade for the purpose intended, unless otherwise specifically provided in this contract. References in the contract to equipment, material, articles, or patented processes by trade name, make, or catalog number, shall be regarded as establishing a standard of quality and shall not be construed as limiting competition. The Contractor may, at its option, use any equipment, material, article, or process that, in the judgment of, and as approved by the Contracting Officer, is equal to that named in the specifications, unless otherwise specifically provided in this contract.
- (b) Approval of equipment and materials.
 - (1) The Contractor shall obtain the Contracting Officer's approval of the machinery and mechanical and other equipment to be incorporated into the work. When requesting approval, the Contractor shall furnish to the Contracting Officer the name of the manufacturer, the model number, and other information concerning the performance, capacity, nature, and rating of the

machinery and mechanical and other equipment. When required by this contract or by the Contracting Officer, the Contractor shall also obtain the Contracting Officer's approval of the material or articles which the Contractor contemplates incorporating into the work. When requesting approval, the Contractor shall provide full information concerning the material or articles. Machinery, equipment, material, and articles that do not have the required approval shall be installed or used at the risk of subsequent rejection.

- (2) When required by the specifications or the Contracting Officer, the Contractor shall submit appropriately marked samples (and certificates related to them) for approval at the Contractor's expense, with all shipping charges prepaid. The Contractor shall label, or otherwise properly mark on the container, the material or product represented, its place of origin, the name of the producer, the Contractor's name, and the identification of the construction project for which the material or product is intended to be used.
- (3) Certificates shall be submitted in triplicate, describing each sample submitted for approval and certifying that the material, equipment or accessory complies with contract requirements. The certificates shall include the name and brand of the product, name of manufacturer, and the location where produced.
- (4) Approval of a sample shall not constitute a waiver of the PHA right to demand full compliance with contract requirements. Materials, equipment and accessories may be rejected for cause even though samples have been approved.
- (5) Wherever materials are required to comply with recognized standards or specifications, such specifications shall be accepted as establishing the technical qualities and testing methods, but shall not govern the number of tests required to be made nor modify other contract requirements. The Contracting Officer may require laboratory test reports on items submitted for approval or may approve materials on the basis of data submitted in certificates with samples. Check tests will be made on materials delivered for use only as frequently as the Contracting Officer determines necessary to insure compliance of materials with the specifications. The Contractor will assume all costs of retesting materials which fail to meet contract requirements and/or testing materials offered in substitution for those found deficient.
- (6) After approval, samples will be kept in the Project office until completion of work. They may be built into the work after a substantial quantity of the materials they represent has been built in and accepted.
- (c) Requirements concerning lead-based paint. The Contractor shall comply with the requirements concerning lead-based paint contained in the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. 4821-4846) as implemented by 24 CFR Part 35.
- 12. Permits and Codes
- (a) The Contractor shall give all notices and comply with all applicable laws, ordinances, codes, rules and regulations. Notwithstanding the requirement of the Contractor to comply with the drawings and specifications in the contract, all work installed shall comply with all applicable codes and regulations as amended by any

waivers. Before installing the work, the Contractor shall examine the drawings and the specifications for compliance with applicable codes and regulations bearing on the work and shall immediately report any discrepancy it may discover to the Contracting Officer. Where the requirements of the drawings and specifications fail to comply with the applicable code or regulation, the Contracting Officer shall modify the contract by change order pursuant to the clause entitled Changes herein to conform to the code or regulation.

- (b) The Contractor shall secure and pay for all permits, fees, and licenses necessary for the proper execution and completion of the work. Where the PHA can arrange for the issuance of all or part of these permits, fees and licenses, without cost to the Contractor, the contract amount shall be reduced accordingly.
- 13. Health, Safety, and Accident Prevention
- (a) In performing this contract, the Contractor shall:
 - (1) Ensure that no laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his/her health and/or safety as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation;
 - (2) Protect the lives, health, and safety of other persons;
 - (3) Prevent damage to property, materials, supplies, and equipment; and,
 - (4) Avoid work interruptions.
- (b) For these purposes, the Contractor shall:
 - (1) Comply with regulations and standards issued by the Secretary of Labor at 29 CFR Part 1926. Failure to comply may result in imposition of sanctions pursuant to the Contract Work Hours and Safety Standards Act (Public Law 91-54, 83 Stat. 96), 40 U.S.C. 3701 et seq.; and
 - (2) Include the terms of this clause in every subcontract so that such terms will be binding on each subcontractor.
- (c) The Contractor shall maintain an accurate record of exposure data on all accidents incident to work performed under this contract resulting in death, traumatic injury, occupational disease, or damage to property, materials, supplies, or equipment, and shall report this data in the manner prescribed by 29 CFR Part 1904.
- (d) The Contracting Officer shall notify the Contractor of any noncompliance with these requirements and of the corrective action required. This notice, when delivered to the Contractor or the Contractor's representative at the site of the work, shall be deemed sufficient notice of the noncompliance and corrective action required. After receiving the notice, the Contractor shall immediately take corrective action. If the Contractor fails or refuses to take corrective action promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. The Contractor shall not base any claim or request for equitable adjustment for additional time or money on any stop order issued under these circumstances.
- (e) The Contractor shall be responsible for its subcontractors' compliance with the provisions of this clause. The Contractor shall take such action with respect to any subcontract as the PHA, the Secretary of Housing and Urban Development, or the Secretary of Labor shall direct as a means of enforcing such provisions.

14. Temporary Heating

The Contractor shall provide and pay for temporary heating, covering, and enclosures necessary to properly protect all work and materials against damage by dampness and cold, to dry out the work, and to facilitate the completion of the work. Any permanent heating equipment used shall be turned over to the PHA in the condition and at the time required by the specifications.

- 15. Availability and Use of Utility Services
- (a) The PHA shall make all reasonably required amounts of utilities available to the Contractor from existing outlets and supplies, as specified in the contract. Unless otherwise provided in the contract, the amount of each utility service consumed shall be charged to or paid for by the Contractor at prevailing rates charged to the PHA or, where the utility is produced by the PHA, at reasonable rates determined by the Contracting Officer. The Contractor shall carefully conserve any utilities furnished without charge.
- (b) The Contractor, at its expense and in a manner satisfactory to the Contracting Officer, shall install and maintain all necessary temporary connections and distribution lines, and all meters required to measure the amount of each utility used for the purpose of determining charges. Before final acceptance of the work by the PHA, the Contractor shall remove all the temporary connections, distribution lines, meters, and associated paraphernalia.
- 16. Protection of Existing Vegetation, Structures, Equipment, Utilities, and Improvements
- (a) The Contractor shall preserve and protect all structures, equipment, and vegetation (such as trees, shrubs, and grass) on or adjacent to the work site, which are not to be removed under this contract, and which do not unreasonably interfere with the work required under this contract.
- (b) The Contractor shall only remove trees when specifically authorized to do so, and shall avoid damaging vegetation that will remain in place. If any limbs or branches of trees are broken during performance of this contract, or by the careless operation of equipment, or by workmen, the Contractor shall trim those limbs or branches with a clean cut and paint the cut with a tree-pruning compound as directed by the Contracting Officer.
- (c) The Contractor shall protect from damage all existing improvements and utilities (1) at or near the work site and (2) on adjacent property of a third party, the locations of which are made known to or should be known by the Contractor. Prior to disturbing the ground at the construction site, the Contractor shall ensure that all underground utility lines are clearly marked.
- (d) The Contractor shall shore up, brace, underpin, secure, and protect as necessary all foundations and other parts of existing structures adjacent to, adjoining, and in the vicinity of the site, which may be affected by the excavations or other operations connected with the construction of the project.
- (e) Any equipment temporarily removed as a result of work under this contract shall be protected, cleaned, and replaced in the same condition as at the time of award of this contract.
- (f) New work which connects to existing work shall correspond in all respects with that to which it connects and/or be similar to existing work unless otherwise required by the specifications.
- (g) No structural members shall be altered or in any way weakened without the written authorization of the Contracting Officer, unless such work is clearly specified in the plans or specifications.
- (h) If the removal of the existing work exposes discolored or unfinished surfaces, or work out of alignment, such surfaces shall be refinished, or the material replaced as necessary to make the continuous work uniform and harmonious. This, however, shall not be construed to require the refinishing or reconstruction of dissimilar finishes previously exposed, or finished surfaces in good condition, but in different planes or on different levels when brought together by the removal of intervening work, unless such refinishing or reconstruction is specified in the plans or specifications.
- (i) The Contractor shall give all required notices to any adjoining or adjacent property owner or other party before the commencement of any work.
- (j) The Contractor shall indemnify and save harmless the PHA from any damages on account of settlement or the loss of lateral support of adjoining property, any damages from changes in topography affecting drainage, and from all loss or expense and all damages for which the PHA may become liable in consequence of such injury or damage to adjoining and adjacent structures and their premises.
- (k) The Contractor shall repair any damage to vegetation, structures, equipment, utilities, or improvements, including those that are the property of a third party, resulting from failure to comply with the requirements of this contract or failure to exercise reasonable care in performing the work. If the Contractor fails or refuses to repair the damage promptly, the Contracting Officer may have the necessary work performed and charge the cost to the Contractor.

17. Temporary Buildings and Transportation of Materials

- (a) Temporary buildings (e.g., storage sheds, shops, offices, sanitary facilities) and utilities may be erected by the Contractor only with the approval of the Contracting Officer and shall be built with labor and materials furnished by the Contractor without expense to the PHA. The temporary buildings and utilities shall remain the property of the Contractor and shall be removed by the Contractor at its expense upon completion of the work. With the written consent of the Contracting Officer, the buildings and utilities may be abandoned and need not be removed.
- (b) The Contractor shall, as directed by the Contracting Officer, use only established roadways, or use temporary roadways constructed by the Contractor when and as authorized by the Contracting Officer. When materials are transported in prosecuting the work, vehicles shall not be loaded beyond the loading capacity recommended by the manufacturer of the vehicle or prescribed by any federal, state, or local law or regulation. When it is necessary to cross curbs or sidewalks, the Contractor shall protect them from damage. The Contractor shall repair or pay for the repair of any damaged curbs, sidewalks, or roads.

18. Clean Air and Water

The contactor shall comply with the Clean Air Act, as amended, 42 USC 7401 et seq., the Federal Water Pollution Control Water Act, as amended, 33 U.S.C. 1251 et seq., and standards issued pursuant thereto in the facilities in which this contract is to be performed.

19. Energy Efficiency

The Contractor shall comply with mandatory standards and policies relating to energy efficiency which are contained in the energy conservation plan issued in compliance with the Energy Policy and Conservation Act (Pub.L. 94-163) for the State in which the work under the contract is performed.

20. Inspection and Acceptance of Construction

- (a) Definitions. As used in this clause -
 - (1) "Acceptance" means the act of an authorized representative of the PHA by which the PHA approves and assumes ownership of the work performed under this contract. Acceptance may be partial or complete.

(2) "Inspection" means examining and testing the work performed under the contract (including, when appropriate, raw materials, equipment, components, and intermediate assemblies) to determine whether it conforms to contract requirements.

(3) "Testing" means that element of inspection that determines the properties or elements, including functional operation of materials, equipment, or their components, by the application of established scientific principles and procedures.

- (b) The Contractor shall maintain an adequate inspection system and perform such inspections as will ensure that the work performed under the contract conforms to contract requirements. All work is subject to PHA inspection and test at all places and at all reasonable times before acceptance to ensure strict compliance with the terms of the contract.
- (c) PHA inspections and tests are for the sole benefit of the PHA and do not: (1) relieve the Contractor of responsibility for providing adequate quality control measures; (2) relieve the Contractor of responsibility for loss or damage of the material before acceptance; (3) constitute or imply acceptance; or, (4) affect the continuing rights of the PHA after acceptance of the completed work under paragraph (j) below.
- (d) The presence or absence of the PHA inspector does not relieve the Contractor from any contract requirement, nor is the inspector authorized to change any term or condition of the specifications without the Contracting Officer's written authorization. All instructions and approvals with respect to the work shall be given to the Contractor by the Contracting Officer.
- (e) The Contractor shall promptly furnish, without additional charge, all facilities, labor, and material reasonably needed for performing such safe and convenient inspections and tests as may be required by the Contracting Officer. The PHA may charge to the Contractor any additional cost of inspection or test when work is not ready at the time specified by the Contractor for inspection or test, or when prior rejection makes reinspection or retest necessary. The PHA shall perform all inspections and tests in a manner that will not unnecessarily delay the work. Special, full size, and performance tests shall be performed as described in the contract.

- (f) The PHA may conduct routine inspections of the construction site on a daily basis.
- (g) The Contractor shall, without charge, replace or correct work found by the PHA not to conform to contract requirements, unless the PHA decides that it is in its interest to accept the work with an appropriate adjustment in contract price. The Contractor shall promptly segregate and remove rejected material from the premises.
- (h) If the Contractor does not promptly replace or correct rejected work, the PHA may (1) by contract or otherwise, replace or correct the work and charge the cost to the Contractor, or (2) terminate for default the Contractor's right to proceed.
- (i) If any work requiring inspection is covered up without approval of the PHA, it must, if requested by the Contracting Officer, be uncovered at the expense of the Contractor. If at any time before final acceptance of the entire work, the PHA considers it necessary or advisable, to examine work already completed by removing or tearing it out, the Contractor, shall on request, promptly furnish all necessary facilities, labor, and material. If such work is found to be defective or nonconforming in any material respect due to the fault of the Contractor or its subcontractors, the Contractor shall defray all the expenses of the examination and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the contract, the Contracting Officer shall make an equitable adjustment to cover the cost of the examination and reconstruction, including, if completion of the work was thereby delayed, an extension of time.
- (j) The Contractor shall notify the Contracting Officer, in writing, as to the date when in its opinion all or a designated portion of the work will be substantially completed and ready for inspection. If the Architect determines that the state of preparedness is as represented, the PHA will promptly arrange for the inspection. Unless otherwise specified in the contract, the PHA shall accept, as soon as practicable after completion and inspection, all work required by the contract or that portion of the work the Contracting Officer determines and designates can be accepted separately. Acceptance shall be final and conclusive except for latent defects, fraud, gross mistakes amounting to fraud, or the PHA's right under any warranty or guarantee.

21. Use and Possession Prior to Completion

- (a) The PHA shall have the right to take possession of or use any completed or partially completed part of the work. Before taking possession of or using any work, the Contracting Officer shall furnish the Contractor a list of items of work remaining to be performed or corrected on those portions of the work that the PHA intends to take possession of or use. However, failure of the Contracting Officer to list any item of work shall not relieve the Contractor of responsibility for complying with the terms of the contract. The PHA's possession or use shall not be deemed an acceptance of any work under the contract.
- (b) While the PHA has such possession or use, the Contractor shall be relieved of the responsibility for (1) the loss of or damage to the work resulting from the PHA's possession or use, notwithstanding the terms of the clause entitled Permits and Codes herein; (2) all maintenance costs on the areas occupied; and, (3) furnishing heat, light, power, and water used in the areas

occupied without proper remuneration therefore. If prior possession or use by the PHA delays the progress of the work or causes additional expense to the Contractor, an equitable adjustment shall be made in the contract price or the time of completion, and the contract shall be modified in writing accordingly.

22. Warranty of Title

The Contractor warrants good title to all materials, supplies, and equipment incorporated in the work and agrees to deliver the premises together with all improvements thereon free from any claims, liens or charges, and agrees further that neither it nor any other person, firm or corporation shall have any right to a lien upon the premises or anything appurtenant thereto.

23. Warranty of Construction

- (a) In addition to any other warranties in this contract, the Contractor warrants, except as provided in paragraph (j) of this clause, that work performed under this contract conforms to the contract requirements and is free of any defect in equipment, material, or workmanship performed by the Contractor or any subcontractor or supplier at any tier. This warranty shall continue for a period of $\underline{TWO}(2)$ (one year unless otherwise indicated) from the date of final acceptance of the work. If the PHA takes possession of any part of the work before final acceptance, this warranty shall continue for a period of (one year unless otherwise indicated) from the date of final acceptance of the work before final acceptance, this warranty shall continue for a period of (one year unless otherwise indicated) from the date that the PHA takes possession.
- (b) The Contractor shall remedy, at the Contractor's expense, any failure to conform, or any defect. In addition, the Contractor shall remedy, at the Contractor's expense, any damage to PHA-owned or controlled real or personal property when the damage is the result of—
 - The Contractor's failure to conform to contract requirements; or
 - (2) Any defects of equipment, material, workmanship or design furnished by the Contractor.
- (c) The Contractor shall restore any work damaged in fulfilling the terms and conditions of this clause. The Contractor's warranty with respect to work repaired or replaced will run for (one year unless otherwise indicated) from the date of repair or replacement.
- (d) The Contracting Officer shall notify the Contractor, in writing, within a reasonable time after the discovery of any failure, defect or damage.
- (e) If the Contractor fails to remedy any failure, defect, or damage within a reasonable time after receipt of notice, the PHA shall have the right to replace, repair or otherwise remedy the failure, defect, or damage at the Contractor's expense.
- (f) With respect to all warranties, express or implied, from subcontractors, manufacturers, or suppliers for work performed and materials furnished under this contract, the Contractor shall:
 - (1) Obtain all warranties that would be given in normal commercial practice;
 - (2) Require all warranties to be executed in writing, for the benefit of the PHA; and,
 - (3) Enforce all warranties for the benefit of the PHA.
- (g) In the event the Contractor's warranty under paragraph (a) of this clause has expired, the PHA may bring suit at its own expense to enforce a subcontractor's, manufacturer's or supplier's warranty.

- (h) Unless a defect is caused by the negligence of the Contractor or subcontractor or supplier at any tier, the Contractor shall not be liable for the repair of any defect of material or design furnished by the PHA nor for the repair of any damage that results from any defect in PHA furnished material or design.
- (i) Notwithstanding any provisions herein to the contrary, the establishment of the time periods in paragraphs (a) and (c) above relate only to the specific obligation of the Contractor to correct the work, and have no relationship to the time within which its obligation to comply with the contract may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to its obligation other than specifically to correct the work.
- (j) This warranty shall not limit the PHA's rights under the Inspection and Acceptance of Construction clause of this contract with respect to latent defects, gross mistakes or fraud.
- 24. Prohibition Against Liens

The Contractor is prohibited from placing a lien on the PHA's property. This prohibition shall apply to all subcontractors at any tier and all materials suppliers.

Administrative Requirements

25. Contract Period

THREE HUNDRED

this contract within (300) calendar days of the effective date of the contract, or within the time schedule established in the notice to proceed issued by the Contracting Officer.

26. Order of Provisions

In the event of a conflict between these General Conditions and the Specifications, the General Conditions shall prevail. In the event of a conflict between the contract and any applicable state or local law or regulation, the state or local law or regulation shall prevail; provided that such state or local law or regulation does not conflict with, or is less restrictive than applicable federal law, regulation, or Executive Order. In the event of such a conflict, applicable federal law, regulation, and Executive Order shall prevail.

27. Payments

- (a) The PHA shall pay the Contractor the price as provided in this contract.
- (b) The PHA shall make progress payments approximately every 30 days as the work proceeds, on estimates of work accomplished which meets the standards of quality established under the contract, as approved by the Contracting Officer. The PHA may, subject to written determination and approval of the Contracting Officer, make more frequent payments to contractors which are qualified small businesses.
- (c) Before the first progress payment under this contract, the Contractor shall furnish, in such detail as requested by the Contracting Officer, a breakdown of the total contract price showing the amount included therein for each principal category of the work, which shall substantiate the payment amount requested in order to provide a

basis for determining progress payments. The breakdown shall be approved by the Contracting Officer and must be acceptable to HUD. If the contract covers more than one project, the Contractor shall furnish a separate breakdown for each. The values and quantities employed in making up this breakdown are for determining the amount of progress payments and shall not be construed as a basis for additions to or deductions from the contract price. The Contractor shall prorate its overhead and profit over the construction period of the contract.

(d) The Contractor shall submit, on forms provided by the PHA, periodic estimates showing the value of the work performed during each period based upon the approved

submitted not later than **THIRTY (30)** days in advance of the date set for payment and are subject to correction and revision as required. The estimates must be approved by the Contracting Officer with the concurrence of the Architect prior to payment. If the contract covers more than one project, the Contractor shall furnish a separate progress payment estimate for each.

- (e) Along with each request for progress payments and the required estimates, the Contractor shall furnish the following certification, or payment shall not be made: I hereby certify, to the best of my knowledge and belief, that:
 - The amounts requested are only for performance in accordance with the specifications, terms, and conditions of the contract;
 - (2) Payments to subcontractors and suppliers have been made from previous payments received under the contract, and timely payments will be made from the proceeds of the payment covered by this certification, in accordance with subcontract agreements; and,
 - (3) This request for progress payments does not include any amounts which the prime contractor intends to withhold or retain from a subcontractor or supplier in accordance with the terms and conditions of the subcontract.

Name:

Title:

Date:

- (f) Except as otherwise provided in State law, the PHA shall retain ten (10) percent of the amount of progress payments until completion and acceptance of all work under the contract; except, that if upon completion of 50 percent of the work, the Contracting Officer, after consulting with the Architect, determines that the Contractor's performance and progress are satisfactory, the PHA may make the remaining payments in full for the work subsequently completed. If the Contracting Officer subsequently determines that the Contractor's performance and progress are unsatisfactory, the PHA shall reinstate the ten (10) percent (or other percentage as provided in State law) retainage until such time as the Contracting Officer determines that performance and progress are satisfactory.
- (g) The Contracting Officer may authorize material delivered on the site and preparatory work done to be taken into consideration when computing progress payments.

Material delivered to the Contractor at locations other than the site may also be taken into consideration if the Contractor furnishes satisfactory evidence that (1) it has acquired title to such material; (2) the material is properly stored in a bonded warehouse, storage yard, or similar suitable place as may be approved by the Contracting Officer; (3) the material is insured to cover its full value; and (4) the material will be used to perform this contract. Before any progress payment which includes delivered material is made, the Contractor shall furnish such documentation as the Contractor shall furnish such materials. The Contractor shall remain responsible for such stored material notwithstanding the transfer of title to the PHA.

- (h) All material and work covered by progress payments made shall, at the time of payment become the sole property of the PHA, but this shall not be construed as (1) relieving the Contractor from the sole responsibility for all material and work upon which payments have been made or the restoration of any damaged work; or, (2) waiving the right of the PHA to require the fulfillment of all of the terms of the contract. In the event the work of the Contractor has been damaged by other contractors or persons other than employees of the PHA in the course of their employment, the Contractor shall restore such damaged work without cost to the PHA and to seek redress for its damage only from those who directly
- caused it.
- (i) The PHA shall make the final payment due the Contractor under this contract after (1) completion and final acceptance of all work; and (2) presentation of release of all claims against the PHA arising by virtue of this contract, other than claims, in stated amounts, that the Contractor has specifically excepted from the operation of the release. Each such exception shall embrace no more than one claim, the basis and scope of which shall be clearly defined. The amounts for such excepted claims shall not be included in the request for final payment. A release may also be required of the assignee if the Contractor's claim to amounts payable under this contract has been assigned.
- (j) Prior to making any payment, the Contracting Officer may require the Contractor to furnish receipts or other evidence of payment from all persons performing work and supplying material to the Contractor, if the Contracting Officer determines such evidence is necessary to substantiate claimed costs.
- (k) The PHA shall not; (1) determine or adjust any claims for payment or disputes arising there under between the Contractor and its subcontractors or material suppliers; or, (2) withhold any moneys for the protection of the subcontractors or material suppliers. The failure or refusal of the PHA to withhold moneys from the Contractor shall in nowise impair the obligations of any surety or sureties under any bonds furnished under this contract.

28. Contract Modifications

- (a) Only the Contracting Officer has authority to modify any term or condition of this contract. Any contract modification shall be authorized in writing.
- (b) The Contracting Officer may modify the contract unilaterally (1) pursuant to a specific authorization stated in a contract clause (e.g., Changes); or (2) for administrative matters which do not change the rights or

responsibilities of the parties (e.g., change in the PHA address). All other contract modifications shall be in the form of supplemental agreements signed by the Contractor and the Contracting Officer.

(c) When a proposed modification requires the approval of HUD prior to its issuance (e.g., a change order that exceeds the PHA's approved threshold), such modification shall not be effective until the required approval is received by the PHA.

29. Changes

- (a) The Contracting Officer may, at any time, without notice to the sureties, by written order designated or indicated to be a change order, make changes in the work within the general scope of the contract including changes:
 (1) In the specifications (including drawings and designs);
 (2) In the method or manner of performance of the work;
 (3) PHA-furnished facilities, equipment, materials,
 - (4) Directing the acceleration in the performance of the
- work.
 (b) Any other written order or oral order (which, as used in this paragraph (b), includes direction, instruction, interpretation, or determination) from the Contracting Officer that causes a change shall be treated as a change order under this clause; provided, that the Contractor gives the Contracting Officer written notice stating (1) the date, circumstances and source of the order and (2) that the Contractor regards the order as a change order.
- (c) Except as provided in this clause, no order, statement or conduct of the Contracting Officer shall be treated as a change under this clause or entitle the Contractor to an equitable adjustment.
- (d) If any change under this clause causes an increase or decrease in the Contractor's cost of, or the time required for the performance of any part of the work under this contract, whether or not changed by any such order, the Contracting Officer shall make an equitable adjustment and modify the contract in writing. However, except for a adjustment based on defective specifications, no proposal for any change under paragraph (b) above shall be allowed for any costs incurred more than 20 days (5 days for oral orders) before the Contractor gives written notice as required. In the case of defective specifications for which the PHA is responsible, the equitable adjustment shall include any increased cost reasonably incurred by the Contractor in attempting to comply with the defective specifications.
- (e) The Contractor must assert its right to an adjustment under this clause within 30 days after (1) receipt of a written change order under paragraph (a) of this clause, or (2) the furnishing of a written notice under paragraph (b) of this clause, by submitting a written statement describing the general nature and the amount of the proposal. If the facts justify it, the Contracting Officer may extend the period for submission. The proposal may be included in the notice required under paragraph (b) above. No proposal by the Contractor for an equitable adjustment shall be allowed if asserted after final payment under this contract.
- (f) The Contractor's written proposal for equitable adjustment shall be submitted in the form of a lump sum proposal supported with an itemized breakdown of all increases and decreases in the contract in at least the following details:

- (1) Direct Costs. Materials (list individual items, the quantity and unit cost of each, and the aggregate cost); Transportation and delivery costs associated with materials; Labor breakdowns by hours or unit costs (identified with specific work to be performed); Construction equipment exclusively necessary for the change; Costs of preparation and/ or revision to shop drawings resulting from the change; Worker's Compensation and Public Liability Insurance; Employment taxes under FICA and FUTA; and, Bond Costs when size of change warrants revision.
- (2)Indirect Costs. Indirect costs may include overhead, general and administrative expenses, and fringe benefits not normally treated as direct costs.
- (3)Profit. The amount of profit shall be negotiated and may vary according to the nature, extent, and complexity of the work required by the change. The allowability of the direct and indirect costs shall be determined in accordance with the Contract Cost Principles and Procedures for Commercial Firms in Part 31 of the Federal Acquisition Regulation (48 CFR 1-31), as implemented by HUD Handbook 2210.18, in effect on the date of this contract. The Contractor shall not be allowed a profit on the profit received by any subcontractor. Equitable adjustments for deleted work shall include a credit for profit and may include a credit for indirect costs. On proposals covering both increases and decreases in the amount of the contract, the application of indirect costs and profit shall be on the net-change in direct costs for the Contractor or subcontractor performing the work.
- (g) The Contractor shall include in the proposal its request for time extension (if any), and shall include sufficient information and dates to demonstrate whether and to what extent the change will delay the completion of the contract in its entirety.
- (h) The Contracting Officer shall act on proposals within 30 days after their receipt, or notify the Contractor of the date when such action will be taken.
- (i) Failure to reach an agreement on any proposal shall be a dispute under the clause entitled Disputes herein. Nothing in this clause, however, shall excuse the Contractor from proceeding with the contract as changed.
- (j) Except in an emergency endangering life or property, no change shall be made by the Contractor without a prior order from the Contracting Officer.

30. Suspension of Work

- (a) The Contracting Officer may order the Contractor in writing to suspend, delay, or interrupt all or any part of the work of this contract for the period of time that the Contracting Officer determines appropriate for the convenience of the PHA.
- (b) If the performance of all or any part of the work is, for an unreasonable period of time, suspended, delayed, or interrupted (1) by an act of the Contracting Officer in the administration of this contract, or (2) by the Contracting Officer's failure to act within the time specified (or within a reasonable time if not specified) in this contract an adjustment shall be made for any increase in the cost of performance of the contract (excluding profit) necessarily caused by such unreasonable suspension, delay, or interruption and the contract modified in writing accordingly. However, no adjustment shall be made under this clause for any suspension, delay, or interruption to the extent that performance would have

been so suspended, delayed, or interrupted by any other cause, including the fault or negligence of the Contractor or for which any equitable adjustment is provided for or excluded under any other provision of this contract.

(c) A claim under this clause shall not be allowed (1) for any costs incurred more than 20 days before the Contractor shall have notified the Contracting Officer in writing of the act or failure to act involved (but this requirement shall not apply as to a claim resulting from a suspension order); and, (2) unless the claim, in an amount stated, is asserted in writing as soon as practicable after the termination of the suspension, delay, or interruption, but not later than the date of final payment under the contract.

31. Disputes

- (a) "Claim," as used in this clause, means a written demand or written assertion by one of the contracting parties seeking, as a matter of right, the payment of money in a sum certain, the adjustment or interpretation of contract terms, or other relief arising under or relating to the contract. A claim arising under the contract, unlike a claim relating to the contract, is a claim that can be resolved under a contract clause that provides for the relief sought by the claimant. A voucher, invoice, or other routine request for payment that is not in dispute when submitted is not a claim. The submission may be converted to a claim by complying with the requirements of this clause, if it is disputed either as to liability or amount or is not acted upon in a reasonable time.
- (b) Except for disputes arising under the clauses entitled Labor Standards - Davis Bacon and Related Acts, herein, all disputes arising under or relating to this contract, including any claims for damages for the alleged breach thereof which are not disposed of by agreement, shall be resolved under this clause.
- (c) All claims by the Contractor shall be made in writing and submitted to the Contracting Officer for a written decision. A claim by the PHA against the Contractor shall be subject to a written decision by the Contracting Officer.
- (d) The Contracting Officer shall, within 60 (unless otherwise indicated) days after receipt of the request, decide the claim or notify the Contractor of the date by which the decision will be made.
- (e) The Contracting Officer's decision shall be final unless the Contractor (1) appeals in writing to a higher level in the PHA in accordance with the PHA's policy and procedures, (2) refers the appeal to an independent mediator or arbitrator, or (3) files suit in a court of competent jurisdiction. Such appeal must be made within (30 unless otherwise indicated) days after receipt of the Contracting Officer's decision.
- (f) The Contractor shall proceed diligently with performance of this contract, pending final resolution of any request for relief, claim, appeal, or action arising under or relating to the contract, and comply with any decision of the Contracting Officer.

32. Default

(a) If the Contractor refuses or fails to prosecute the work, or any separable part thereof, with the diligence that will insure its completion within the time specified in this contract, or any extension thereof, or fails to complete said work within this time, the Contracting Officer may, by written notice to the Contractor, terminate the right to proceed with the work (or separable part of the work) that has been delayed. In this event, the PHA may take over the work and complete it, by contract or otherwise, and may take possession of and use any materials, equipment, and plant on the work site necessary for completing the work. The Contractor and its sureties shall be liable for any damage to the PHA resulting from the Contractor's refusal or failure to complete the work within the specified time, whether or not the Contractor's right to proceed with the work is terminated. This liability includes any increased costs incurred by the PHA in completing the work.

- (b) The Contractor's right to proceed shall not be terminated or the Contractor charged with damages under this clause if—
 - (1) The delay in completing the work arises from unforeseeable causes beyond the control and without the fault or negligence of the Contractor. Examples of such causes include (i) acts of God, or of the public enemy, (ii) acts of the PHA or other governmental entity in either its sovereign or contractual capacity, (iii) acts of another contractor in the performance of a contract with the PHA, (iv) fires, (v) floods, (vi) epidemics, (vii) quarantine restrictions, (viii) strikes, (ix) freight embargoes, (x) unusually severe weather, or (xi) delays of subcontractors or suppliers at any tier arising from unforeseeable causes beyond the control and without the fault or negligence of both the Contractor and the subcontractors or suppliers; and
 - (2) The Contractor, within days (10 days unless otherwise indicated) from the beginning of such delay (unless extended by the Contracting Officer) notifies the Contracting Officer in writing of the causes of delay. The Contracting Officer shall ascertain the facts and the extent of the delay. If, in the judgment of the Contracting Officer, the findings of fact warrant such action, time for completing the work shall be extended by written modification to the contract. The findings of the Contracting Officer shall be reduced to a written decision which shall be subject to the provisions of the Disputes clause of this contract.
- (c) If, after termination of the Contractor's right to proceed, it is determined that the Contractor was not in default, or that the delay was excusable, the rights and obligations of the parties will be the same as if the termination had been for convenience of the PHA.

33. Liquidated Damages

- (a) If the Contractor fails to complete the work within the time specified in the contract, or any extension, as specified in the clause entitled Default of this contract, the Contractor shall pay to the PHA as liquidated damages, the sum of <u>100.00</u> Contracting Officer insert amount] for each day of delay. If different completion dates are specified in the contract for separate parts or stages of the work, the amount of liquidated damages shall be assessed on those parts or stages which are delayed. To the extent that the Contractor's delay or nonperformance is excused under another clause in this contract, liquidated damages shall not be due the PHA. The Contractor remains liable for damages caused other than by delay.
- (b) If the PHA terminates the Contractor's right to proceed, the resulting damage will consist of liquidated damages until such reasonable time as may be required for final

completion of the work together with any increased costs occasioned the PHA in completing the work.

(c) If the PHA does not terminate the Contractor's right to proceed, the resulting damage will consist of liquidated damages until the work is completed or accepted.

34. Termination for Convenience

- (a) The Contracting Officer may terminate this contract in whole, or in part, whenever the Contracting Officer determines that such termination is in the best interest of the PHA. Any such termination shall be effected by delivery to the Contractor of a Notice of Termination specifying the extent to which the performance of the work under the contract is terminated, and the date upon which such termination becomes effective.
- (b) If the performance of the work is terminated, either in whole or in part, the PHA shall be liable to the Contractor for reasonable and proper costs resulting from such termination upon the receipt by the PHA of a properly presented claim setting out in detail: (1) the total cost of the work performed to date of termination less the total amount of contract payments made to the Contractor; (2) the cost (including reasonable profit) of settling and paying claims under subcontracts and material orders for work performed and materials and supplies delivered to the site, payment for which has not been made by the PHA to the Contractor or by the Contractor to the subcontractor or supplier; (3) the cost of preserving and protecting the work already performed until the PHA or assignee takes possession thereof or assumes responsibility therefore; (4) the actual or estimated cost of legal and accounting services reasonably necessary to prepare and present the termination claim to the PHA; and (5) an amount constituting a reasonable profit on the value of the work performed by the Contractor.
- (c) The Contracting Officer will act on the Contractor's claim within days (60 days unless otherwise indicated) of receipt of the Contractor's claim.
- (d) Any disputes with regard to this clause are expressly made subject to the provisions of the Disputes clause of this contract.

35. Assignment of Contract

The Contractor shall not assign or transfer any interest in this contract; except that claims for monies due or to become due from the PHA under the contract may be assigned to a bank, trust company, or other financial institution. Such assignments of claims shall only be made with the written concurrence of the Contracting Officer. If the Contractor is a partnership, this contract shall inure to the benefit of the surviving or remaining member(s) of such partnership as approved by the Contracting Officer.

36. Insurance

- (a) Before commencing work, the Contractor and each subcontractor shall furnish the PHA with certificates of insurance showing the following insurance is in force and will insure all operations under the Contract:
 - (1) Workers' Compensation, in accordance with state or Territorial Workers' Compensation laws.
 - (2) Commercial General Liability with a combined single limit for bodily injury and property damage of not less than \$500,000[Contracting Officer insert amount]

per occurrence to protect the Contractor and each subcontractor against claims for bodily injury or death and damage to the property of others. This shall cover the use of all equipment, hoists, and vehicles on the site(s) not covered by Automobile Liability under (3) below. If the Contractor has a "claims made" policy, then the following additional requirements apply: the policy must provide a "retroactive date" which must be on or before the execution date of the Contract; and the extended reporting period may not be less than five years

- following the completion date of the Contract.
 (3) Automobile Liability on owned and non -owned motor vehicles used on the site(s) or in connection therewith for a combined single limit for bodily injury and property damage of not less than \$ 500,000 [Contracting Officer insert amount] per occurrence.
- (b) Before commencing work, the Contractor shall furnish the PHA with a certificate of insurance evidencing that Builder's Risk (fire and extended coverage) Insurance on all work in place and/or materials stored at the building site(s), including foundations and building equipment, is in force. The Builder's Risk Insurance shall be for the benefit of the Contractor and the PHA as their interests may appear and each shall be named in the policy or policies as an insured. The Contractor in installing equipment supplied by the PHA shall carry insurance on such equipment from the time the Contractor takes possession thereof until the Contract work is accepted by the PHA. The Builder's Risk Insurance need not be carried on excavations, piers, footings, or foundations until such time as work on the superstructure is started. It need not be carried on landscape work. Policies shall furnish coverage at all times for the full cash value of all completed construction, as well as materials in place and/or stored at the site(s), whether or not partial payment has been made by the PHA. The Contractor may terminate this insurance on buildings as of the date taken over for occupancy by the PHA. The Contractor is not required to carry Builder's Risk Insurance for modernization work which does not involve structural alterations or additions and where the PHA's existing fire and extended coverage policy can be endorsed to include such work.
- (c) All insurance shall be carried with companies which are financially responsible and admitted to do business in the State in which the project is located. If any such insurance is due to expire during the construction period, the Contractor (including subcontractors, as applicable) shall not permit the coverage to lapse and shall furnish evidence of coverage to the Contracting Officer. All certificates of insurance, as evidence of coverage, shall provide that no coverage may be canceled or nonrenewed by the insurance company until at least 30 days prior written notice has been given to the Contracting Officer.

37. Subcontracts

- (a) Definitions. As used in this contract -
 - (1) "Subcontract" means any contract, purchase order, or other purchase agreement, including modifications and change orders to the foregoing, entered into by a subcontractor to furnish supplies, materials, equipment, and services for the performance of the prime contract or a subcontract.

- (2) "Subcontractor" means any supplier, vendor, or firm that furnishes supplies, materials, equipment, or services to or for the Contractor or another subcontractor.
- (b) The Contractor shall not enter into any subcontract with any subcontractor who has been temporarily denied participation in a HUD program or who has been suspended or debarred from participating in contracting programs by any agency of the United States Government or of the state in which the work under this contract is to be performed.
- (c) The Contractor shall be as fully responsible for the acts or omissions of its subcontractors, and of persons either directly or indirectly employed by them as for the acts or omissions of persons directly employed by the Contractor.
- (d) The Contractor shall insert appropriate clauses in all subcontracts to bind subcontractors to the terms and conditions of this contract insofar as they are applicable to the work of subcontractors.
- (e) Nothing contained in this contract shall create any contractual relationship between any subcontractor and the PHA or between the subcontractor and HUD.

38. Subcontracting with Small and Minority Firms, Women's Business Enterprise, and Labor Surplus Area Firms

The Contractor shall take the following steps to ensure that, whenever possible, subcontracts are awarded to small business firms, minority firms, women's business enterprises, and labor surplus area firms:Á

- (a) Placing qualified small and minority businesses and k women's business enterprises on solicitation lists; Á
- (b) Ensuring that small and minority businesses and women's business enterprises are solicited whenever they are potential sources; Á
- (c) Dividing total requirements, when economically feasible, A into smaller tasks or quantities to permit maximum participation by small and minority businesses and women's business enterprises; A
- (d) Establishing delivery schedules, where the requirements A of the contract permit, which encourage participation by A small and minority businesses and women's business A enterprises; and A
- (e) Using the services and assistance of the U.S. SmallÁ Business Administration, the Minority BusinessÁ Development Agency of the U.S. Department ofÁ Commerce, and State and local governmental smallÁ business agencies.Á

39. Equal Employment Opportunity

During the performance of this contract, the Contractor \mathbf{E} $\dot{\mathbf{U}}$

(a) The ContractorĐ/>||^} shall not discriminate against anyÁ employee or applicant for employment because of of race,,, color, religion, sex, sexual orientation, gender identity, disability, or national origin.Á

include, but not be limited to, (1) employment, (2) Áupgrading, (3), (3) demotion, (4) transfer, (5) recruitment or Á

recruitment advertising, (6) layoff or termination, (7) ratesÁ of pay or other forms of compensation, and (8) selectionÁ for training including apprenticesbin Á (c) The Contractor D/||^ agrees to post in conspicuous places available Áo employees and applicants for employment At he notices to be provided by the Contracting Officer setting forth the provisions of this nondiscrimination clause.Á

- (d) The Contractor D/|// / Ashall, in all solicitations or A advertisements for employees placed by or on behalf of the Contractor/Seller, state that all gualified applicants willÁ receive consideration for employment without regard toÁ race, color, religion, sex, or national origin.Á
- (e) The Contractor D/||^{kshall send, to each labor union or representative of workers with which it has a collectiveA bargaining agreement or other contract or understanding,Á the notice to be provided by the Contracting OfficerÁ advising the labor union or workers' representative of theÁ Contractor's commitments under this clause, and postÁ copies of the notice in conspicuous places available toÁ employees and applicants for employment.

(f) The Contractor D/ ||/ Ashall comply with Executive Order 11246, As amended, and the rules, regulations, and orders A of the ASecretary of Labor. A

(a) The Contractor D/I/LAshall furnish all information and A reports Arequired by Executive Order 11246, as amended, Á Section 4503 of the Rehabilitation Act of 1973, as amended, Á and Aby rules, regulations, and orders of the Secretary of A Labor, or pursuant thereto. The Contractor D/||/{kshall permitA

access to its books, records, and accounts by theÁ Secretary of Labor for purposes of investigation toÁ ascertain compliance with such rules, regulations, andÁ orders.Á

(h) In the event of a that the Contractor D/||/: As in noncompliance with the nondiscrimination clauses of this contract or with any of such rules, regulations, or orders, this contract may be canceled, terminated or suspended in whole or in part and the contractor/seller may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(i)The contractor/seller will include the provisions of paragraphs (a) through (h) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each sub[contractor/seller] or vendor. The [contractor/seller] will take such action with respect to any subcontract or purchase order as may be directed by the Secretary of Labor as a means of enforcing such provisions in cluding sanctions for noncompliance: Provided, however, that in the event the [contractor/seller] becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the [contractor/seller] may request the United States to enter into such litigation to protect the interests of the United States.

- (j) Compliance with the requirements of this clause shall beÁ to the maximum extent consistent with, but not inÁ derogation of, compliance with section 7(b) of the IndianÁ Self-Determination and Education Assistance Act and theÁ Indian Preference clause of this contract.Á
- 40. Employment, Training, and Contracting Opportunities for Low-Income Persons, Section 3 of the Housing and Urban Development Act of 1968.

- (a) The work to be performed under this contract is subject to the requirements of section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. 1701u (section 3). The purpose of section 3 is to ensure that employment and other economic opportunities generated by HUD assistance or HUD-assisted projects covered by section 3, shall, to the greatest extent feasible, be directed to low- and very low-income persons, particularly persons who are recipients of HUD assistance for housing.
- (b) The parties to this contract agree to comply with HUD's regulations in 24 CFR Part 135, which implement section 3. As evidenced by their execution of this contract, the parties to this contract certify that they are under no contractual or other impediment that would prevent them from complying with the Part 135 regulations.
- (c) The contractor agrees to send to each labor organization or representative of workers with which the contractor has a collective bargaining agreement or other understanding, if any, a notice advising the labor organization or workers' representative of the contractor's commitments under this section 3 clause, and will post copies of the notice in conspicuous places at the work site where both employees and applicants for training and employment positions can see the notice. The notice shall describe the section 3 preference, shall set forth minimum number and job titles subject to hire, availability of apprenticeship and training positions, the qualifications for each; and the name and location of the person(s) taking applications for each of the positions; and the anticipated date the work shall begin.
- (d) The contractor agrees to include this section 3 clause in every subcontract subject to compliance with regulations in 24 CFR Part 135, and agrees to take appropriate action, as provided in an applicable provision of the subcontract or in this section 3 clause, upon a finding that the subcontractor is in violation of the regulations in 24 CFR Part 135. The contractor will not subcontract with any subcontractor where the contractor has notice or knowledge that the subcontractor has been found in violation of the regulations in 24 CFR Part 135.
- (e) The contractor will certify that any vacant employment positions, including training positions, that are filled (1) after the contractor is selected but before the contract is executed, and (2) with persons other than those to whom the regulations of 24 CFR Part 135 require employment opportunities to be directed, were not filled to circumvent the contractor's obligations under 24 CFR Part 135.
- (f) Noncompliance with HUD's regulations in 24 CFR Part 135 may result in sanctions, termination of this contract for default, and debarment or suspension from future HUD assisted contracts.
- (g) With respect to work performed in connection with section 3 covered Indian housing assistance, section 7(b) of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450e) also applies to the work to be performed under this contract. Section 7(b) requires that to the greatest extent feasible (i) preference and opportunities for training and employment shall be given to Indians, and (ii) preference in the award of contracts and subcontracts shall be given to Indian organizations and Indian-owned Economic Enterprises. Parties to this contract that are subject to the provisions of section 3 and section 7(b)agree to comply with section 3 to the maximum extent feasible, but not in derogation of compliance with section 7(b).

41. Interest of Members of Congress

No member of or delegate to the Congress of the United States of America shall be admitted to any share or part of this contract or to any benefit that may arise therefrom.

42. Interest of Members, Officers, or Employees and Former Members, Officers, or Employees

No member, officer, or employee of the PHA, no member of the governing body of the locality in which the project is situated, no member of the governing body of the locality in which the PHA was activated, and no other public official of such locality or localities who exercises any functions or responsibilities with respect to the project, shall, during his or her tenure, or for one year thereafter, have any interest, direct or indirect, in this contract or the proceeds thereof.

43. Limitations on Payments made to Influence Certain Federal Financial Transactions

- (a) The Contractor agrees to comply with Section 1352 of Title 31, United States Code which prohibits the use of Federal appropriated funds to pay any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, and officer or employee of Congress, or an employee of a Member of Congress in connection with any of the following covered Federal actions: the awarding of any Federal contract; the making of any Federal grant; the making of any Federal loan; the entering into of any cooperative agreement; or the modification of any Federal contract, grant, loan, or cooperative agreement.
- (b) The Contractor further agrees to comply with the requirement of the Act to furnish a disclosure (OMB Standard Form LLL, Disclosure of Lobbying Activities) if any funds other than Federal appropriated funds (including profit or fee received under a covered Federal transaction) have been paid, or will be paid, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a Federal contract, grant, loan, or cooperative agreement.

44. Royalties and Patents

The Contractor shall pay all royalties and license fees. It shall defend all suits or claims for infringement of any patent rights and shall save the PHA harmless from loss on account thereof; except that the PHA shall be responsible for all such loss when a particular design, process or the product of a particular manufacturer or manufacturers is specified and the Contractor has no reason to believe that the specified design, process, or product is an infringement. If, however, the Contractor has reason to believe that any design, process or product specified is an infringement of a patent, the Contractor shall promptly notify the Contracting Officer. Failure to give such notice shall make the Contractor responsible for resultant loss.

45. Examination and Retention of Contractor's Records

- (a) The PHA, HUD, or Comptroller General of the United States, or any of their duly authorized representatives shall, until 3 years after final payment under this contract, have access to and the right to examine any of the Contractor's directly pertinent books, documents, papers, or other records involving transactions related to this contract for the purpose of making audit, examination, excerpts, and transcriptions.
- (b) The Contractor agrees to include in first-tier subcontracts under this contract a clause substantially the same as paragraph (a) above. "Subcontract," as used in this clause, excludes purchase orders not exceeding \$10,000.
- (c) The periods of access and examination in paragraphs (a) and (b) above for records relating to (1) appeals under the Disputes clause of this contract, (2) litigation or settlement of claims arising from the performance of this contract, or (3) costs and expenses of this contract to which the PHA, HUD, or Comptroller General or any of their duly authorized representatives has taken exception shall continue until disposition of such appeals, litigation, claims, or exceptions.

46. Labor Standards - Davis-Bacon and Related Acts

If the total amount of this contract exceeds \$2,000, the Federal labor standards set forth in the clause below shall apply to the development or construction work to be performed under the contract.

(a) Minimum Wages.

(1) All laborers and mechanics employed under this contract in the development or construction of the project(s) involved will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR Part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the Contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of 29 CFR 5.5(a)(1)(iv); also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the regular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits in the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein; provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under 29 CFR 5.5(a)(1)(ii) and the Davis-Bacon poster (WH-1321) shall

be posted at all times by the Contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

- (2) (i) Any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. HUD shall approve an additional classification and wage rate and fringe benefits therefor only when all the following criteria have been met: (A) The work to be performed by the classification requested is not performed by a classification in the wage determination; and (B) The classification is utilized in the area by the construction industry; and (C) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.
 - (ii) If the Contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and HUD or its designee agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by HUD or its designee to the Administrator of the Wage and Hour Division, Employee Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary.
 - (iii) In the event the Contractor, the laborers or mechanics to be employed in the classification or their representatives, and HUD or its designee do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), HUD or its designee shall refer the questions, including the views of all interested parties and the recommendation of HUD or its designee, to the Administrator of the Wage and Hour Division for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary.
 - (iv) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (a)(2)(ii) or (iii) of this clause shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in classification.
- (3) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the Contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.
- (4) If the Contractor does not make payments to a trustee or other third person, the Contractor may consider as part of the wages of any laborer or mechanic the

amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program; provided, that the Secretary of Labor has found, upon the written request of the Contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the Contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

- (b) Withholding of funds. HUD or its designee shall, upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the Contractor under this contract or any other Federal contract with the same prime Contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime Contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the Contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working in the construction or development of the project, all or part of the wages required by the contract, HUD or its designee may, after written notice to the Contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased. HUD or its designee may, after written notice to the Contractor, disburse such amounts withheld for and on account of the Contractor or subcontractor to the respective employees to whom they are due.
- (c) Payrolls and basic records.
 - (1) Payrolls and basic records relating thereto shall be maintained by the Contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working in the construction or development of the project. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made, and actual wages paid. Whenever the Secretary of Labor has found, under 29 CFR 5.5(a)(1)(iv), that the wages of any laborer or mechanic include the amount of costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the Contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

- (2) (i) The Contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the Contracting Officer for transmission to HUD or its designee. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under subparagraph (c)(1) of this clause. This information may be submitted in any form desired. Optional Form WH-347 (Federal Stock Number 029-005-00014-1) is available for this purpose and may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. The Contractor is responsible for the submission of copies of payrolls by all subcontractors. (Approved by the Office of Management and Budget under OMB Control Number 1214-0149.)
 - (ii) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the Contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:
 - (A) That the payroll for the payroll period contains the information required to be maintained under paragraph (c) (1) of this clause and that such information is correct and complete;
 - (B) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR Part 3; and
 - (C) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.
 - (iii) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirements for submission of the "Statement of Compliance" required by subparagraph (c)(2)(ii) of this clause.
 - (iv) The falsification of any of the above certifications may subject the Contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 3729 of Title 31 of the United States Code.
- (3) The Contractor or subcontractor shall make the records required under subparagraph (c)(1) available for inspection, copying, or transcription by authorized representatives of HUD or its designee, the Contracting Officer, or the Department of Labor and shall permit such representatives to interview employees during working hours on the job. If the Contractor or subcontractor fails to submit the required records or to make them available, HUD or its designee may, after written notice to the Contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to

make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

- (d) (1) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship and Training, Employer and Labor Services (OATELS), or with a State Apprenticeship Agency recognized by OATELS, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by OATELS or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the Contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated in this paragraph, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the Contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator of the Wage and Hour Division determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event OATELS, or a State Apprenticeship Agency recognized by OATELS, withdraws approval of an apprenticeship program, the Contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.
 - (2) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under

the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed in the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate in the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate in the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate in the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the Contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

- (3) Equal employment opportunity. The utilization of apprentices, trainees, and journeymen under this clause shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.
- (e) Compliance with Copeland Act requirements. The Contractor shall comply with the requirements of 29 CFR Part 3, which are hereby incorporated by reference in this contract.
- (f) Contract termination; debarment. A breach of this contract clause may be grounds for termination of the contract and for debarment as a Contractor and a subcontractor as provided in 29 CFR 5.12.
- (g) Compliance with Davis-Bacon and related Act requirements. All rulings and interpretations of the Davis-Bacon and related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this contract.
- (h) Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this clause shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the Contractor (or any of its subcontractors) and the PHA, HUD, the U.S. Department of Labor, or the employees or their representatives.
- (i) Certification of eligibility.
 - (1) By entering into this contract, the Contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the Contractor's firm is a person or firm ineligible to be awarded contracts by the United States Government by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

- (2) No part of this contract shall be subcontracted to any person or firm ineligible for award of a United States Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
- (3) The penalty for making false statements is prescribed in the U. S. Criminal Code, 18 U.S.C. 1001.
- (j) Contract Work Hours and Safety Standards Act. As used in this paragraph, the terms "laborers" and "mechanics" include watchmen and guards.
 - (1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics, including watchmen and guards, shall require or permit any such laborer or mechanic in any workweek in which the individual is employed on such work to work in excess of 40 hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of 40 hours in such workweek.
 - (2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the provisions set forth in subparagraph (j)(1) of this clause, the Contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such Contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic (including watchmen and guards) employed in violation of the provisions set forth in subparagraph (j)(1) of this clause, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of 40 hours without payment of the overtime wages required by provisions set forth in subparagraph (j)(1) of this clause
 - (3) Withholding for unpaid wages and liquidated damages. HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the Contractor or subcontractor under any such contract or any Federal contract with the same prime Contractor, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime Contractor, such sums as may be determined to be necessary to satisfy any liabilities of such Contractor or subcontractor for unpaid wages and liquidated damages as provided in the provisions set forth in subparagraph (j)(2) of this clause.
- (k) Subcontracts. The Contractor or subcontractor shall insert in any subcontracts all the provisions contained in this clause, and such other clauses as HUD or its designee may by appropriate instructions require, and also a clause requiring the subcontractors to include these provisions in any lower tier subcontracts. The prime Contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all these provisions.

47. Non-Federal Prevailing Wage Rates

- (a) Any prevailing wage rate (including basic hourly rate and any fringe benefits), determined under State or tribal law to be prevailing, with respect to any employee in any trade or position employed under the contract, is inapplicable to the contract and shall not be enforced against the Contractor or any subcontractor, with respect to employees engaged under the contract whenever such non-Federal prevailing wage rate exceeds:
 - The applicable wage rate determined by the Secretary of Labor pursuant to the Davis-Bacon Act (40 U.S.C. 3141 et seq.) to be prevailing in the locality with respect to such trade;
- (b) An applicable apprentice wage rate based thereon specified in an apprenticeship program registered with the U.S. Department of Labor (DOL) or a DOLrecognized State Apprenticeship Agency; or
- (c) An applicable trainee wage rate based thereon specified in a DOL-certified trainee program.
- 48. Procurement of Recovered Materials.
- (a) In accordance with Section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, the Contractor shall procure items designated in guidelines of the Environmental Protection Agency (EPA) at 40 CFR Part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition. The Contractor shall procure items designated in the EPA guidelines that contain the highest percentage of recovered materials practicable unless the Contractor determines that such items: (1) are not reasonably available in a reasonable period of time; (2) fail to meet reasonable performance standards, which shall be determined on the basis of the guidelines of the National Institute of Standards and Technology, if applicable to the item; or (3) are only available at an unreasonable price.
- (b) Paragraph (a) of this clause shall apply to items purchased under this contract where: (1) the Contractor purchases in excess of \$10,000 of the item under this contract; or (2) during the preceding Federal fiscal year, the Contractor: (i) purchased any amount of the items for use under a contract that was funded with Federal appropriations and was with a Federal agency or a State agency or agency of a political subdivision of a State; and (ii) purchased a total of in excess of \$10,000 of the item both under and outside that contract.

GENERAL INFORMATION SECTION 3 – PROVISION OF THE HOUSING AND URBAN DEVELOPMENT ACT OF 1968

The Section 3 policy, a provision of the Housing and Urban Development Act of 1968, was established by Congress to guarantee that employment and other economic opportunities created by Federal financial assistance for housing and community development programs should, if possible, be directed toward low- and very low-income persons, particularly those who are recipients of government assistance for housing (i.e. the residents who live in the Housing Authority of the City of Frederick's public housing communities). The purpose of Section 3 is to ensure that employment and other economic opportunities generated by certain HUD financial assistance shall, to the greatest extent feasible, and consistent with existing Federal, State, and local laws and regulations, be directed to <u>Section 3 workers</u>, particularly those who are recipients of Section 3 covered financial assistance should make every effort within their disposal to meet and comply with the regulatory requirements. This requirement applies to ALL CONTRACTORS (& subcontractors) that receive awards from the Housing Authority of the City of Frederick (HACF), regardless of the dollar amount of the contract. More info: <u>Section 3/hiring-eligible-and-qualified-workers/</u> Section 3 FAQs

A <u>Section 3 worker</u> is any worker who is a low or very low income person, a public housing resident, or a YouthBuild participant. Low-income is defined as 80% or below the median income of the area and very low-income is defined as 50% or below the median income of the area. <u>https://www.huduser.gov/portal/datasets/il.html</u>

Section 3 business concerns are businesses that can provide evidence that they meet one (1) of the following criteria:

- a. At least 51 percent of the business is owned and controlled by low- or very low-income persons (Refer to income guidelines on page 00750-3).
- b. At least 51 percent of the business is owned and controlled by current public housing residents or residents who currently live in Section 8-assisted housing.
- c. Over 75 percent of the labor hours performed for the business over the prior three-month period are performed by Section 3 workers (Refer to definition on page 00750-8).

Recipients are required, to the greatest extent feasible, to provide all types of employment opportunities that are created as a direct result of the expenditure of Section 3 covered financial assistance to low- and very low-income persons, including seasonal and temporary employment, as well as long-term employment. **Employment goals are based on "new hires and accumulated labor hours"**, which are defined as employees for permanent, temporary, or seasonal employment opportunities, and the labor hours involved completing the project. If the Contractor or sub-contractor has the need to hire new persons to complete the *Section 3 covered project* or needs to sub-contract portions of the work to another business, they are required to direct their newly created employment and/or sub-contracting opportunities to qualified Section 3 residents who live in HACF's public housing units, and business concerns. In addition, the Contractor/sub-contractor must notify HACF about their efforts to comply with Section 3 requirements and submit any required documentation. The Contractor who is awarded the contract is required to hire QUALIFIED residents within the HACF communities before hiring from the outside public. The Contractor is to notify HACF of any possible job opportunities so that information can be posted and memos can be submitted informing the residents of a possible job opportunity.

A Section 3 covered project involves the construction or rehabilitation of housing or other public construction such as street repair, sewage line repair or installation, updates to building facades, etc.; the abatement of hazardous materials; demolition projects; professional service contracts; etc.

The Section 3 Agreement and Certification Form (page 00750-2) must be submitted by ALL Contractors who are bidding on the specific project. It is not necessary for the Contractor to be a Section 3 company; however, the form still needs to be submitted acknowledging your agreement to, and certifying that you will comply with, Section 3 regulations. At the time of the Pre-Construction Conference with the Contractor who is being awarded the contract, the Contractor will be required to submit a list of ALL employees who will be working on the specific project. This list will be compared to your Certified Payroll Statements, if applicable, and will inform HACF if you hired any persons for the specific project who are not on the approved employee list of workers, whether self-classified as a section 3 worker or not.

SECTION 3 – PROVISION OF THE HOUSING AND URBAN DEVELOPMENT ACT OF 1968 AGREEMENT AND CERTIFICATION FORM

General Contractor shall submit this form as part of the Bid Documents. Any sub-contractors shall submit this form prior to starting work.

Company Nam	e:
Company Addr	ess:
Company Teler	bhone Number:
Company Tax I	dentification Number:
Project Title:	THE CARVER COMMUNITY CENTER EXPANSION PROJECT AT 207 MADISON STREET FOR THE HOUSING AUTHORITY OF THE CITY OF FREDERICK
Number of nev	v hires company expects to obtain for this project:

Number of sub-contractors company expects to contract for this project:

Please check the following statements if they apply to your company. Any check mark indicates that your company is a Section 3 business.

At least 51 percent of the business is owned and controlled by low- or very low-income persons (Refer to income guidelines on page 00750-3).

At least 51 percent of the business is owned and controlled by current public housing residents or residents who currently live in Section 8-assisted housing.

□ Over 75 percent of the labor hours performed for the business over the prior three-month period are performed by Section 3 workers (Refer to definition on page 00750-8).

STATEMENT OF AGREEMENT AND CERTIFICATION TO COMPLY WITH SECTION 3 REQUIREMENTS

The Company named above has read the General Information about Section 3 (page 00750-1) in the contract for the project, will comply with the regulations of Section 3 as they apply to this project, and will carry out the basic actions for compliance as stated in the contract. The company certifies that no hiring done during the period between the selection of the Contractor and execution of the contract was intended to circumvent the obligations under Section 3. The company further certifies to the correctness of the information it has provided above for use in determining whether or not the company is a Section 3 business. The company understands that they do not have to be a Section 3 business in order to receive the contract.

Signature of Officer or Owner of Company: _____

Printed Name & Title of Signatory above: _____

Date:_____

The Housing Authority of the City of Frederick (HACF)

Section 3 Income Limits

Eligibility Guidelines

The worker's income must be at or below the amount provided below for an individual (household of 1) regardless of actual household size.

Individual Income Limits

FY 2021	Income Limits	FY 2021
Income Limit Area	Category	Income Limits
City of Frederick, MD	Extremely Low Income Limits (30%)	\$27,100
	Very Low Income Limits (50%)	\$45,150
	Low Income Limits (80%)	\$57,650

See https://www.huduser.gov/portal/datasets/il.html for most recent income limits.

Section 3 Worker Definition:

- A low or very low-income resident (the worker's income for the previous or annualized calendar year is below the income limit established by HUD); or
- · Employed by a Section 3 business concern; or
- A YouthBuild participant.

Targeted Section 3 Worker Definition:

- Employed by a Section 3 business concern or
- Currently meets or when hired met at least one of the following categories as documented within the past five years:
 - A resident of public housing; or
 - A resident of other public housing projects or Section 8-assisted housing; or
 - A YouthBuild participant.

FY 2021 INCOME LIMITS DOCUMENTATION SYSTEM

HUD.gov HUD User Home Data Sets Fair Market Rents Section 8 Income Limits MTSP Income Limits HUD LIHTC Database

FY 2021 Income Limits Summary

Selecting any of the buttons labeled "Click for More Detail" will display detailed calculation steps for each of the various parameters.

FY 2021	Median Family Income	FY 2021 Income Limit Category				Persons	in Famil	y	
Area	Click for More Detail		1	2	3	4	5	6	7
Washington- Arlington- Alexandria, DC-VA-MD HUD Metro FMR Area		Very Low (50%) Income Limits (\$) Click for More Detail	45,150	51,600	58,050	64,500	69,700	74,850	80,000
	\$129,000	Extremely Low Income Limits (\$)* Click for More Detail	27,100	31,000	34,850	38,700	41,800	44,900	48,000
		Low (80%) Income Limits (\$) Click for More Detail	57,650	65,850	74,100	82,300	88,900	95,500	102,100

NOTE: Frederick County is part of the **Washington-Arlington-Alexandria**, **DC-VA-MD HUD Metro FMR Area**, so all information presented here applies to all of the **Washington-Arlington-Alexandria**, **DC-VA-MD HUD Metro FMR Area**. HUD generally uses the Office of Management and Budget (OMB) area definitions in the calculation of income limit program parameters. However, to ensure that program parameters do not vary significantly due to area definition changes, HUD has used custom geographic definitions for the **Washington-Arlington-Alexandria**, **DC-VA-MD HUD Metro FMR Area**.

The **Washington-Arlington-Alexandria**, **DC-VA-MD HUD Metro FMR Area** contains the following areas: District of Columbia, DC; Calvert County, MD; Charles County, MD; Frederick County, MD; Montgomery County, MD; Prince George's County, MD; Arlington County, VA; Clarke County, VA; Fairfax County, VA; Fauquier County, VA; Loudoun County, VA; Prince William County, VA; Spotsylvania County, VA; Stafford County, VA; Alexandria city, VA; Fairfax city, VA; Falls Church city, VA; Fredericksburg city, VA; Manassas city, VA; and Manassas Park city, VA.

* The FY 2014 Consolidated Appropriations Act changed the definition of extremely low-income to be the greater of 30/50ths (60 percent) of the Section 8 very low-income limit or the poverty guideline as <u>established by the Department of</u> <u>Health and Human Services (HHS)</u>, provided that this amount is not greater than the Section 8 50% very low-income limit. Consequently, the extremely low income limits may equal the very low (50%) income limits.

Income Limit areas are based on FY 2021 Fair Market Rent (FMR) areas. For information on FMRs, please see our associated FY 2021 Fair Market Rent documentation system.

For last year's Median Family Income and Income Limits, please see here:

FY2020 Median Family Income and Income Limits for Washington-Arlington-Alexandria, DC-VA-MD HUD Metro FMR Area

Select a different county or county equivalent in Maryland:

Select any FY2021 HUD Metropolitan FMR Area's Income Limits:



A Section 3 Worker is any worker who **currently fits**, or **when hired within the past five years** fit, at least one of the following categories, as documented:





Certification: Section 3 Worker

One of the following must be maintained:

Worker Self-Certifications

- A worker's self-certification that their income is below the income limit from the prior calendar year;
- A worker's self-certification of participation in a means-tested program such as public housing or Section 8- assisted housing;

PHA/Owner Certifications

- Certification from a PHA, or the owner or property manager of project-based Section 8-assisted housing, or the administrator of tenant-based Section 8- assisted housing that the worker is a participant in one of their programs;
- An employer's certification that the worker's income is below the income limit when based on an employer's calculation of what the worker's wage rate would be if annualized on a full-time basis; or
- An employer's certification that the worker is employed by a Section 3 business concern.

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Certification: Targeted Section 3 Worker

One of the following must be maintained (Subpart B):

Worker Self-Certifications

- A worker's self-certification of participation in public housing or Section 8- assisted housing programs;
- A worker's certification that the worker is a YouthBuild participant.

PHA/Owner Certifications

- Certification from a PHA, or the owner or property manager of project-based Section 8-assisted housing, or the administrator of tenant-based Section 8- assisted housing that the worker is a participant in one of their programs;
- An employer's certification that the worker is employed by a Section 3 business concern.



Certification: Section 3 Business Concern

To qualify as a Section 3 Business, <u>one</u> of the following must be documented (within the last six-month period):



 51% or more owned and controlled by low or very-low income persons
 OR



51% or more owned and controlled by current residents of public housing or Section 8-assisted housing OR



Over 75% of the labor hours performed for the business over the prior three-month period are performed by Section 3 workers

Certification: Section 3 Business Concern

- Business concerns may self-certify to claim eligibility
- Business concerns bidding on a Section 3 project should submit certification **during** the bidding or contracting process
- Section 3 status should be verified before awarding contracts or subcontracts to businesses that self-certified
- A Section 3 Business Concern will retain status for as long as it continues to meet the definition
- Eligible Section 3 Business Concerns are responsible for maintaining records that verify eligibility







SUPPLEMENTARY CONDITIONS - SECTION 00800

1.0 PROJECT TITLE

The Carver Community Center Expansion Project at 207 Madison Street for the Housing Authority of The City Of Frederick

1.1 TIME OF COMPLETION

The work shall begin at the time stipulated in the Notice to Proceed, once executed. The work shall be fully completed within **Three Hundred (300) calendar days**.

1.2 WARRANTY

Warranty shall continue for a period of two (2) years from the date of final acceptance of the work in reference to workmanship only. Material warranties shall be as provided by the manufacturer of the specific product.

1.3 PERMITS

The Contractor shall be responsible for obtaining and paying for any permits (if any) and certificates required for the work to be performed under this contract.

1.4 AMENDMENTS TO THE GENERAL CONDITIONS (SECTION 00700)

The "General Conditions" shall be modified as follows: Delete all reference to PHA and insert HACF (Housing Authority of the City of Frederick) in lieu thereof.

1.5 SUBSTITUTIONS

- a. The selection of material and equipment specified in this Specification Manual are for setting the standard of quality, performance, and capacity required.
- b. Materials and equipment submitted by the Contractor for substituting the specified material and/or equipment shall meet or exceed the standards of the materials and/or equipment originally specified.
- c. Whenever substitute products are to be considered, supporting technical literature, test reports, samples, and drawings must be submitted in order for HACF to make a valid comparison of the product involved.
- d. HACF will be the sole authority to decide whether or not the desired substitution(s) meet or exceed the standards of the specified materials and/or equipment.
- e. Substitutions will only be considered if written request is submitted before the deadline date of December 30th, 2022
 by 4:00 p.m. In all cases, substitutions will only be considered by written request. Please refer to Technical Specifications: Division 01 General Requirements, section 012500 "Substitution Procedures" for further information.
- f. If HACF approves any proposed substitutions prior to the receipt of proposals, such approval will be set forth in an Addendum.

1.6 PRE-CONSTRUCTION CONFERENCE

- a. Before any work can begin on this project, a Pre-Construction Conference must be held between HACF Staff and the Contractor. In some instances, the residents affected by this project may be in attendance at this meeting. The Contractor must obtain the input of HACF and the residents of the project in order that he/she can prepare a "Schedule of Operations". This "Schedule of Operations" must be in sufficient detail to take into account what effects this project will have on the residents and HACF, especially keeping this at a minimum of inconvenience to the residents as well as HACF.
- b. Schedule of work shall be coordinated by the Contractor with the duly appointed representative of HACF in order that HACF can monitor the operations of this project.

1.7 LIQUIDATED DAMAGES

Although it is difficult to determine the actual daily amount of Liquidated Damages which occur, all parties agree that there are damages on a daily basis if this project is not completed on time as specified. Therefore, it is further agreed that these damages shall be assessed at **One Hundred Dollars (\$100.00) per calendar day**.

1.8 ADDITIONAL CONDITIONS

- a. In addition to other safety provisions contained elsewhere in this Specification Manual, the Contractor shall provide additional safety precautions and protection during the progress of the work against injury or death to any person or persons having right of entry onto the premises, not limited to residents, visitors, delivery persons, Owner's representative(s), pedestrian, and other residents within the community. Protection shall include barricades, flasher lights, etc.
- b. No work shall be permitted nor shall materials be allowed to be brought onto the project before 7 a.m. and after 4:30 p.m. on any given work day. No work shall be permitted on Saturdays, Sundays, or any and all holidays observed by HACF unless special permission is given from HACF to do otherwise.
- c. During the construction period, the Contractor and all workmen shall interfere as little as possible with the goings and comings of the employees and the residents. Walks shall be kept clear of all debris. Materials shall be stored in such places as will not obstruct passage of all persons having right of entry into their residences and/or housing development.

1.9 WAGE DECISION OF THE SECRETARY OF LABOR

- a. Davis-Bacon & Related Acts Prevailing Building Wage Decision# MD20220042, Publication Date 09/09/2022, Modification# 13 is included in this Specification Manual, section 00900, and shall apply to all work performed on-site on this project.
- b. If any state rate exceeds the corresponding federal rate, as indicated in paragraph (a) above, the state rate shall become inapplicable and not enforced.

END OF SECTION

Superseded General Decision Number: MD20210042

State: Maryland

Construction Type: Building

County: Frederick County in Maryland.

BUILDING CONSTRUCTION PROJECTS (does not include single family homes or apartments up to and including 4 stories).

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	 Executive Order 14026 generally applies to the contract. The contractor must pay all covered workers at least \$15.00 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2022.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	 Executive Order 13658 generally applies to the contract. The contractor must pay all covered workers at least \$11.25 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2022.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at https://www.dol.gov/agencies/whd/government-contracts.

Number	Publication	Date
	01/07/2022	
	01/14/2022	
	02/11/2022	
	02/18/2022	
	Number	Number Publication 01/07/2022 01/14/2022 02/11/2022 02/18/2022

02/25/2022
03/11/2022
05/20/2022
06/03/2022
06/17/2022
07/08/2022
08/05/2022
08/12/2022
09/02/2022
09/09/2022

ASBE0024-007 04/01/2021

Rates Fringes ASBESTOS WORKER/HEAT & FROST INSULATOR.....\$ 39.27 18.67+a Includes the application of all insulating materials, protective coverings, coatings and finishes to all types of mechanical systems a. PAID HOLIDAYS: New Year's Day, Martin Luther King Day, Memorial Day, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day, the day after Thanksgiving and Christmas Day provided the employee works the regular work day before and after the paid holiday. ASBE0024-010 04/01/2021 Rates Fringes ASBESTOS WORKER: HAZARDOUS MATERIAL HANDLER (Removal of hazardous material from ceilings, floors, mechanical systems, and walls).....\$ 24.46 8.69+a a. PAID HOLIDAYS: New Year's Day, Martin Luther King Day, Memorial Day, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day, the day after Thanksgiving and Christmas Day provided the employee works the regular work day before and after the paid holiday. _____ BRMD0001-006 05/01/2022 Rates Fringes TILE SETTER.....\$ 32.31 12.61 BRMD0001-009 05/01/2022 Rates Fringes TILE FINISHER.....\$ 26.80 11.56 -----BRMD0001-010 05/01/2022 Rates Fringes
 TERRAZZO WORKER/SETTER.....\$ 32.31
 12.61
 _____ BRMD0001-011 05/01/2022

Rates

Fringes

BRICKLAYER (Excluding Pointing, Caulking and				
Cleaning)	.\$ 35.20	12.85		
BRMD0001-012 05/01/2022				
	Rates	Fringes		
MASON - STONE	.\$ 42.06	19.75		
CARP0197-005 05/01/2022				
	Rates	Fringes		
CARPENTER (Including Acoustical Ceiling Installation, Drywall Hanging, Form Work and Metal Stud Installation)	.\$ 31.40	13.86		
CARP0219-002 05/01/2022				
	Rates	Fringes		
MILLWRIGHT	.\$ 34.90	16.71		
ELEC0024-012 05/29/2022				
	Rates	Fringes		
ELECTRICIAN (Including low voltage wiring for and installation of alarms; HVAC controls)	.\$ 42.75	5.25%+16.94		
ELEC0024-013 05/29/2022				
	Rates	Fringes		
ELECTRICIAN (Communication and Sound Equipment)	.\$ 30.90	4.75%+14.45		
PAID HOLIDAYS: New Year's Day, Labor Day, Veterans Day, Thank Thanksgiving, Christmas Day	Memorial D sgiving Day	ay, Fourth of July, , Day after		
ELEV0007-001 01/01/2022				
	Rates	Fringes		
ELEVATOR MECHANIC	.\$ 51.75	36.885+a+b		
a. PAID HOLIDAYS: New Year's Day, Memorial Day, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day, the Friday after Thanksgiving Day and Christmas Day.				
b. VACATIONS: Employer contrib for 5 years of service or more 6 months to 5 years of service	outes 8% of e; 6% of bas e as vacatio	basic hourly rate ic hourly rate for n pay credit.		
ENGI0037-030 04/01/2021				
	Rates	Fringes		

POWER EQUIPMENT OPERATOR: Backhoe Bulldozer	.\$ 31.73 .\$ 31.73	13.15+a 13.15+a
a. PAID HOLIDAYS: New Year's Da Day, Labor Day, Veterans' Day, Christmas Day.	ay, Memorial Day, Thanksgiving Day	Independence and
IRON0005-015 06/01/2021		
	Rates	Fringes
IRONWORKER, ORNAMENTAL, REINFORCING AND STRUCTURAL	.\$ 31.17	24.16
LAB00616-014 11/01/2021		
	Rates	Fringes
LABORER: Mason Tender - Cement/Concrete LABORER: Pipelayer	.\$ 21.94 .\$ 21.94	21.40 21.40
* PAIN0051-019 06/01/2022		
	Rates	Fringes
PAINTER Brush, Roller, Spray and Drywall Finisher/Taper Industrial	.\$ 26.61 .\$ 33.05	11.41 13.22
PLAS0891-005 07/01/2021		
	Rates	Fringes
PLASTERER (Including Fireproofing)	.\$ 30.53	7.93
PLAS0891-006 02/01/2020		
	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER	.\$ 28.82	11.68
PLUM0486-013 12/16/2021		
	Rates	Fringes
PLUMBER	.\$ 42.62	22.77
PLUM0486-019 12/16/2021		
	Rates	Fringes
PIPEFITTER (HVAC Pipe and System Installation Only)	.\$ 42.62	22.77
ROOF0030-025 07/01/2022		
South and Wast of Pouto No 270 f	oom the intercest	ion of the

South and West of Route No.270 from the intersection of the Montgomery County Line to Route No.70, south and west of Route No.70 to the intersection of Route No.70 and the Washington County Line

	Rates	Fringes
ROOFER	\$ 32.26	14.71
ROOF0030-031 07/01/2022		
East of Routes 70 and 270		
	Rates	Fringes
ROOFER	\$ 28.45 	13.71
SFMD0669-001 01/01/2022		
	Rates	Fringes
SPRINKLER FITTER (Fire Sprinklers)	\$ 36.95	24.56
SHEE0100-023 11/01/2021		
	Rates	Fringes
SHEETMETAL WORKER, Including HVAC Duct Installation	\$ 44.37	21.33+a
a. PAID HOLIDAYS: New Year's Da Birthday, Memorial Day, Indepen Veterans Day, Thanksgiving Day	y, Martin Luther dence Day, Labor and Christmas Da	• King's • Day, IY
* SUMD2010-090 04/30/2010		
	Rates	Fringes
GLAZIER	\$ 17.64	1.17
LABORER: Common or General	\$ 10.61 **	0.00
LABORER: Grade Checker	\$ 16.00	2.90
LABORER: Landscape	\$ 9.23 **	0.00
LABORER: Mason Tender - Brick	\$ 13.00 **	0.00
LABORER: Mason Tender - Stone	\$ 14.03 **	0.00
LABORER: Mortar Mixer	\$ 16.61	9.08
LABORER: Mason Tender (for Pointing, Caulking, Cleaning)	\$ 13.25 **	0.00
OPERATOR: Asphalt Roller	\$ 21.35	5.38
OPERATOR: Bobcat/Skid Steer/Skid Loader	\$ 18.05	8.78
OPERATOR: Boom	\$ 21.44	8.29
OPERATOR: Crane	\$ 20.95	6.18
OPERATOR: Excavator	\$ 20.00	0.00
OPERATOR: Forklift	\$ 16.00	5.12
OPERATOR: Gradall	\$ 20.50	8.42

OPERATOR: Gr	rader/Blade\$	14.50 **	5.18
OPERATOR: Lo	oader\$	22.75	4.91
OPERATOR: Pa Aggregate, ar	aver (Asphalt, nd Concrete)\$	17.47	6.36
OPERATOR: Ro Asphalt	oller excluding	17.60	3.88
PIPEFITTER (E Pipe and Syst	Excluding HVAC cem Installation)\$	28.96	11.35
POINTER, CAUL Includes poir cleaning of e brick, stone structures (r work); exclud caulking, cle replacement	KER, CLEANER, nting, caulking, existing masonry, and cement restoration des pointing, eaning of new or		
masonry, brid	ck, stone or	19.17	0.00
TRUCK DRIVER:	Dump Truck\$	15.90	1.12
TRUCK DRIVER: Truck	: Tractor Haul	17.87	9.98

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

** Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 (\$15.00) or 13658 (\$11.25). Please see the Note at the top of the wage determination for more information.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at

https://www.dol.gov/agencies/whd/government-contracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)). The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations Wage and Hour Division U.S. Department of Labor 200 Constitution Avenue, N.W. Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator U.S. Department of Labor 200 Constitution Avenue, N.W. Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board U.S. Department of Labor 200 Constitution Avenue, N.W. Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

END OF GENERAL DECISIO"

PROCUREMENT AND CONTRACTING DOCUMENTS GROUP

DIVISION 00 - PROCUREMENT AND CONTRACTING REQUIREMENTS

SPECIFICATIONS GROUP

General Requirements Subgroup

DIVISION 01 - GENERAL REQUIREMENTS

011000	SUMMARY	12.5.2022
012100	ALLOWANCES	12.5.2022
012500	SUBSTITUTION PROCEDURES	12.5.2022
012600	CONTRACT MODIFICATION PROCEDURES	12.5.2022
012900	PAYMENT PROCEDURES	12.5.2022
013100	PROJECT MANAGEMENT AND COORDINATION	12.5.2022
013200	CONSTRUCTION PROGRESS DOCUMENTATION	12.5.2022
013233	PHOTOGRAPHIC DOCUMENTATION	12.5.2022
013300	SUBMITTAL PROCEDURES	12.5.2022
013516	ALTERATION PROJECT PROCEDURES	12.5.2022
014000	QUALITY REQUIREMENTS	12.5.2022
014200	REFERENCES	12.5.2022
015000	TEMPORARY FACILITIES AND CONTROLS	12.5.2022
016000	PRODUCT REQUIREMENTS	12.5.2022
017300	EXECUTION	12.5.2022
017419	CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL	12.5.2022
017700	CLOSEOUT PROCEDURES	12.5.2022
017823	OPERATION AND MAINTENANCE DATA	12.5.2022
017839	PROJECT RECORD DOCUMENTS	12.5.2022
017900	DEMONSTRATION AND TRAINING	12.5.2022

Facility Construction Subgroup			
DIVISION	02 - FXISTING CONDITIONS		
024119	SELECTIVE DEMOLITION	12.5.2022	
DIVISION	03 - CONCRETE		
033053	MISCELLANEOUS CAST-IN-PLACE CONCRETE	12.5.2022	
DIVISION	M - MASONRY		
040110	MASONRY CLEANING	12.5.2022	
040120.64	BRICK MASONRY REPOINTING	12.5.2022	
042000	UNIT MASONRY	12.5.2022	
DIVISION	05 - METALS	10 5 0000	
055000	METAL FABRICATIONS	12.5.2022	
055213	PIPE AND TUBE RAILINGS	12.5.2022	
DIVISION	06 - WOOD, PLASTICS, AND COMPOSITES		
061000	ROUGH CARPENTRY	12.5.2022	
061600	SHEATHING	12.5.2022	
064600	WOOD TRIM	12.5.2022	
DIVISION	07 THEDMAL AND MOISTIDE DOCTECTION		
072100	17 - THERMAL AND MOISTURE PROTECTION THEDMAL INSULATION	12 5 2022	
072100	ASPHALT SHINGLES	12.5.2022	
07/113 16	STANDING-SEAM METAL ROOF PANELS	12.5.2022	
075423	THERMOPI ASTIC-POLYOL FEIN (TPO) ROOFING	12.5.2022	
076200	SHEET METAL FLASHING AND TRIM	12.5.2022	
077253	SNOW GUARDS	12.5.2022	
078413	PENETRATION FIRESTOPPING	12.5.2022	
070200	IOINT SEALANTS	12.5.2022	
079200	JOINT SEALANTS	12.5.2022	
DIVISION	08 - OPENINGS		
081113	HOLLOW METAL DOORS AND FRAMES	12.5.2022	
083313	COILING COUNTER DOORS	12.5.2022	
084113	ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS	12.5.2022	
085313	VINYL WINDOWS	12.5.2022	
087100	DOOR HARDWARE	12.5.2022	
088000	GLAZING	12.5.2022	
089119	FIXED LOUVERS	12.5.2022	
DIVISION	09 - FINISHES		
092900	GYPSUM BOARD	12.5.2022	
093013	CERAMIC TILING	12.5.2022	
095113	ACOUSTICAL PANEL CEILINGS	12.5.2022	
096513	RESILIENT BASE AND ACCESSORIES	12.5.2022	
096519	RESILIENT THE FLOORING	12.5.2022	
099114	EXTERIOR PAINTING (MPI STANDARDS)	12.5.2022	
099124	INTERIOR PAINTING (MPI STANDARDS)	12.5.2022	
~ / / • • •		12.2.2022	

DIVISION 10 – SPECIALTIES

101419	DIMENSIONAL LETTER SIGNAGE	12.5.2022
101423.16	ROOM-IDENTIFICATION PANEL SIGNAGE	12.5.2022
102113.19	PLASTIC TOILET COMPARTMENTS	12.5.2022
102239	FOLDING PANEL PARTITIONS	12.5.2022
102800	TOILET, BATH, AND LAUNDRY ACCESSORIES	12.5.2022
104400	FIRE PROTECTION SPECIALTIES	12.5.2022

DIVISION 11 - EQUIPMENT

113013	RESIDENTIAL APPLIANCES	12.5.2022
DIVISIO	N 12 - FURNISHINGS	
122116	VERTICAL LOUVER BLINDS	12.5.2022
122520	DESIDENTIAL CASEWORK	12 5 2022

123530	RESIDENTIAL CASEWORK	12.5.2022
123661.16	SOLID SURFACING COUNTERTOPS	12.5.2022
124813	ENTRANCE FLOOR MATS AND FRAMES	12.5.2022

DIVISION 13 - SPECIAL CONSTRUCTION NOT APPLICABLE

DIVISION 14 - CONVEYING EQUIPMENT NOT APPLICABLE

DIVISION 15 - RESERVED NOT APPLICABLE

DIVISION 16 - RESERVED

NOT APPLICABLE

DIVISION 17 - RESERVED

NOT APPLICABLE

DIVISION 18 - RESERVED NOT APPLICABLE

DIVISION 19 - RESERVED NOT APPLICABLE

Facility Services Subgroup

DIVISION 20 - RESERVED NOT APPLICABLE

DIVISION 21 - FIRE SUPPRESSION NOT APPLICABLE

DIVISION 22 - PLUMBING SPECIFICATIONS WILL BE PROVIDED ON THE DRAWINGS

DIVISION 23 - HEATING, VENTILATING, AND AIR CONDITIONING (HVAC) SPECIFICATIONS WILL BE PROVIDED ON THE DRAWINGS **DIVISION 24 - RESERVED** NOT APPLICABLE

DIVISION 25 - INTEGRATED AUTOMATION NOT APPLICABLE

DIVISION 26 - ELECTRICAL SPECIFICATIONS WILL BE PROVIDED ON THE DRAWINGS

DIVISION 27 - COMMUNICATIONS SPECIFICATIONS WILL BE PROVIDED ON THE DRAWINGS

DIVISION 28 - ELECTRONIC SAFETY AND SECURITY SPECIFICATIONS WILL BE PROVIDED ON THE DRAWINGS

DIVISION 29 - RESERVED NOT APPLICABLE

Site and Infrastructure Subgroup

DIVISION 30 - RESERVED NOT APPLICABLE

DIVISION 31 - EARTHWORK NOT APPLICABLE

DIVISION 32 - EXTERIOR IMPROVEMENTS SPECIFICATIONS WILL BE PROVIDED ON THE DRAWINGS

DIVISION 33 - UTILITIES SPECIFICATIONS WILL BE PROVIDED ON THE DRAWINGS

DIVISION 34 - TRANSPORTATION NOT APPLICABLE

DIVISION 35 - WATERWAY AND MARINE CONSTRUCTION NOT APPLICABLE

END OF TABLE OF CONTENTS

SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Project information.
 - 2. Work covered by Contract Documents.
 - 3. Phased construction.
 - 4. Work under separate contracts.
 - 5. Access to site.
 - 6. Coordination with occupants.
 - 7. Work restrictions.
 - 8. Specification and Drawing conventions.
- B. Related Requirements:
 - 1. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.2 PROJECT INFORMATION

- A. Project Identification: Renovation of Carver Community Center, 207 Lee Alley, Frederick, MD 21701.
- B. Owner: Housing Authority of the City of Frederick, 209 Madison Street, Frederick, MD 21701.
- C. Architect: Miner Feinstein Architects, LLC, 241 East 4th Street, Suite 207, Frederick, MD 21701.
- 1.3 WORK COVERED BY CONTRACT DOCUMENTS
 - A. The Work of Project is defined by the Contract Documents and consists of the following:
 - 1. Renovation of an approximately 1,380 square foot community building and two flanking additions of 1,400 and 3,840 square feet.
 - B. Type of Contract:
 - 1. Project will be constructed under a single prime contract.

1.4 ACCESS TO SITE

- A. General: Contractor shall have full use of Project site for construction operations during construction period. Contractor's use of Project site is limited only by Owner's right to perform work or to retain other contractors on portions of Project.
- B. Use of Site: Limit use of Project site to Work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
 - 1. Driveways, Walkways, and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or for storage of materials.
- C. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.
1.5 COORDINATION WITH OCCUPANTS

Owner Limited Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and A. to place and install equipment in completed portions of the Work, prior to Substantial Completion of the Work, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and limited occupancy shall not constitute acceptance of the total Work.

WORK RESTRICTIONS 1.6

- A. Work Restrictions, General: Comply with restrictions on construction operations. Comply with limitations on use of public streets and with other requirements of authorities having 1. iurisdiction.
- В. On-Site Work Hours: Limit work in the existing building to normal business working hours of 7:00 a.m. to 5:00 p.m., Monday through Friday, unless otherwise indicated. 1
 - Comply with noise restrictions and with other requirements of authorities having jurisdiction.
- C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
 - 1. Notify Owner not less than two days in advance of proposed utility interruptions.
 - 2. Obtain Owner's written acknowledgement before proceeding with utility interruptions.
- Restricted Substances: Use of tobacco products and other controlled substances within the existing D. building is not permitted.

1.7 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
 - 1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
 - 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- В. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

SECTION 012100 - ALLOWANCES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements governing allowances.
- B. Types of allowances include the following:
 - 1. Lump-sum allowances.
 - 2. Unit-cost allowances.
 - 3. Quantity allowances.

1.2 SELECTION AND PURCHASE

- A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection, or purchase and delivery, of each product or system described by an allowance must be completed by the Owner to avoid delaying the Work.
- B. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.
- C. Purchase products and systems selected by Architect from the designated supplier.

1.3 ACTION SUBMITTALS

A. Submit proposals for purchase of products or systems included in allowances in the form specified for Change Orders.

1.4 INFORMATIONAL SUBMITTALS

- A. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.
- B. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.
- C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.5 LUMP-SUM ALLOWANCES

- A. Allowance shall include cost to Contractor of specific products and materials ordered by Owner or selected by Architect under allowance and shall include taxes, freight, and delivery to Project site.
- B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by Owner or selected by Architect under allowance shall be included as part of the Contract Sum and not part of the allowance.

1.6 UNIT-COST ALLOWANCES

A. Allowance shall include cost to Contractor of specific products and materials ordered by Owner or selected by Architect under allowance and shall include taxes, freight, and delivery to Project site.

B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by Owner or selected by Architect under allowance shall be included as part of the Contract Sum and not part of the allowance.

1.7 QUANTITY ALLOWANCES

- A. Allowance shall include cost to Contractor of specific products and materials ordered by Owner or selected by Architect under allowance and shall include [taxes,]freight[,] and delivery to Project site.
- B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by Owner or selected by Architect under allowance shall be included as part of the Contract Sum and not part of the allowance.
- C. Contractor's Scheduled Value for Quantity Allowances, as submitted on the Application for Payment (AIA G702/703 & Continuation Sheets), shall establish Unit Prices for work covered by the corresponding Quantity Allowances

1.8 ADJUSTMENT OF ALLOWANCES

- A. Allowance Adjustment: To adjust allowance amounts, prepare a Change Order proposal based on the difference between purchase amount and the allowance, multiplied by final measurement of work-inplace where applicable. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.
 - 1. Include installation costs in purchase amount only where indicated as part of the allowance.
 - 2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other markups.
 - 3. Submit substantiation of a change in scope of Work, if any, claimed in Change Orders related to unit-cost allowances.
 - 4. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.
- B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the purchase order amount or Contractor's handling, labor, installation, overhead, and profit.
 - 1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of Work has changed from what could have been foreseen from information in the Contract Documents.
 - 2. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

A. Allowance No. 1: Unit-Cost Allowance: Include the sum of \$600.00 per thousand for face brick, as specified in Section 042000 "Unit Masonry" and as shown on Drawings.

SECTION 012500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions.
- B. Related Requirements:
 - 1. Section 016000 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

1.2 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
 - 1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
 - 2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.3 ACTION SUBMITTALS

- A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified product or fabrication or installation method cannot be provided, if applicable.
 - b. Coordination of information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitutions with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes, such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.
 - f. Certificates and qualification data, where applicable or requested.
 - g. List of similar installations for completed projects, with project names and addresses as well as names and addresses of architects and owners.
 - h. Material test reports from a qualified testing agency, indicating and interpreting test results for compliance with requirements indicated.
 - i. Research reports evidencing compliance with building code in effect for Project, from ICC-ES.
 - j. Detailed comparison of Contractor's construction schedule using proposed substitutions with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.

- k. Cost information, including a proposal of change, if any, in the Contract Sum.
- 1. Contractor's certification that proposed substitution complies with requirements in the Contract Documents, except as indicated in substitution request, is compatible with related materials and is appropriate for applications indicated.
- m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
- 2. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 7 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
 - a. Forms of Acceptance: Addendum, Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
 - b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.4 QUALITY ASSURANCE

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.5 PROCEDURES

A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

1.6 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.
 - 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - b. Substitution request is fully documented and properly submitted.
 - c. Requested substitution will not adversely affect Contractor's construction schedule.
 - d. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - e. Requested substitution is compatible with other portions of the Work.
 - f. Requested substitution has been coordinated with other portions of the Work.
 - g. Requested substitution provides specified warranty.
 - h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- B. Substitutions Prior to Bid Date: Architect will consider requests for substitution if received prior to the published deadline for questions. Requests received after that time may be considered or rejected at discretion of Architect.
 - 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 - b. Requested substitution does not require extensive revisions to the Contract Documents.

- c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
- d. Substitution request is fully documented and properly submitted.
- e. Requested substitution will not adversely affect Contractor's construction schedule.
- f. Requested substitution has received necessary approvals of authorities having jurisdiction.
- g. Requested substitution is compatible with other portions of the Work.
- h. Requested substitution has been coordinated with other portions of the Work.
- i. Requested substitution provides specified warranty.
- j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- C. Substitutions for Convenience: Architect will consider requests for substitution if received within 60 days after the Notice to Award. Requests received after that time may be considered or rejected at discretion of Architect.
 - 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 - b. Requested substitution does not require extensive revisions to the Contract Documents.
 - c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - d. Substitution request is fully documented and properly submitted.
 - e. Requested substitution will not adversely affect Contractor's construction schedule.
 - f. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - g. Requested substitution is compatible with other portions of the Work.
 - h. Requested substitution has been coordinated with other portions of the Work.
 - i. Requested substitution provides specified warranty.
 - j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

SECTION 012500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions.
- B. Related Requirements:
 - 1. Section 016000 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

1.2 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
 - 1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
 - 2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.3 ACTION SUBMITTALS

- A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified product or fabrication or installation method cannot be provided, if applicable.
 - b. Coordination of information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitutions with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes, such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.
 - f. Certificates and qualification data, where applicable or requested.
 - g. List of similar installations for completed projects, with project names and addresses as well as names and addresses of architects and owners.
 - h. Material test reports from a qualified testing agency, indicating and interpreting test results for compliance with requirements indicated.
 - i. Research reports evidencing compliance with building code in effect for Project, from ICC-ES.
 - j. Detailed comparison of Contractor's construction schedule using proposed substitutions with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.

- k. Cost information, including a proposal of change, if any, in the Contract Sum.
- 1. Contractor's certification that proposed substitution complies with requirements in the Contract Documents, except as indicated in substitution request, is compatible with related materials and is appropriate for applications indicated.
- m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
- 2. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
 - a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
 - b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.4 QUALITY ASSURANCE

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.5 PROCEDURES

A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

1.6 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.
 - 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - b. Substitution request is fully documented and properly submitted.
 - c. Requested substitution will not adversely affect Contractor's construction schedule.
 - d. Requested substitution will not adversely affect Green Communities requirements and compliance.
 - e. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - f. Requested substitution is compatible with other portions of the Work.
 - g. Requested substitution has been coordinated with other portions of the Work.
 - h. Requested substitution provides specified warranty.
 - i. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- B. Substitutions for Convenience: Architect will consider requests for substitution if received within 60 days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Architect.
 - 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect

for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.

- b. Requested substitution does not require extensive revisions to the Contract Documents.
- c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
- d. Substitution request is fully documented and properly submitted.
- e. Requested substitution will not adversely affect Contractor's construction schedule.
- f. Requested substitution will not adversely affect Green Communities requirements and compliance.
- g. Requested substitution has received necessary approvals of authorities having jurisdiction.
- h. Requested substitution is compatible with other portions of the Work.
- i. Requested substitution has been coordinated with other portions of the Work.
- j. Requested substitution provides specified warranty.
- k. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

1.2 MINOR CHANGES IN THE WORK

A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710.

1.3 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 1. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
 - 2. Within time specified in Proposal Request or20 days, when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
 - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include costs of labor and supervision directly attributable to the change.
 - d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
- B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.
 - 1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
 - 2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - 4. Include costs of labor and supervision directly attributable to the change.
 - 5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 - 6. Comply with requirements in Section 012500 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.

1.4 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Work Change Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on AIA Document G701.

1.5 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: Architect may issue a Construction Change Directive on AIA Document G714. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 - 1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
 - 1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.
- PART 2 PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

SECTION 012900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.

1.2 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.
 - 1. Coordinate line items in the schedule of values with items required to be indicated as separate activities in Contractor's construction schedule.
 - 2. Submit the schedule of values to Architect at earliest possible date, but no later than seven days before the date scheduled for submittal of initial Applications for Payment.
- B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.
 - 1. Arrange schedule of values consistent with format of AIA Document G703.
 - 2. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Provide multiple line items for principal subcontract amounts in excess of five percent of the Contract Sum.
 - 3. 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.
 - 4. Allowances: Provide a separate line item in the schedule of values for each allowance. Show lineitem value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
 - 5. Overhead Costs: Include total cost and proportionate share of general overhead and profit for each line item.
 - 6. Overhead Costs: Show cost of temporary facilities and other major cost items that are not direct cost of actual work-in-place as separate line items.
 - 7. Closeout Costs. Include separate line items under Contractor and principal subcontracts for Project closeout requirements in an amount totaling five percent of the Contract Sum and subcontract amount.
 - 8. Schedule of Values Revisions: Revise the schedule of values when Change Orders or Construction Change Directives result in a change in the Contract Sum. Include at least one separate line item for each Change Order and Construction Change Directive.

1.3 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.
- B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.
 - 1. Submit draft copy of Application for Payment three days prior to due date for review by Architect.
- C. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 as form for Applications for Payment.

- D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
 - 1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
 - 2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
 - 3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
- E. Transmittal: Submit six signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.
- F. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from:
 - 1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
 - 2. When an application shows completion of an item, submit conditional final or full waivers.
 - 3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
 - 4. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
 - 5. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.
- G. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
 - 1. List of subcontractors.
 - 2. Schedule of values.
 - 3. Contractor's construction schedule (preliminary if not final).
 - 4. Products list (preliminary if not final).
 - 5. Sustainable design action plans, including preliminary project materials cost data.
 - 6. Schedule of unit prices.
 - 7. Submittal schedule (preliminary if not final).
 - 8. List of Contractor's staff assignments.
 - 9. List of Contractor's principal consultants.
 - 10. Copies of building permits.
 - 11. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 - 12. Initial progress report.
 - 13. Report of preconstruction conference.
 - 14. Certificates of insurance and insurance policies.
 - 15. Performance and payment bonds.
 - 16. Data needed to acquire Owner's insurance.
- H. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
 - 1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
 - 2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

- I. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
 - 1. Evidence of completion of Project closeout requirements.
 - 2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
 - 3. Updated final statement, accounting for final changes to the Contract Sum.
 - 4. AIA Document G706.
 - 5. AIA Document G706A.
 - 6. AIA Document G707.
 - 7. Evidence that claims have been settled.
 - 8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
 - 9. Final liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. General coordination procedures.
 - 2. Coordination drawings.
 - 3. RFIs.
 - 4. Digital project management procedures.
 - 5. Project meetings.
- B. Related Requirements:
 - 1. Section 017300 "Execution" for procedures for coordinating general installation and fieldengineering services, including establishment of benchmarks and control points.
 - 2. Section 019113 "General Commissioning Requirements" for coordinating the Work with Owner's Commissioning Authority.

1.3 DEFINITIONS

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

1.4 INFORMATIONAL SUBMITTALS

- A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
 - 1. Name, address, telephone number, and email address of entity performing subcontract or supplying products.
 - 2. Number and title of related Specification Section(s) covered by subcontract.
 - 3. Drawing number and detail references, as appropriate, covered by subcontract.

1.5 GENERAL COORDINATION PROCEDURES

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations included in different Sections that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.

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

1.6 REQUEST FOR INFORMATION (RFI)

- A. General: Immediately on discovery of the need for additional information, clarification, or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
 - 1. Architect will return without response those RFIs submitted to Architect by other entities controlled by Contractor.
 - 2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
 - 1. Project name.
 - 2. Project number.
 - 3. Date.

1.

- 4. Name of Contractor.
- 5. Name of Architect.
- 6. RFI number, numbered sequentially.
- 7. RFI subject.
- 8. Specification Section number and title and related paragraphs, as appropriate.
- 9. Drawing number and detail references, as appropriate.
- 10. Field dimensions and conditions, as appropriate.
- 11. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
- 12. Contractor's signature.
- 13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
- C. RFI Forms: Software-generated form with substantially the same content as indicated above, acceptable to Architect.
- D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow seven working days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.
 - The following Contractor-generated RFIs will be returned without action:
 - a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for approval of Contractor's means and methods.
 - d. Requests for coordination information already indicated in the Contract Documents.
 - e. Requests for adjustments in the Contract Time or the Contract Sum.
 - f. Requests for interpretation of Architect's actions on submittals.
 - g. Incomplete RFIs or inaccurately prepared RFIs.

- 2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt by Architect or Construction Manager of additional information.
- 3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."
 - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 10 days of receipt of the RFI response.
- E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Software log with not less than the following:
 - 1. Project name.
 - 2. Name and address of Contractor.
 - 3. Name and address of Architect.
 - 4. RFI number including RFIs that were returned without action or withdrawn.
 - 5. RFI description.
 - 6. Date the RFI was submitted.
 - 7. Date Architect's response was received.
- F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within three days if Contractor disagrees with response.

1.7 DIGITAL PROJECT MANAGEMENT PROCEDURES

- A. Use of Architect's Digital Data Files: Digital data files of Architect's BIM model or CAD drawings will be provided by Architect for Contractor's use during construction.
 - 1. Digital data files may be used by Contractor in preparing coordination drawings, Shop Drawings, and Project record Drawings.
 - 2. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Contract Drawings.
 - 3. Contractor shall execute a data licensing agreement in the form of AIA Document C106 Digital Data Licensing Agreement or Agreement form acceptable to the Architect.
 - a. Subcontractors, and other parties granted access by Contractor to Architect's digital data files shall execute a data licensing agreement in the form of AIA Document C106 Agreement acceptable to the Architect.
 - 4. The following digital data files will be furnished for each appropriate discipline:
 - a. Floor plans.
 - b. Reflected ceiling plans.
- B. Web-Based Project Software: Provide, administer, and use web-based Project software site for purposes of hosting and managing Project communication and documentation until Final Completion.
 - 1. Web-based Project software site includes, at a minimum, the following features:
 - a. Compilation of Project data, including Contractor, subcontractors, Architect, architect's consultants, Owner, and other entities involved in Project. Include names of individuals and contact information.
 - b. Access control for each entity for each workflow process, to determine entity's digital rights to create, modify, view, and print documents.
 - c. Document workflow planning, allowing customization of workflow between project entities.
 - d. Creation, logging, tracking, and notification for Project communications required in other Specification Sections, including, but not limited to, RFIs, submittals, Minor Changes in the Work, Construction Change Directives, and Change Orders.
 - e. Track status of each Project communication in real time, and log time and date when responses are provided.

- f. Procedures for handling PDFs or similar file formats, allowing markups by each entity. Provide security features to lock markups against changes once submitted.
- g. Processing and tracking of payment applications.
- h. Processing and tracking of contract modifications.
- i. Creating and distributing meeting minutes.
- j. Document management for Drawings, Specifications, and coordination drawings, including revision control.
- k. Management of construction progress photographs.
- 1. Mobile device compatibility, including smartphones and tablets.
- 2. Provide up to seven web-based Project software user licenses for use of Owner, Architect, and Architect's consultants. Provide eight hours of software training at Architect's office for web-based Project software users.
- 3. At completion of Project, provide digital archive in format that is readable by common desktop software applications in format acceptable to Architect. Provide data in locked format to prevent further changes.
- 4. Provide one of the following web-based Project software packages under their current published licensing agreements:
 - a. Autodesk; Buzzsaw or Constructware.
 - b. Corecon Technologies, Inc.
 - c. Meridian Systems; Prolog.
 - d. Newforma, Inc.
 - e. Procore Technologies, Inc.
 - f. Viewpoint, Inc.; Viewpoint for Project Collaboration.
- C. PDF Document Preparation: Where PDFs are required to be submitted to Architect, prepare as follows:
 - 1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
 - 2. Name file with submittal number or other unique identifier, including revision identifier.
 - 3. Certifications: Where digitally submitted certificates and certifications are required, provide a digital signature with digital certificate on where indicated.

1.8 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.
- B. Preconstruction Conference: Architect will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.
 - 1. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 2. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Responsibilities and personnel assignments.
 - b. Tentative construction schedule.
 - c. Phasing.
 - d. Critical work sequencing and long lead items.
 - e. Designation of key personnel and their duties.
 - f. Lines of communications.
 - g. Use of web-based Project software.
 - h. Procedures for processing field decisions and Change Orders.
 - i. Procedures for RFIs.
 - j. Procedures for testing and inspecting.
 - k. Procedures for processing Applications for Payment.
 - 1. Distribution of the Contract Documents.

- m. Submittal procedures.
- n. Sustainable design requirements.
- o. Preparation of Record Documents.
- p. Use of the premises and existing building.
- q. Work restrictions.
- r. Working hours.
- s. Owner's occupancy requirements.
- t. Responsibility for temporary facilities and controls.
- u. Procedures for moisture and mold control.
- v. Procedures for disruptions and shutdowns.
- w. Construction waste management and recycling.
- x. Parking availability.
- y. Office, work, and storage areas.
- z. Equipment deliveries and priorities.
- aa. First aid.
- bb. Security.
- cc. Progress cleaning.
- 3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.
- C. Sustainable Design Requirements Coordination Conference: Owner will schedule and conduct a sustainable design coordination conference before starting construction, at a time convenient to Owner Architect, and Contractor.
 - 1. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent and sustainable design coordinator; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 2. Agenda: Discuss items of significance that could affect meeting sustainable design requirements, including the following:
 - a. Sustainable design Project checklist.
 - b. General requirements for sustainable design-related procurement and documentation.
 - c. Project closeout requirements and sustainable design certification procedures.
 - d. Role of sustainable design coordinator.
 - e. Construction waste management.
 - f. Construction operations and sustainable design requirements and restrictions.
 - 3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.
- D. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity when required by other sections and when required for coordination with other construction.
 - 1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect of scheduled meeting dates.
 - 2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
 - a. Contract Documents.
 - b. Options.
 - c. Related RFIs.
 - d. Related Change Orders.
 - e. Purchases.
 - f. Deliveries.
 - g. Submittals.
 - h. Sustainable design requirements.
 - i. Review of mockups.
 - j. Possible conflicts.
 - k. Compatibility requirements.
 - l. Time schedules.
 - m. Weather limitations.

- n. Manufacturer's written instructions.
- o. Warranty requirements.
- p. Compatibility of materials.
- q. Acceptability of substrates.
- r. Temporary facilities and controls.
- s. Space and access limitations.
- t. Regulations of authorities having jurisdiction.
- u. Testing and inspecting requirements.
- v. Installation procedures.
- w. Coordination with other work.
- x. Required performance results.
- y. Protection of adjacent work.
- z. Protection of construction and personnel.
- 3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
- 4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
- 5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- E. Progress Meetings: Conduct progress meetings at bi-monthly intervals.
 - 1. Coordinate dates of meetings with preparation of payment requests.
 - 2. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - 1) Review schedule for next period.
 - b. Review present and future needs of each entity present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Status of submittals.
 - 4) Status of sustainable design documentation.
 - 5) Deliveries.
 - 6) Off-site fabrication.
 - 7) Access.
 - 8) Site use.
 - 9) Temporary facilities and controls.
 - 10) Progress cleaning.
 - 11) Quality and work standards.
 - 12) Status of correction of deficient items.
 - 13) Field observations.
 - 14) Status of RFIs.
 - 15) Status of Proposal Requests.
 - 16) Pending changes.
 - 17) Status of Change Orders.
 - 18) Pending claims and disputes.

- 19) Documentation of information for payment requests.
- 4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.
 - a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
 - 1. Contractor's Construction Schedule.
 - 2. Construction schedule updating reports.
 - 3. Daily construction reports.
 - 4. Site condition reports.

1.2 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction Project. Activities included in a construction schedule consume time and resources.
 - 1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
 - 2. Predecessor Activity: An activity that precedes another activity in the network.
 - 3. Successor Activity: An activity that follows another activity in the network.
- B. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.
- C. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.
- D. Event: The starting or ending point of an activity.
- E. Float: The measure of leeway in starting and completing an activity.
 - 1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
 - 2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
 - 3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

1.3 INFORMATIONAL SUBMITTALS

- A. Format for Submittals: Submit required submittals in the following format:
 - 1. Working electronic copy of schedule file, where indicated.
 - 2. PDF file.
- B. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.
 - 1. Submit a working digital copy of schedule, using software indicated, and labeled to comply with requirements for submittals.

- C. CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports shall contain activity number, activity description, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.
 - 1. Activity Report: List of activities sorted by activity number and then early start date, or actual start date if known.
 - 2. Logic Report: List of preceding and succeeding activities for each activity, sorted in ascending order by activity number and then by early start date, or actual start date if known.
 - 3. Total Float Report: List of activities sorted in ascending order of total float.
- D. Construction Schedule Updating Reports: Submit with Applications for Payment.
- E. Daily Construction Reports: Submit at weekly intervals.
- F. Site Condition Reports: Submit at time of discovery of differing conditions.

1.4 COORDINATION

- A. Coordinate Contractor's Construction Schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.
 - 1. Secure time commitments for performing critical elements of the Work from entities involved.
 - 2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

1.5 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.
 - 1. Use Microsoft Project, for current Windows operating system.
- B. Time Frame: Extend schedule from date established for the Notice to Proceed to date of final completion.
 1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- C. Activities: Treat each floor or separate area as a separate numbered activity for each main element of the Work. Comply with the following:
 - 1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.
 - 2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
 - 3. Submittal Review Time: Include review and resubmittal times indicated in Section 013300 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with submittal schedule.
 - 4. Startup and Testing Time: Include no fewer than 15 days for startup and testing.
 - 5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
 - 6. Punch List and Final Completion: Include not more than 45 days for completion of punch list items and final completion.
- D. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule and show how the sequence of the Work is affected.
 - 1. Phasing: Arrange list of activities on schedule by phase.

- 2. Owner-Furnished Products: Include a separate activity for each product. Include delivery date indicated in Section 011000 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
- 3. Work Restrictions: Show the effect of the following items on the schedule:
 - a. Coordination with existing construction.
 - b. Limitations of continued occupancies.
 - c. Uninterruptible services.
 - d. Partial occupancy before Substantial Completion.
 - e. Use-of-premises restrictions.
 - f. Provisions for future construction.
 - g. Seasonal variations.
 - h. Environmental control.
- E. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and final completion.
- F. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:
 - 1. Unresolved issues.
 - 2. Unanswered Requests for Information.
 - 3. Rejected or unreturned submittals.
 - 4. Notations on returned submittals.
 - 5. Pending modifications affecting the Work and the Contract Time.
- G. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
 - 1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
 - 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
 - 3. As the Work progresses, indicate final completion percentage for each activity.
- H. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, equipment required to achieve compliance, and date by which recovery will be accomplished.
- I. Distribution: Distribute copies of approved schedule to Architect, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
 - 1. Post copies in Project meeting rooms and temporary field offices.
 - 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

1.6 GANTT-CHART SCHEDULE REQUIREMENTS

- A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's Construction Schedule within 30 days of date established for the Notice to Proceed.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.
 - 1. For construction activities that require three months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

1.7 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
 - 1. List of subcontractors at Project site.
 - 2. List of separate contractors at Project site.
 - 3. Approximate count of personnel at Project site.
 - 4. Equipment at Project site.
 - 5. Material deliveries.
 - 6. High and low temperatures and general weather conditions, including presence of rain or snow.
 - 7. Testing and inspection.
 - 8. Accidents.
 - 9. Meetings and significant decisions.
 - 10. Stoppages, delays, shortages, and losses.
 - 11. Meter readings and similar recordings.
 - 12. Emergency procedures.
 - 13. Orders and requests of authorities having jurisdiction.
 - 14. Change Orders received and implemented.
 - 15. Construction Change Directives received and implemented.
 - 16. Services connected and disconnected.
 - 17. Equipment or system tests and startups.
 - 18. Partial completions and occupancies.
 - 19. Substantial Completions authorized.
- B. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

SECTION 013233 - PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
 - 1. Preconstruction photographs.
 - 2. Periodic construction photographs.
 - 3. Final completion construction photographs.
- B. Related Requirements:
 - 1. Section 017700 "Closeout Procedures" for submitting photographic documentation as Project Record Documents at Project closeout.
 - 2. Section 024119 "Selective Demolition" for photographic documentation before selective demolition operations commence.

1.2 INFORMATIONAL SUBMITTALS

- A. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.
- B. Digital Photographs: Submit image files within three days of taking photographs.
 - 1. Submit photos by uploading to web-based project software site. Include copy of key plan indicating each photograph's location and direction.
 - 2. Identification: Provide the following information with each image description in web-based project software site:
 - a. Name of Project.
 - b. Name and contact information for photographer.
 - c. Name of Architect.
 - d. Name of Contractor.
 - e. Date photograph was taken.
 - f. Description of location, vantage point, and direction.
 - g. Unique sequential identifier keyed to accompanying key plan.

1.3 QUALITY ASSURANCE

A. Photographer Qualifications: An individual who has been regularly engaged as a professional photographer of construction projects for not less than three years.

1.4 FORMATS AND MEDIA

- A. Digital Photographs: Provide color images in JPG format, produced by a digital camera with minimum sensor size of 12 megapixels, and at an image resolution of not less than 3200 by 2400 pixels, and with vibration-reduction technology. Use flash in low light levels or backlit conditions.
- B. Digital Images: Submit digital media as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
- C. Metadata: Record accurate date and time from camera.
- D. File Names: Name media files with date and sequential numbering suffix.

1.5 CONSTRUCTION PHOTOGRAPHS

- A. Photographer: Engage a qualified photographer to take construction photographs.
- B. General: Take photographs with maximum depth of field and in focus.
 - 1. Maintain key plan with each set of construction photographs that identifies each photographic location.
- C. Preconstruction Photographs: Before commencement of demolition, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Architect.
 - 1. Flag excavation areas or construction limits before taking construction photographs.
 - 2. Take 20 photographs to show existing conditions adjacent to property before starting the Work.
 - 3. Take 20 photographs of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.
 - 4. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.
- D. Periodic Construction Photographs: Take 20 photographs monthly coinciding with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.
- E. Final Completion Construction Photographs: Take 50 photographs after date of Substantial Completion for submission as Project Record Documents. Architect will inform photographer of desired vantage points.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Submittal schedule requirements.
 - 2. Administrative and procedural requirements for submittals.

1.2 DEFINITIONS

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

1.3 SUBMITTAL SCHEDULE

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

1.4 SUBMITTAL FORMATS

- A. Submittal Information: Include the following information in each submittal:
 - 1. Project name.
 - 2. Date.
 - 3. Name of Architect.
 - 4. Name of Construction Manager.
 - 5. Name of Contractor.
 - 6. Name of firm or entity that prepared submittal.
 - 7. Names of subcontractor, manufacturer, and supplier.
 - 8. Unique submittal number, including revision identifier. Include Specification Section number with sequential alphanumeric identifier; and alphanumeric suffix for resubmittals.
 - 9. Category and type of submittal.
 - 10. Submittal purpose and description.
 - 11. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
 - 12. Drawing number and detail references, as appropriate.
 - 13. Indication of full or partial submittal.
 - 14. Location(s) where product is to be installed, as appropriate.
 - 15. Other necessary identification.
 - 16. Remarks.
 - 17. Signature of transmitter.
- B. Options: Identify options requiring selection by Architect.

- C. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Architect on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.
- D. Paper Submittals:
 - 1. Place a permanent label or title block on each submittal item for identification; include name of firm or entity that prepared submittal.
 - 2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Architect.
 - 3. Action Submittals: Submit six paper copies of each submittal unless otherwise indicated. Architect will return three copies.
 - 4. Informational Submittals: Submit two paper copies of each submittal unless otherwise indicated. Architect will not return copies.
 - 5. Transmittal for Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using AIA Document G810 transmittal form.
- E. PDF Submittals: Prepare submittals as PDF package, incorporating complete information into each PDF file. Name PDF file with submittal number.
- F. Submittals for Web-Based Project Software: Prepare submittals as PDF files, or other format indicated by Project software website.

1.5 SUBMITTAL PROCEDURES

- A. Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
 - 1. Web-Based Project Software: Prepare submittals in PDF form, and upload to web-based Project software website. Enter required data in web-based software site to fully identify submittal.
 - 2. Paper: Prepare submittals in paper form, and deliver to Architect.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received and reviewed.
 - 2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
 - 3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
- C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
 - 1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
 - 2. Resubmittal Review: Allow 15 days for review of each resubmittal.
- D. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

- E. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- F. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

1.6 SUBMITTAL REQUIREMENTS

- A. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
 - 1. If information must be specially prepared for submittal because standard published data are unsuitable for use, submit as Shop Drawings, not as Product Data.
 - 2. Mark each copy of each submittal to show which products and options are applicable.
 - 3. Include the following information, as applicable:
 - a. Manufacturer's catalog cuts.
 - b. Manufacturer's product specifications.
 - c. Standard color charts.
 - d. Statement of compliance with specified referenced standards.
 - e. Testing by recognized testing agency.
 - f. Application of testing agency labels and seals.
 - g. Notation of coordination requirements.
 - h. Availability and delivery time information.
 - 4. For equipment, include the following in addition to the above, as applicable:
 - a. Wiring diagrams that show factory-installed wiring.
 - b. Printed performance curves.
 - c. Operational range diagrams.
 - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
 - 5. Submit Product Data before Shop Drawings, and before or concurrent with Samples.
- B. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data unless submittal based on Architect's digital data drawing files is otherwise permitted.
 - 1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Identification of products.
 - b. Schedules.
 - c. Compliance with specified standards.
 - d. Notation of coordination requirements.
 - e. Notation of dimensions established by field measurement.
 - f. Relationship and attachment to adjoining construction clearly indicated.
 - g. Seal and signature of professional engineer if specified.
 - 2. Paper Sheet Size: Except for templates, patterns, and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 30 by 42 inches.
 - a. Six opaque copies of each submittal. Architect will retain three copies; remainder will be returned.
- C. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other materials.
 - 1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
 - Identification: Permanently attach label on unexposed side of Samples that includes the following:
 a. Project name and submittal number.
 - b. Generic description of Sample.
 - c. Product name and name of manufacturer.

- d. Sample source.
- e. Number and title of applicable Specification Section.
- f. Specification paragraph number and generic name of each item.
- 3. Web-Based Project Software: Prepare submittals in PDF form, and upload to web-based Project software website. Enter required data in web-based software site to fully identify submittal.
- 4. Paper Transmittal: Include paper transmittal including complete submittal information indicated.
- 5. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
 - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
- 6. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
 - a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
- 7. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
 - a. Number of Samples: Submit three sets of Samples. Architect will retain two Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a project record Sample.
 - 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
 - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.
- D. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
- E. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.
- F. Design Data: Prepare and submit written and graphic information indicating compliance with indicated performance and design criteria in individual Specification Sections. Include list of assumptions and summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Number each page of submittal.
- G. Certificates:
 - 1. Certificates and Certifications Submittals: Submit a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity. Provide a notarized signature where indicated.
 - 2. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

- 3. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- 4. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- 5. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- 6. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.
- H. Test and Research Reports:
 - 1. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
 - 2. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
 - 3. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
 - 4. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
 - 5. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
 - 6. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
 - a. Name of evaluation organization.
 - b. Date of evaluation.
 - c. Time period when report is in effect.
 - d. Product and manufacturers' names.
 - e. Description of product.
 - f. Test procedures and results.
 - g. Limitations of use.

1.7 DELEGATED-DESIGN SERVICES

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 - 1. If criteria indicated are insufficient to perform services or certification required, submit a written request for additional information to Architect.
- B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF file and three paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
 - 1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

1.8 CONTRACTOR'S REVIEW

- A. Action Submittals and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.
- B. Contractor's Approval: Indicate Contractor's approval for each submittal with a uniform approval stamp or indication in web-based Project software. Include name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.
 - 1. Architect will not review submittals received from Contractor that do not have Contractor's review and approval.

1.9 ARCHITECT'S REVIEW

- A. Action Submittals: Architect will review each submittal, indicate corrections or revisions required, and return it.
 - 1. PDF Submittals: Architect will indicate, via markup on each submittal, the appropriate action, as follows:
 - a. Final Unrestricted Release: Where the submittal is marked "No Exception Taken," the Work covered by the submittal may proceed provided it complies with the Contract Documents. Final acceptance will depend on that compliance.
 - b. Final-but-Restricted Release: Where the submittal is marked "Furnish as Corrected," the Work covered by the submittal may proceed provided it complies both with Architect's notations and corrections on the submittal and the Contract Documents. Final acceptance will depend on that compliance.
 - c. Resubmit: Where the submittal is marked "Revise and Resubmit," do not proceed with the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity for the product submitted. Revise or prepare a new submittal according to Architect's notations and corrections.
 - d. Rejected: Where the submittal is marked "Submit Specified Item" or "Rejected," do not proceed with the Work covered by the submittal. Prepare a new submittal for a product that complies with the Contract Documents.
 - 2. Paper Submittals: Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action, as follows:
 - a. Final Unrestricted Release: Where the submittal is marked "No Exception Taken," the Work covered by the submittal may proceed provided it complies with the Contract Documents. Final acceptance will depend on that compliance.
 - b. Final-but-Restricted Release: Where the submittal is marked "Furnish as Corrected," the Work covered by the submittal may proceed provided it complies both with Architect's notations and corrections on the submittal and the Contract Documents. Final acceptance will depend on that compliance.
 - c. Resubmit: Where the submittal is marked "Revise and Resubmit," do not proceed with the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity for the product submitted. Revise or prepare a new submittal according to Architect's notations and corrections.
 - d. Rejected: Where the submittal is marked "Submit Specified Item" or "Rejected," do not proceed with the Work covered by the submittal. Prepare a new submittal for a product that complies with the Contract Documents.
 - 3. Submittals by Web-Based Project Software: Architect will indicate, on Project software website, the appropriate action.
 - a. Web-Based Project software shall be modified to provide the following responses.
 - 1) No Exception Taken
 - 2) Furnish as Corrected
 - 3) Revise and Resubmit
 - 4) Submit Specified Item

- 5) Rejected
- b. Actions taken by indication on Project software website have the following meanings:
 - 1) Final Unrestricted Release: Where the submittal is marked "No Exception Taken," the Work covered by the submittal may proceed provided it complies with the Contract Documents. Final acceptance will depend on that compliance.
 - 2) Final-but-Restricted Release: Where the submittal is marked "Furnish as Corrected," the Work covered by the submittal may proceed provided it complies both with Architect's notations and corrections on the submittal and the Contract Documents. Final acceptance will depend on that compliance.
 - 3) Resubmit: Where the submittal is marked "Revise and Resubmit," do not proceed with the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity for the product submitted. Revise or prepare a new submittal according to Architect's notations and corrections.
 - 4) Rejected: Where the submittal is marked "Submit Specified Item" or "Rejected," do not proceed with the Work covered by the submittal. Prepare a new submittal for a product that complies with the Contract Documents.
- B. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.
- C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.
- D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- E. Architect will discard submittals received from sources other than Contractor.
- F. Submittals not required by the Contract Documents will be returned by Architect without action.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

SECTION 013516 - ALTERATION PROJECT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes special procedures for alteration work.

1.2 DEFINITIONS

- A. Alteration Work: This term includes remodeling, renovation, repair, and maintenance work performed within existing spaces or on existing surfaces as part of the Project.
- B. Consolidate: To strengthen loose or deteriorated materials in place.
- C. Design Reference Sample: A sample that represents the Architect's prebid selection of work to be matched; it may be existing work or work specially produced for the Project.
- D. Dismantle: To remove by disassembling or detaching an item from a surface, using gentle methods and equipment to prevent damage to the item and surfaces; disposing of items unless indicated to be salvaged or reinstalled.
- E. Match: To blend with adjacent construction and manifest no apparent difference in material type, species, cut, form, detail, color, grain, texture, or finish; as approved by Architect.
- F. Refinish: To remove existing finishes to base material and apply new finish to match original, or as otherwise indicated.
- G. Repair: To correct damage and defects, retaining existing materials, features, and finishes. This includes patching, piecing-in, splicing, consolidating, or otherwise reinforcing or upgrading materials.
- H. Replace: To remove, duplicate, and reinstall entire item with new material. The original item is the pattern for creating duplicates unless otherwise indicated.
- I. Replicate: To reproduce in exact detail, materials, and finish unless otherwise indicated.
- J. Reproduce: To fabricate a new item, accurate in detail to the original, and from either the same or a similar material as the original, unless otherwise indicated.
- K. Retain: To keep existing items that are not to be removed or dismantled.
- L. Strip: To remove existing finish down to base material unless otherwise indicated.

1.3 PROJECT MEETINGS FOR ALTERATION WORK

- A. Preliminary Conference for Alteration Work: Before starting alteration work, Architect will conduct conference at Project site.
 - 1. Attendees: In addition to representatives of Owner, Construction Manager, Architect, and Contractor, testing service representative, and chemical-cleaner manufacturer(s) shall be represented at the meeting.
 - 2. Agenda: Discuss items of significance that could affect progress of alteration work, including review of the following:
 - a. Fire-prevention plan.
 - b. Governing regulations.
- c. Areas where existing construction is to remain and the required protection.
- d. Hauling routes.
- e. Sequence of alteration work operations.
- f. Storage, protection, and accounting for salvaged and specially fabricated items.
- g. Existing conditions, staging, and structural loading limitations of areas where materials are stored.
- 3. Reporting: Architect will record conference results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from conference.
- B. Coordination Meetings: Conduct coordination meetings specifically for alteration work at monthly intervals. Coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.
 - 1. Agenda: Review and correct or approve minutes of previous coordination meeting. Review other items of significance that could affect progress of alteration work. Include topics for discussion as appropriate to status of Project.
 - 2. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

1.4 MATERIALS OWNERSHIP

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

1.5 INFORMATIONAL SUBMITTALS

- A. Alteration Work Program: Submit 30 days before work begins.
- B. Fire-Prevention Plan: Submit 30 days before work begins.

1.6 QUALITY ASSURANCE

- A. Title X Requirement: Each firm conducting activities that disturb painted surfaces shall be a "Lead-Safe Certified Firm" according to 40 CFR 745, Subpart E, and use only workers that are trained in lead-safe work practices.
- B. Alteration Work Program: Prepare a written plan for alteration work for whole Project, including each phase or process and protection of surrounding materials during operations. Show compliance with indicated methods and procedures specified in this and other Sections. Coordinate this whole-Project alteration work program with specific requirements of programs required in other alteration work Sections.
 - 1. Dust and Noise Control: Include locations of proposed temporary dust- and noise-control partitions and means of egress from occupied areas coordinated with continuing on-site operations and other known work in progress.
 - 2. Debris Hauling: Include plans clearly marked to show debris hauling routes, turning radii, and locations and details of temporary protective barriers.
- C. Fire-Prevention Plan: Prepare a written plan for preventing fires during the Work, including placement of fire extinguishers, fire blankets, rag buckets, and other fire-control devices during each phase or process. Coordinate plan with Owner's fire-protection equipment and requirements. Include fire-watch personnel's training, duties, and authority to enforce fire safety.
- D. Safety and Health Standard: Comply with ANSI/ASSE A10.6.

1.7 STORAGE AND HANDLING OF SALVAGED MATERIALS

- A. Salvaged Materials:
 - 1. Clean loose dirt and debris from salvaged items unless more extensive cleaning is indicated.
 - 2. Pack or crate items after cleaning; cushion against damage during handling. Label contents of containers.
 - 3. Store items in a secure area until delivery to Owner.
 - 4. Transport items to Owner's storage area on-site.
 - 5. Protect items from damage during transport and storage.
- B. Salvaged Materials for Reinstallation:
 - 1. Repair and clean items for reuse as indicated.
 - 2. Pack or crate items after cleaning and repairing; cushion against damage during handling. Label contents of containers.
 - 3. Protect items from damage during transport and storage.
 - 4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment unless otherwise indicated. Provide connections, supports, and miscellaneous materials to make items functional for use indicated.
- C. Existing Materials to Remain: Protect construction indicated to remain against damage and soiling from construction work. Where permitted by Architect, items may be dismantled and taken to a suitable, protected storage location during construction work and reinstalled in their original locations after alteration and other construction work in the vicinity is complete.
- D. Storage: Catalog and store items within a weathertight enclosure where they are protected from moisture, weather, condensation, and freezing temperatures.
 - 1. Identify each item for reinstallation with a nonpermanent mark to document its original location. Indicate original locations on plans, elevations, sections, or photographs by annotating the identifying marks.
 - 2. Secure stored materials to protect from theft.
 - 3. Control humidity so that it does not exceed 85 percent. Maintain temperatures 5 deg F or more above the dew point.
- PART 2 PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 **PROTECTION**

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

- 1. Protect existing materials with temporary protections and construction. Do not remove existing materials unless otherwise indicated.
- 2. Do not attach temporary protection to existing surfaces except as indicated as part of the alteration work program.
- C. Comply with each product manufacturer's written instructions for protections and precautions. Protect against adverse effects of products and procedures on people and adjacent materials, components, and vegetation.
- D. Utility and Communications Services:
 - 1. Notify Owner, Architect, authorities having jurisdiction, and entities owning or controlling wires, conduits, pipes, and other services affected by alteration work before commencing operations.
 - 2. Disconnect and cap pipes and services as required by authorities having jurisdiction, as required for alteration work.
 - 3. Maintain existing services unless otherwise indicated; keep in service, and protect against damage during operations. Provide temporary services during interruptions to existing utilities.
- E. Existing Drains: Prior to the start of work in an area, test drainage system to ensure that it is functioning properly. Notify Architect immediately of inadequate drainage or blockage. Do not begin work in an area until the drainage system is functioning properly.
 - 1. Prevent solids such as adhesive or mortar residue or other debris from entering the drainage system. Clean out drains and drain lines that become sluggish or blocked by sand or other materials resulting from alteration work.
 - 2. Protect drains from pollutants. Block drains or filter out sediments, allowing only clean water to pass.

3.2 PROTECTION FROM FIRE

- A. General: Follow fire-prevention plan and the following:
 - 1. Comply with NFPA 241 requirements unless otherwise indicated. Perform duties titled "Owner's Responsibility for Fire Protection."
 - 2. Remove and keep area free of combustibles, including rubbish, paper, waste, and chemicals, unless necessary for the immediate work.
 - a. If combustible material cannot be removed, provide fire blankets to cover such materials.
- B. Heat-Generating Equipment and Combustible Materials: Comply with the following procedures while performing work with heat-generating equipment or combustible materials, including welding, torchcutting, soldering, brazing, removing paint with heat, or other operations where open flames or implements using high heat or combustible solvents and chemicals are anticipated:
 - 1. Obtain Owner's approval for operations involving use of open-flame or welding or other high-heat equipment. Notify Owner at least 72 hours before each occurrence, indicating location of such work.
 - 2. As far as practicable, restrict heat-generating equipment to shop areas or outside the building.
 - 3. Do not perform work with heat-generating equipment in or near rooms or in areas where flammable liquids or explosive vapors are present or thought to be present. Use a combustible gas indicator test to ensure that the area is safe.
 - 4. Use fireproof baffles to prevent flames, sparks, hot gases, or other high-temperature material from reaching surrounding combustible material.
 - 5. Prevent the spread of sparks and particles of hot metal through open windows, doors, holes, and cracks in floors, walls, ceilings, roofs, and other openings.
 - 6. Fire Watch: Before working with heat-generating equipment or combustible materials, station personnel to serve as a fire watch at each location where such work is performed. Fire-watch personnel shall have the authority to enforce fire safety. Station fire watch according to NFPA 51B, NFPA 241, and as follows:
 - a. Train each fire watch in the proper operation of fire-control equipment and alarms.

- b. Prohibit fire-watch personnel from other work that would be a distraction from fire-watch duties.
- c. Cease work with heat-generating equipment whenever fire-watch personnel are not present.
- d. Have fire-watch personnel perform final fire-safety inspection each day beginning no sooner than 30 minutes after conclusion of work to detect hidden or smoldering fires and to ensure that proper fire prevention is maintained.
- e. Maintain fire-watch personnel at Project site until two hours after conclusion of daily work.
- C. Fire-Control Devices: Provide and maintain fire extinguishers, fire blankets, and rag buckets for disposal of rags with combustible liquids. Maintain each as suitable for the type of fire risk in each work area. Ensure that nearby personnel and the fire-watch personnel are trained in fire-extinguisher and blanket use.
- D. Sprinklers: Where sprinkler protection exists and is functional, maintain it without interruption while operations are being performed. If operations are performed close to sprinklers, shield them temporarily with guards.
 - 1. Remove temporary guards at the end of work shifts, whenever operations are paused, and when nearby work is complete.

3.3 PROTECTION DURING APPLICATION OF CHEMICALS

- A. Protect motor vehicles, surrounding surfaces of building, building site, plants, and surrounding buildings from harm or spillage resulting from applications of chemicals and adhesives.
- B. Cover adjacent surfaces with protective materials that are proven to resist chemicals selected for Project unless chemicals being used will not damage adjacent surfaces as indicated in alteration work program. Use covering materials and masking agents that are waterproof and UV resistant and that will not stain or leave residue on surfaces to which they are applied. Apply protective materials according to manufacturer's written instructions. Do not apply liquid masking agents or adhesives to painted or porous surfaces. When no longer needed, promptly remove protective materials.
- C. Do not apply chemicals during winds of sufficient force to spread them to unprotected surfaces.
- D. Neutralize alkaline and acid wastes and legally dispose of off Owner's property.
- E. Collect and dispose of runoff from chemical operations by legal means and in a manner that prevents soil contamination, soil erosion, undermining of paving and foundations, damage to landscaping, or water penetration into building interior.

3.4 GENERAL ALTERATION WORK

- A. Record existing work before each procedure (preconstruction), and record progress during the work. Use digital preconstruction documentation photographs or video recordings. Comply with requirements in Section 013233 "Photographic Documentation."
- B. Perform surveys of Project site as the Work progresses to detect hazards resulting from alterations.
- C. Notify Architect of visible changes in the integrity of material or components whether from environmental causes including biological attack, UV degradation, freezing, or thawing or from structural defects including cracks, movement, or distortion.
 - 1. Do not proceed with the work in question until directed by Architect.

END OF SECTION 013516

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspection services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
 - 2. Requirements for Contractor to provide quality-assurance and quality-control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

1.2 DEFINITIONS

- A. Experienced: When used with an entity or individual, "experienced" unless otherwise further described means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.
- B. Field Quality-Control Tests: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- C. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.
 - 1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).
- D. Mockups: Full-size physical assemblies that are constructed on-site either as freestanding temporary built elements or as part of permanent construction. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.
 - 1. Integrated Exterior Mockups: Mockups of the exterior envelope constructed on-site as freestanding temporary built elements or as part of permanent construction, consisting of multiple products, assemblies, and subassemblies.
 - 2. Room Mockups: Mockups of typical interior spaces complete with wall, floor, and ceiling finishes; doors; windows; millwork; casework; specialties; furnishings and equipment; and lighting.
- E. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.
- F. Product Tests: Tests and inspections that are performed by a nationally recognized testing laboratory (NRTL) according to 29 CFR 1910.7, by a testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program (NVLAP), or by a testing agency qualified to conduct

product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

- G. Source Quality-Control Tests: Tests and inspections that are performed at the source; for example, plant, mill, factory, or shop.
- H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- I. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- J. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Contractor's quality-control services do not include contract administration activities performed by Architect.

1.3 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1.4 CONFLICTING REQUIREMENTS

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

1.5 ACTION SUBMITTALS

A. Delegated-Design Services Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit a statement signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.

1.6 INFORMATIONAL SUBMITTALS

- A. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility submitted to authorities having jurisdiction before starting work on the following systems:
 - 1. Seismic-force-resisting system, designated seismic system, or component listed in the Statement of Special Inspections.
 - 2. Main wind-force-resisting system or a wind-resisting component listed in the Statement of Special Inspections.

- B. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- C. Permits, Licenses, and Certificates: For Owner's record, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents established for compliance with standards and regulations bearing on performance of the Work.

1.7 REPORTS AND DOCUMENTS

- A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
 - 1. Date of issue.
 - 2. Project title and number.
 - 3. Name, address, telephone number, and email address of testing agency.
 - 4. Dates and locations of samples and tests or inspections.
 - 5. Names of individuals making tests and inspections.
 - 6. Description of the Work and test and inspection method.
 - 7. Identification of product and Specification Section.
 - 8. Complete test or inspection data.
 - 9. Test and inspection results and an interpretation of test results.
 - 10. Record of temperature and weather conditions at time of sample taking and testing and inspection.
 - 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
 - 12. Name and signature of laboratory inspector.
 - 13. Recommendations on retesting and reinspecting.
- B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
 - 1. Statement on condition of substrates and their acceptability for installation of product.
 - 2. Statement that products at Project site comply with requirements.
 - 3. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 - 4. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 - 5. Other required items indicated in individual Specification Sections.
- C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
 - 1. Statement that equipment complies with requirements.
 - 2. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 - 3. Other required items indicated in individual Specification Sections.

1.8 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units. As applicable, procure products from manufacturers able

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

- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Installer Qualifications: A firm or individual experienced in installing, erecting, applying, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.
- F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
 - 1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.
- G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspection indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
- H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- J. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
 - 1. Contractor responsibilities include the following:
 - a. Provide test specimens representative of proposed products and construction.
 - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
 - c. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
 - d. When testing is complete, remove test specimens and test assemblies, and mockups; do not reuse products on Project.
 - 2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
- K. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
 - 1. Build mockups of size indicated.
 - 2. Build mockups in location indicated or, if not indicated, as directed by Architect.
 - 3. Notify Architect seven days in advance of dates and times when mockups will be constructed.

- 4. Employ supervisory personnel who will oversee mockup construction. Employ workers that will be employed to perform same tasks during the construction at Project.
- 5. Demonstrate the proposed range of aesthetic effects and workmanship.
- 6. Obtain Architect's approval of mockups before starting corresponding work, fabrication, or construction.
 - a. Allow seven days for initial review and each re-review of each mockup.
- 7. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
- 8. Demolish and remove mockups when directed unless otherwise indicated.
- L. Laboratory Mockups: Comply with requirements of preconstruction testing and those specified in individual Specification Sections.

1.9 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
 - 1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspection they are engaged to perform.
 - 2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.
- B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities, whether specified or not, to verify and document that the Work complies with requirements.
 - 1. Engage a qualified testing agency to perform quality-control services.
 - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
 - 2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspection will be performed.
 - 3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 - 4. Testing and inspection requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 - 5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- D. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
 - 1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 - 2. Determine the locations from which test samples will be taken and in which in-situ tests are conducted.
 - 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
 - 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
 - 5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
 - 6. Do not perform duties of Contractor.

- E. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 "Submittal Procedures."
- F. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.
- G. Associated Contractor Services: Cooperate with agencies and representatives performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
 - 1. Access to the Work.
 - 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 - 3. Adequate quantities of representative samples of materials that require testing and inspection. Assist agency in obtaining samples.
 - 4. Facilities for storage and field curing of test samples.
 - 5. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 - 6. Security and protection for samples and for testing and inspection equipment at Project site.
- H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and qualitycontrol services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspection.
 - 1. Schedule times for tests, inspections, obtaining samples, and similar activities.

1.10 SPECIAL TESTS AND INSPECTIONS

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

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
 - 1. Date test or inspection was conducted.
 - 2. Description of the Work tested or inspected.
 - 3. Date test or inspection results were transmitted to Architect.
 - 4. Identification of testing agency or special inspector conducting test or inspection.

- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.
 - 1. Submit log at Project closeout as part of Project Record Documents.

3.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspection, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
 - 1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

SECTION 014200 - REFERENCES

PART 1 - GENERAL

1.1 DEFINITIONS

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

1.2 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.
- C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
 - 1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.3 ABBREVIATIONS AND ACRONYMS

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale's "Encyclopedia of Associations: National Organizations of the U.S." or in Columbia Books' "National Trade & Professional Associations of the United States."
- B. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list.
 - 1. AABC Associated Air Balance Council; <u>www.aabc.com</u>.
 - 2. AAMA American Architectural Manufacturers Association; <u>www.aamanet.org</u>.
 - 3. AAPFCO Association of American Plant Food Control Officials; <u>www.aapfco.org</u>.
 - 4. AASHTO American Association of State Highway and Transportation Officials; www.transportation.org.
 - 5. AATCC American Association of Textile Chemists and Colorists; <u>www.aatcc.org</u>.
 - 6. ABMA American Bearing Manufacturers Association; <u>www.americanbearings.org</u>.
 - 7. ABMA American Boiler Manufacturers Association; <u>www.abma.com</u>.
 - 8. ACI American Concrete Institute; (Formerly: ACI International); <u>www.concrete.org</u>
 - 9. ACPA American Concrete Pipe Association; <u>www.concrete-pipe.org</u>.
 - 10. AEIC Association of Edison Illuminating Companies, Inc. (The); <u>www.aeic.org</u>.
 - 11. AF&PA American Forest & Paper Association; <u>www.afandpa.org</u>.
 - 12. AGA American Gas Association; <u>www.aga.org</u>.
 - 13. AHAM Association of Home Appliance Manufacturers; <u>www.aham.org</u>.
 - 14. AHRI Air-Conditioning, Heating, and Refrigeration Institute (The); www.ahrinet.org.
 - 15. AI Asphalt Institute; <u>www.asphaltinstitute.org</u>.
 - 16. AIA American Institute of Architects (The); <u>www.aia.org</u>.
 - 17. AISC American Institute of Steel Construction; <u>www.aisc.org</u>.
 - 18. AISI American Iron and Steel Institute; <u>www.steel.org</u>.
 - 19. AITC American Institute of Timber Construction; <u>www.aitc-glulam.org</u>.
 - 20. AMCA Air Movement and Control Association International, Inc.; www.amca.org.
 - 21. ANSI American National Standards Institute; www.ansi.org.
 - 22. AOSA Association of Official Seed Analysts, Inc.; www.aosaseed.com.
 - 23. APA APA The Engineered Wood Association; <u>www.apawood.org</u>.
 - 24. APA Architectural Precast Association; <u>www.archprecast.org</u>.
 - 25. API American Petroleum Institute; <u>www.api.org</u>.
 - 26. ARI Air-Conditioning & Refrigeration Institute; (See AHRI).
 - 27. ARI American Refrigeration Institute; (See AHRI).
 - 28. ARMA Asphalt Roofing Manufacturers Association; <u>www.asphaltroofing.org</u>.
 - 29. ASCE American Society of Civil Engineers; <u>www.asce.org</u>.
 - 30. ASCE/SEI American Society of Civil Engineers/Structural Engineering Institute; (See ASCE).
 - 31. ASHRAE American Society of Heating, Refrigerating and Air-Conditioning Engineers; www.ashrae.org.
 - 32. ASME ASME International; (American Society of Mechanical Engineers); www.asme.org.
 - 33. ASSE American Society of Safety Engineers (The); www.asse.org.
 - 34. ASSE American Society of Sanitary Engineering; www.asse-plumbing.org.
 - 35. ASTM ASTM International; www.astm.org.
 - 36. ATIS Alliance for Telecommunications Industry Solutions; <u>www.atis.org</u>.
 - 37. AWEA American Wind Energy Association; <u>www.awea.org</u>.
 - 38. AWI Architectural Woodwork Institute; <u>www.awinet.org</u>.
 - 39. AWMAC Architectural Woodwork Manufacturers Association of Canada; <u>www.awmac.com</u>.
 - 40. AWPA American Wood Protection Association; <u>www.awpa.com</u>.
 - 41. AWS American Welding Society; <u>www.aws.org</u>.
 - 42. AWWA American Water Works Association; <u>www.awwa.org</u>.
 - 43. BHMA Builders Hardware Manufacturers Association; <u>www.buildershardware.com</u>.
 - 44. BIA Brick Industry Association (The); <u>www.gobrick.com</u>.
 - 45. BICSI BICSI, Inc.; <u>www.bicsi.org</u>.

- 46. BIFMA BIFMA International; (Business and Institutional Furniture Manufacturer's Association); www.bifma.org.
- 47. BISSC Baking Industry Sanitation Standards Committee; <u>www.bissc.org</u>.
- 48. BWF Badminton World Federation; (Formerly: International Badminton Federation); www.bissc.org.
- 49. CDA Copper Development Association; <u>www.copper.org</u>.
- 50. CE Conformite Europeenne; http://ec.europa.eu/growth/single-market/ce-marking/
- 51. CEA Canadian Electricity Association; <u>www.electricity.ca</u>.
- 52. CEA Consumer Electronics Association; <u>www.ce.org</u>.
- 53. CFFA Chemical Fabrics and Film Association, Inc.; <u>www.chemicalfabricsandfilm.com</u>.
- 54. CFSEI Cold-Formed Steel Engineers Institute; <u>www.cfsei.org</u>.
- 55. CGA Compressed Gas Association; <u>www.cganet.com</u>.
- 56. CIMA Cellulose Insulation Manufacturers Association; <u>www.cellulose.org</u>.
- 57. CISCA Ceilings & Interior Systems Construction Association; <u>www.cisca.org</u>.
- 58. CISPI Cast Iron Soil Pipe Institute; <u>www.cispi.org</u>.
- 59. CLFMI Chain Link Fence Manufacturers Institute; <u>www.chainlinkinfo.org</u>.
- 60. CPA Composite Panel Association; <u>www.pbmdf.com</u>.
- 61. CRI Carpet and Rug Institute (The); <u>www.carpet-rug.org</u>.
- 62. CRRC Cool Roof Rating Council; <u>www.coolroofs.org</u>.
- 63. CRSI Concrete Reinforcing Steel Institute; www.crsi.org.
- 64. CSA Canadian Standards Association; <u>www.csa.ca</u>.
- 65. CSA CSA International; (Formerly: IAS International Approval Services); <u>www.csa-international.org</u>.
- 66. CSI Construction Specifications Institute (The); <u>www.csinet.org</u>.
- 67. CSSB Cedar Shake & Shingle Bureau; <u>www.cedarbureau.org</u>.
- 68. CTI Cooling Technology Institute; (Formerly: Cooling Tower Institute); <u>www.cti.org</u>.
- 69. CWC Composite Wood Council; (See CPA).
- 70. DASMA Door and Access Systems Manufacturers Association; www.dasma.com.
- 71. DHI Door and Hardware Institute; www.dhi.org.
- 72. ECA Electronic Components Association; (See ECIA).
- 73. ECAMA Electronic Components Assemblies & Materials Association; (See ECIA).
- 74. ECIA Electronic Components Industry Association; <u>www.eciaonline.org</u>.
- 75. EIA Electronic Industries Alliance; (See TIA).
- 76. EIMA EIFS Industry Members Association; <u>www.eima.com</u>.
- 77. EJMA Expansion Joint Manufacturers Association, Inc.; <u>www.ejma.org</u>.
- 78. ESD ESD Association; (Electrostatic Discharge Association); www.esda.org .
- 79. ESTA Entertainment Services and Technology Association; (See PLASA).
- 80. ETL Intertek (See Intertek); <u>www.intertek.com</u>.
- 81. EVO Efficiency Valuation Organization; <u>www.evo-world.org</u>.
- 82. FCI Fluid Controls Institute; <u>www.fluidcontrolsinstitute.org</u>.
- 83. FIBA Federation Internationale de Basketball; (The International Basketball Federation); www.fiba.com.
- 84. FIVB Federation Internationale de Volleyball; (The International Volleyball Federation); www.fivb.org.
- 85. FM Approvals FM Approvals LLC; <u>www.fmglobal.com</u>.
- 86. FM Global FM Global; (Formerly: FMG FM Global); www.fmglobal.com.
- 87. FRSA Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc.; www.floridaroof.com.
- 88. FSA Fluid Sealing Association; <u>www.fluidsealing.com</u>.
- 89. FSC Forest Stewardship Council U.S.; <u>www.fscus.org</u>.
- 90. GA Gypsum Association; <u>www.gypsum.org</u>.
- 91. GANA Glass Association of North America; www.glasswebsite.com.
- 92. GS Green Seal; <u>www.greenseal.org</u>.
- 93. HI Hydraulic Institute; <u>www.pumps.org</u>.
- 94. HI/GAMA Hydronics Institute/Gas Appliance Manufacturers Association; (See AHRI).
- 95. HMMA Hollow Metal Manufacturers Association; (See NAAMM).

- 96. HPVA Hardwood Plywood & Veneer Association; www.hpva.org.
- 97. HPW H. P. White Laboratory, Inc.; <u>www.hpwhite.com</u>.
- 98. IAPSC International Association of Professional Security Consultants; <u>www.iapsc.org</u>.
- 99. IAS International Accreditation Service; <u>www.iasonline.org</u>.
- 100. IAS International Approval Services; (See CSA).
- 101. ICBO International Conference of Building Officials; (See ICC).
- 102. ICC International Code Council; <u>www.iccsafe.org</u>.
- 103. ICEA Insulated Cable Engineers Association, Inc.; <u>www.icea.net</u>.
- 104. ICPA International Cast Polymer Alliance; <u>www.icpa-hq.org</u>.
- 105. ICRI International Concrete Repair Institute, Inc.; <u>www.icri.org</u>.
- 106. IEC International Electrotechnical Commission; <u>www.iec.ch</u>.
- 107. IEEE Institute of Electrical and Electronics Engineers, Inc. (The); www.ieee.org.
- 108. IES Illuminating Engineering Society; (Formerly: Illuminating Engineering Society of North America); www.ies.org.
- 109. IESNA Illuminating Engineering Society of North America; (See IES).
- 110. IEST Institute of Environmental Sciences and Technology; <u>www.iest.org</u>.
- 111. IGMA Insulating Glass Manufacturers Alliance; www.igmaonline.org.
- 112. IGSHPA International Ground Source Heat Pump Association; www.igshpa.okstate.edu.
- 113. ILI Indiana Limestone Institute of America, Inc.; <u>www.iliai.com</u>.
- 114. Intertek Intertek Group; (Formerly: ETL SEMCO; Intertek Testing Service NA); www.intertek.com.
- 115. ISA International Society of Automation (The); (Formerly: Instrumentation, Systems, and Automation Society); www.isa.org.
- 116. ISAS Instrumentation, Systems, and Automation Society (The); (See ISA).
- 117. ISFA International Surface Fabricators Association; (Formerly: International Solid Surface Fabricators Association); <u>www.isfanow.org</u>.
- 118. ISO International Organization for Standardization; www.iso.org.
- 119. ISSFA International Solid Surface Fabricators Association; (See ISFA).
- 120. ITU International Telecommunication Union; www.itu.int/home.
- 121. KCMA Kitchen Cabinet Manufacturers Association; www.kcma.org.
- 122. LMA Laminating Materials Association; (See CPA).
- 123. LPI Lightning Protection Institute; <u>www.lightning.org</u>.
- 124. MBMA Metal Building Manufacturers Association; www.mbma.com.
- 125. MCA Metal Construction Association; <u>www.metalconstruction.org.</u>
- 126. MFMA Maple Flooring Manufacturers Association, Inc.; <u>www.maplefloor.org</u>.
- 127. MFMA Metal Framing Manufacturers Association, Inc.; www.metalframingmfg.org.
- 128. MHIA Material Handling Industry of America; www.mhia.org.
- 129. MIA Marble Institute of America; www.marble-institute.com.
- 130. MMPA Moulding & Millwork Producers Association; www.wmmpa.com.
- 131. MPI Master Painters Institute; <u>www.paintinfo.com</u>.
- 132. MSS Manufacturers Standardization Society of The Valve and Fittings Industry Inc.; <u>www.mss-hq.org</u>.
- 133. NAAMM National Association of Architectural Metal Manufacturers; <u>www.naamm.org</u>.
- 134. NACE NACE International; (National Association of Corrosion Engineers International); www.nace.org.
- 135. NADCA National Air Duct Cleaners Association; www.nadca.com.
- 136. NAIMA North American Insulation Manufacturers Association; www.naima.org.
- 137. NBGQA National Building Granite Quarries Association, Inc.; www.nbgqa.com.
- 138. NBI New Buildings Institute; www.newbuildings.org.
- 139. NCAA National Collegiate Athletic Association (The); <u>www.ncaa.org</u>.
- 140. NCMA National Concrete Masonry Association; <u>www.ncma.org</u>.
- 141. NEBB National Environmental Balancing Bureau; <u>www.nebb.org</u>.
- 142. NECA National Electrical Contractors Association; <u>www.necanet.org</u>.
- 143. NeLMA Northeastern Lumber Manufacturers Association; www.nelma.org.
- 144. NEMA National Electrical Manufacturers Association; <u>www.nema.org</u>.
- 145. NETA InterNational Electrical Testing Association; <u>www.netaworld.org</u>.

- 146. NFHS National Federation of State High School Associations; <u>www.nfhs.org</u>.
- 147. NFPA National Fire Protection Association; www.nfpa.org.
- 148. NFPA NFPA International; (See NFPA).
- 149. NFRC National Fenestration Rating Council; <u>www.nfrc.org</u>.
- 150. NHLA National Hardwood Lumber Association; www.nhla.com.
- 151. NLGA National Lumber Grades Authority; <u>www.nlga.org</u>.
- 152. NOFMA National Oak Flooring Manufacturers Association; (See NWFA).
- 153. NOMMA National Ornamental & Miscellaneous Metals Association; <u>www.nomma.org</u>.
- 154. NRCA National Roofing Contractors Association; <u>www.nrca.net</u>.
- 155. NRMCA National Ready Mixed Concrete Association; <u>www.nrmca.org</u>.
- 156. NSF NSF International; <u>www.nsf.org</u>.
- 157. NSPE National Society of Professional Engineers; <u>www.nspe.org</u>.
- 158. NSSGA National Stone, Sand & Gravel Association; www.nssga.org.
- 159. NTMA National Terrazzo & Mosaic Association, Inc. (The); www.ntma.com.
- 160. NWFA National Wood Flooring Association; <u>www.nwfa.org</u>.
- 161. PCI Precast/Prestressed Concrete Institute; <u>www.pci.org</u>.
- 162. PDI Plumbing & Drainage Institute; <u>www.pdionline.org</u>.
- 163. PLASA PLASA; (Formerly: ESTA Entertainment Services and Technology Association); http://www.plasa.org.
- 164. RCSC Research Council on Structural Connections; <u>www.boltcouncil.org</u>.
- 165. RFCI Resilient Floor Covering Institute; <u>www.rfci.com</u>.
- 166. RIS Redwood Inspection Service; <u>www.redwoodinspection.com</u>.
- 167. SAE SAE International; <u>www.sae.org</u>.
- 168. SCTE Society of Cable Telecommunications Engineers; <u>www.scte.org</u>.
- 169. SDI Steel Deck Institute; www.sdi.org.
- 170. SDI Steel Door Institute; www.steeldoor.org.
- 171. SEFA Scientific Equipment and Furniture Association (The); <u>www.sefalabs.com</u>.
- 172. SEI/ASCE Structural Engineering Institute/American Society of Civil Engineers; (See ASCE).
- 173. SIA Security Industry Association; <u>www.siaonline.org</u>.
- 174. SJI Steel Joist Institute; <u>www.steeljoist.org</u>.
- 175. SMA Screen Manufacturers Association; <u>www.smainfo.org</u>.
- 176. SMACNA Sheet Metal and Air Conditioning Contractors' National Association; www.smacna.org.
- 177. SMPTE Society of Motion Picture and Television Engineers; <u>www.smpte.org</u>.
- 178. SPFA Spray Polyurethane Foam Alliance; <u>www.sprayfoam.org</u>.
- 179. SPIB Southern Pine Inspection Bureau; <u>www.spib.org</u>.
- 180. SPRI Single Ply Roofing Industry; <u>www.spri.org</u>.
- 181. SRCC Solar Rating & Certification Corporation; <u>www.solar-rating.org</u>.
- 182. SSINA Specialty Steel Industry of North America; <u>www.ssina.com</u>.
- 183. SSPC SSPC: The Society for Protective Coatings; <u>www.sspc.org</u>.
- 184. STI Steel Tank Institute; <u>www.steeltank.com</u>.
- 185. SWI Steel Window Institute; <u>www.steelwindows.com</u>.
- 186. SWPA Submersible Wastewater Pump Association; <u>www.swpa.org</u>.
- 187. TCA Tilt-Up Concrete Association; <u>www.tilt-up.org</u>.
- 188. TCNA Tile Council of North America, Inc.; www.tileusa.com.
- 189. TEMA Tubular Exchanger Manufacturers Association, Inc.; <u>www.tema.org</u>.
- 190. TIA Telecommunications Industry Association (The); (Formerly: TIA/EIA Telecommunications Industry Association/Electronic Industries Alliance); <u>www.tiaonline.org</u>.
- 191. TIA/EIA Telecommunications Industry Association/Electronic Industries Alliance; (See TIA).
- 192. TMS The Masonry Society; www.masonrysociety.org.
- 193. TPI Truss Plate Institute; www.tpinst.org.
- 194. TPI Turfgrass Producers International; <u>www.turfgrasssod.org</u>.
- 195. TRI Tile Roofing Institute; <u>www.tileroofing.org</u>.
- 196. UL Underwriters Laboratories Inc.; <u>http://www.ul.com</u>.
- 197. UNI Uni-Bell PVC Pipe Association; www.uni-bell.org.
- 198. USAV USA Volleyball; <u>www.usavolleyball.org</u>.

- 199. USGBC U.S. Green Building Council; <u>www.usgbc.org</u>.
- 200. USITT United States Institute for Theatre Technology, Inc.; <u>www.usitt.org</u>.
- 201. WASTEC Waste Equipment Technology Association; <u>www.wastec.org</u>.
- 202. WCLIB West Coast Lumber Inspection Bureau; <u>www.wclib.org</u>.
- 203. WCMA Window Covering Manufacturers Association; <u>www.wcmanet.org</u>.
- 204. WDMA Window & Door Manufacturers Association; <u>www.wdma.com</u>.
- 205. WI Woodwork Institute; <u>www.wicnet.org</u>.
- 206. WSRCA Western States Roofing Contractors Association; <u>www.wsrca.com</u>.
- 207. WWPA Western Wood Products Association; <u>www.wwpa.org</u>.
- C. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is believed to be accurate as of the date of the Contract Documents.
 - 1. IAPMO International Association of Plumbing and Mechanical Officials; <u>www.iapmo.org</u>.
 - 2. ICC International Code Council; <u>www.iccsafe.org</u>.
 - 3. ICC-ES ICC Evaluation Service, LLC; <u>www.icc-es.org</u>.
- D. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Information is subject to change and is up to date as of the date of the Contract Documents.
 - 1. COE Army Corps of Engineers; <u>www.usace.army.mil</u>.
 - 2. CPSC Consumer Product Safety Commission; <u>www.cpsc.gov</u>.
 - 3. DOC Department of Commerce; National Institute of Standards and Technology; <u>www.nist.gov</u>.
 - 4. DOE Department of Energy; <u>www.energy.gov</u>.
 - 5. EPA Environmental Protection Agency; <u>www.epa.gov</u>.
 - 6. FAA Federal Aviation Administration; <u>www.faa.gov</u>.
 - 7. FG Federal Government Publications; <u>www.gpo.gov/fdsys</u>.
 - 8. GSA General Services Administration; <u>www.gsa.gov</u>.
 - 9. HUD Department of Housing and Urban Development; <u>www.hud.gov</u>.
 - 10. LBL Lawrence Berkeley National Laboratory; Environmental Energy Technologies Division; <u>www.eetd.lbl.gov</u>.
 - 11. OSHA Occupational Safety & Health Administration; <u>www.osha.gov</u>.
 - 12. SD Department of State; <u>www.state.gov</u>.
 - 13. TRB Transportation Research Board; National Cooperative Highway Research Program; The National Academies; <u>www.trb.org</u>.
 - 14. USDA Department of Agriculture; Agriculture Research Service; U.S. Salinity Laboratory; <u>www.ars.usda.gov</u>.
 - 15. USDA Department of Agriculture; Rural Utilities Service; <u>www.usda.gov</u>.
 - 16. USDOJ Department of Justice; Office of Justice Programs; National Institute of Justice; <u>www.ojp.usdoj.gov</u>.
 - 17. USP U.S. Pharmacopeial Convention; <u>www.usp.org</u>.
 - 18. USPS United States Postal Service; <u>www.usps.com</u>.
- E. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.
 - 1. CFR Code of Federal Regulations; Available from Government Printing Office; <u>www.gpo.gov/fdsys</u>.
 - 2. DOD Department of Defense; Military Specifications and Standards; Available from DLA Document Services; <u>www.quicksearch.dla.mil</u>.
 - 3. DSCC Defense Supply Center Columbus; (See FS).
 - 4. FED-STD Federal Standard; (See FS).
 - 5. FS Federal Specification; Available from DLA Document Services; <u>www.quicksearch.dla.mil</u>.
 - a. Available from Defense Standardization Program; <u>www.dsp.dla.mil</u>.
 - b. Available from General Services Administration; <u>www.gsa.gov</u>.

- c. Available from National Institute of Building Sciences/Whole Building Design Guide; <u>www.wbdg.org/ccb</u>.
- 6. MILSPEC Military Specification and Standards; (See DOD).
- 7. USAB United States Access Board; <u>www.access-board.gov</u>.
- 8. USATBCB U.S. Architectural & Transportation Barriers Compliance Board; (See USAB).
- F. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.
 - 1. CBHF; State of California; Department of Consumer Affairs; Bureau of Electronic and Appliance Repair, Home Furnishings and Thermal Insulation; <u>www.bearhfti.ca.gov</u>.
 - 2. CCR; California Code of Regulations; Office of Administrative Law; California Title 24 Energy Code; <u>www.calregs.com</u>.
 - 3. CDHS; California Department of Health Services; (See CDPH).
 - 4. CDPH; California Department of Public Health; Indoor Air Quality Program; <u>www.cal-iaq.org</u>.
 - 5. CPUC; California Public Utilities Commission; <u>www.cpuc.ca.gov</u>.
 - 6. SCAQMD; South Coast Air Quality Management District; <u>www.aqmd.gov</u>.
 - 7. TFS; Texas A&M Forest Service; Sustainable Forestry and Economic Development; www.txforestservice.tamu.edu.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 014200

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Requirements:
 1. Section 011000 "Summary" for work restrictions and limitations on utility interruptions.

1.2 USE CHARGES

- A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities engaged in the Project to use temporary services and facilities without cost, including, but not limited to, Architect, testing agencies, and authorities having jurisdiction.
- B. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
- C. Electric Power Service from Existing System: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

1.3 INFORMATIONAL SUBMITTALS

- A. Site Utilization Plan: Show temporary facilities, temporary utility lines and connections, staging areas, construction site entrances, vehicle circulation, and parking areas for construction personnel.
- B. Project Identification and Temporary Signs: Show fabrication and installation details, including plans, elevations, details, layouts, typestyles, graphic elements, and message content.
- C. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.
- D. Moisture-and Mold-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage and mold.
- E. Dust- and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust- and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their operation. Include the following:
 - 1. Locations of dust-control partitions at each phase of work.
 - 2. HVAC system isolation schematic drawing.
 - 3. Location of proposed air-filtration system discharge.
 - 4. Waste-handling procedures.
 - 5. Other dust-control measures.

1.4 QUALITY ASSURANCE

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

TEMPORARY FACILITIES AND CONTROLS © Miner Feinstein Architects, LLC

- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.
- C. Accessible Temporary Egress: Comply with applicable provisions in the United States Access Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

1.5 PROJECT CONDITIONS

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

PART 2 - PRODUCTS

2.1 TEMPORARY FACILITIES

- A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.
- B. Common-Use Field Office: Of sufficient size to accommodate needs of Owner, Architect, and construction personnel office activities and to accommodate Project meetings specified in other Division 01 Sections. Keep office clean and orderly. Furnish and equip offices as follows:
 - 1. Furniture required for Project-site documents including file cabinets, plan tables, plan racks, and bookcases.
 - 2. Conference room of sufficient size to accommodate meetings of 10 individuals. Provide electrical power service and 120-V ac duplex receptacles, with no fewer than one receptacle on each wall. Furnish room with conference table, chairs, and 4-foot-square tack and marker boards.
 - 3. Drinking water and private toilet.
 - 4. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 72 deg F.
 - 5. Lighting fixtures capable of maintaining average illumination of 20 fc at desk height.

2.2 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.
- B. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, selfcontained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
 - 1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
 - 2. Heating Units: Listed and labeled for type of fuel being consumed, by a qualified testing agency acceptable to authorities having jurisdiction, and marked for intended location and application.
 - 3. Permanent HVAC System: If Owner authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of 8 at each return-air grille in system and remove at end of construction. and clean HVAC system as required in Section 017700 "Closeout Procedures."
- C. Air-Filtration Units: Primary and secondary HEPA-filter-equipped portable units with four-stage filtration. Provide single switch for emergency shutoff. Configure to run continuously.

PART 3 - EXECUTION

3.1 TEMPORARY FACILITIES, GENERAL

- A. Conservation: Coordinate construction and use of temporary facilities with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.
 - 1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as Owner's property.

3.2 INSTALLATION, GENERAL

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

3.3 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.
 - 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
 - 2. Provide a temporary power source for period between the abandonment of the existing electrical service and the energizing of the new electrical service.
 - a. Include the anticipated duration and rental cost in the Schedule of Values.
 - b. Include the anticipated fuel cost in the Schedule of Values.
- B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.
- C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.
- D. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
- E. Temporary Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.
 - 1. Provide temporary dehumidification systems when required to reduce ambient and substrate moisture levels to level required to allow installation or application of finishes and their proper curing or drying.
- F. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.
- G. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.
 - 1. Install electric power service overhead unless otherwise indicated.
- H. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

- 1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
- I. Telephone Service: Provide temporary telephone service in common-use facilities for use by all construction personnel. Install WiFi cell phone access equipment and one land-based telephone line(s) for each field office.

3.4 SUPPORT FACILITIES INSTALLATION

- A. General: Comply with the following:
 - 1. Provide construction for temporary offices, shops, and sheds located within construction area or within 30 feet of building lines that is noncombustible according to ASTM E 136. Comply with NFPA 241.
 - 2. Maintain support facilities until Architect schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.
- B. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations. Locate temporary roads and paved areas on Drawings.
 - 1. Provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust.
- C. Traffic Controls: Comply with requirements of authorities having jurisdiction.
 - 1. Protect existing site improvements to remain including curbs, pavement, and utilities.
 - 2. Maintain access for fire-fighting equipment and access to fire hydrants.
- D. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
 - 1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.
 - 2. Remove snow and ice as required to minimize accumulations.
- E. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.
 - 1. Identification Signs: Provide Project 4' x 8' identification sign with the following information:
 - a. Construct signs of 3/4" exterior-grade A-C high density overlaid concrete form plywood.
 - b. Paint sign panel and applied graphics with exterior-grade alkyd gloss enamel over exterior primer.
 - c. Provide two 4x4x12' pressure treated posts for installation of Project Identification Sign.
 - d. Color rendering of the project (provided by Architect)
 - e. Owner's name and logo.
 - f. Owner's financial partner's name(s), as applicable
 - g. Governmental agencies, as applicable.
 - h. Contractor's name.
 - i. Architect's name and logo.
 - j. Engage an experience sign painter to apply graphics for Project Identification signs.
 - k. Locate sign as indicated or as directed by Architect in field.
 - 2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.
 - a. Provide temporary, directional signs for construction personnel and visitors.
 - 3. Maintain and touch up signs so they are legible at all times.
- F. Waste Disposal Facilities: Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."
- G. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.

- 1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.
- H. Existing Elevator Use: Use of Owner's existing elevators will be permitted, provided elevators are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore elevators to condition existing before initial use, including replacing worn cables, guide shoes, and similar items of limited life.
 - 1. Do not load elevators beyond their rated weight capacity.
 - 2. Provide protective coverings, barriers, devices, signs, or other procedures to protect elevator car and entrance doors and frame. If, despite such protection, elevators become damaged, engage elevator Installer to restore damaged work so no evidence remains of correction work. Return items that cannot be refinished in field to the shop, make required repairs and refinish entire unit, or provide new units as required.
- I. Temporary Stairs: Until permanent stairs are available, provide temporary stairs where ladders are not adequate.
- J. Existing Stair Usage: Use of Owner's existing stairs will be permitted, provided stairs are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore stairs to condition existing before initial use.
 - 1. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress. If stairs become damaged, restore damaged areas so no evidence remains of correction work.

3.5 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.
 - 1. Where access to adjacent properties is required in order to affect protection of existing facilities, obtain written permission from adjacent property owner to access property for that purpose.
- B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
- C. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to erosion- and sedimentation-control Drawings.
 - 1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant-protection zones.
 - 2. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
 - 3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from Project site during the course of Project.
 - 4. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.
- D. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.
- E. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

- F. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using materials approved by authorities having jurisdiction.
- G. Site Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people from easily entering site except by entrance gates.
 - 1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.
 - 2. Maintain security by limiting number of keys and restricting distribution to authorized personnel.
- H. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each workday.
- I. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- J. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.
- K. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
 - 1. Where heating or cooling is needed and permanent enclosure is incomplete, insulate temporary enclosures.
- L. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by Owner and tenants from fumes and noise.
 - 1. Construct dustproof partitions with gypsum wallboard with joints taped on occupied side, and fireretardant-treated plywood on construction operations side.
 - 2. Where fire-resistance-rated temporary partitions are indicated or are required by authorities having jurisdiction, construct partitions according to the rated assemblies.
 - 3. Provide walk-off mats at each entrance through temporary partition.
- M. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.
 - 1. Prohibit smoking in construction areas. Comply with additional limits on smoking specified in other Sections.
 - 2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
 - 3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
 - 4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

3.6 MOISTURE AND MOLD CONTROL

- A. Contractor's Moisture-Protection Plan: Describe delivery, handling, storage, installation, and protection provisions for materials subject to water absorption or water damage.
 - 1. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water-damaged Work.

- 2. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.
- 3. Indicate methods to be used to avoid trapping water in finished work.
- B. Exposed Construction Period: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect as follows:
 - 1. Protect porous materials from water damage.
 - 2. Protect stored and installed material from flowing or standing water.
 - 3. Keep porous and organic materials from coming into prolonged contact with concrete.
 - 4. Remove standing water from decks.
 - 5. Keep deck openings covered or dammed.
- C. Partially Enclosed Construction Period: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:
 - 1. Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.
 - 2. Keep interior spaces reasonably clean and protected from water damage.
 - 3. Periodically collect and remove waste containing cellulose or other organic matter.
 - 4. Discard or replace water-damaged material.
 - 5. Do not install material that is wet.
 - 6. Discard and replace stored or installed material that begins to grow mold.
 - 7. Perform work in a sequence that allows wet materials adequate time to dry before enclosing the material in gypsum board or other interior finishes.
- D. Controlled Construction Period: After completing and sealing of the building enclosure but prior to the full operation of permanent HVAC systems, maintain as follows:
 - 1. Control moisture and humidity inside building by maintaining effective dry-in conditions.
 - 2. Use temporary or permanent HVAC system to control humidity within ranges specified for installed and stored materials.
 - 3. Comply with manufacturer's written instructions for temperature, relative humidity, and exposure to water limits.

3.7 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.
 - 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
 - 1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.

2. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017700 "Closeout Procedures."

END OF SECTION 015000

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

B. Related Requirements: 1. Section 012500 "Substitution Procedures" for requests for substitutions.

1.2 DEFINITIONS

- A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
 - 2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
 - 3. Comparable Product: Product that is demonstrated and approved by Architect through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Basis-of-Design Product Specification: A specification in which a single manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation. In addition to the basis-of-design product description, product attributes and characteristics may be listed to establish the significant qualities related to type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other special features and requirements for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.3 ACTION SUBMITTALS

- A. Comparable Product Request Submittal: Submit request for consideration of each comparable product. Identify basis-of-design product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.
 - 2. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a comparable product request. Architect will notify Contractor of approval or rejection of proposed comparable product request within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
 - a. Form of Architect's Approval of Submittal: As specified in Section 013300 "Submittal Procedures."
 - b. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.

B. Basis-of-Design Product Specification Submittal: Comply with requirements in Section 013300 "Submittal Procedures." Show compliance with requirements.

1.4 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
 - 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 - 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 - 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 - 4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.

C. Storage:

- 1. Store products to allow for inspection and measurement of quantity or counting of units.
- 2. Store materials in a manner that will not endanger Project structure.
- 3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
- 4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
- 5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
- 6. Protect stored products from damage and liquids from freezing.

1.6 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
 - 1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
 - 2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
 - 1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 - 2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
 - 3. See other Sections for specific content requirements and particular requirements for submitting special warranties.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
 - 1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 - 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 - 3. Owner reserves the right to limit selection to products with warranties meeting requirements of the Contract Documents.
 - 4. Where products are accompanied by the term "as selected," Architect will make selection.
 - 5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
- B. Product Selection Procedures:
 - 1. Sole Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 - a. Sole product may be indicated by the phrase: "Subject to compliance with requirements, provide the following: ..."
 - 2. Sole Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 - a. Sole manufacturer/source may be indicated by the phrase: "Subject to compliance with requirements, provide products by the following: ..."
 - 3. Limited List of Products: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.
 - a. Limited list of products may be indicated by the phrase: "Subject to compliance with requirements, provide one of the following: ..."
 - 4. Non-Limited List of Products: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, which complies with requirements.
 - a. Non-limited list of products is indicated by the phrase: "Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to, the following: ..."
 - 5. Limited List of Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.
 - a. Limited list of manufacturers is indicated by the phrase: "Subject to compliance with requirements, provide products by one of the following: ..."
 - 6. Non-Limited List of Manufacturers: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, which complies with requirements.
 - a. Non-limited list of manufacturers is indicated by the phrase: "Subject to compliance with requirements, available manufacturers whose products may be incorporated in the Work include, but are not limited to, the following: ..."
 - 7. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named.

Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

- a. For approval of products by unnamed manufacturers, comply with requirements in Section 012500 "Substitution Procedures" for substitutions for convenience.
- C. Visual Matching Specification: Where Specifications require "match Architect's sample," provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
 - 1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 012500 "Substitution Procedures" for proposal of product.
- D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

- A. Conditions for Consideration of Comparable Products: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with these requirements:
 - 1. Evidence that proposed product does not require revisions to the Contract Documents, is consistent with the Contract Documents, will produce the indicated results, and is compatible with other portions of the Work. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant product qualities include attributes such as type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other specific features and requirements.
 - 2. Evidence that proposed product provides specified warranty.
 - 3. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
 - 4. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 016000

SECTION 017300 - EXECUTION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
 - 1. Construction layout.
 - 2. Field engineering and surveying.
 - 3. Installation of the Work.
 - 4. Cutting and patching.
 - 5. Progress cleaning.
 - 6. Starting and adjusting.
 - 7. Protection of installed construction.
- B. Related Requirements:
 - 1. Section 011000 "Summary" for limits on use of Project site.
 - 2. Section 017700 "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, replacing defective work, and final cleaning.

1.2 INFORMATIONAL SUBMITTALS

- A. Certificates: Submit certificate signed by land surveyor certifying that location and elevation of improvements comply with requirements.
- B. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

1.3 QUALITY ASSURANCE

- A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.
- B. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
 - 1. Structural Elements: When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.
 - 2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.
 - 3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.
 - 4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

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

PART 2 - PRODUCTS

- 2.1 MATERIALS
 - A. General: Comply with requirements specified in other Sections.
 - 1. For projects requiring compliance with sustainable design and construction practices and procedures, use products for patching that comply with sustainable design requirements.
 - B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
 - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning site work, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.
 - 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services; and other utilities.
 - 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
 - 1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
 - 2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
 - 3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
- C. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Existing Utility Information: Furnish information to local utility that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Architect according to requirements in Section 013100 "Project Management and Coordination."

3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.
- B. General: Engage a land surveyor to lay out the Work using accepted surveying practices.
 - 1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
 - 2. Establish limits on use of Project site.
 - 3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
 - 4. Inform installers of lines and levels to which they must comply.
 - 5. Check the location, level and plumb, of every major element as the Work progresses.
 - 6. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
 - 7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.
- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.
- D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

3.4 FIELD ENGINEERING

- A. Identification: Owner will identify existing benchmarks, control points, and property corners.
- B. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
- C. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.
 - 1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.

3.5 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 - 1. Make vertical work plumb and make horizontal work level.
 - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 - 3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.
- F. Tools and Equipment: Where possible, select tools or equipment that minimize production of excessive noise levels.
- G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other portions of the Work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.
 - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
 - 2. Allow for building movement, including thermal expansion and contraction.
 - 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- J. Remove and replace damaged, defective, or non-conforming Work.

3.6 CUTTING AND PATCHING

- A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 - 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.

- C. Temporary Support: Provide temporary support of work to be cut.
- D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- E. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching according to requirements in Section 011000 "Summary."
- F. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas.
- G. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
 - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 - 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 - 4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
 - 5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
 - 6. Proceed with patching after construction operations requiring cutting are complete.
- H. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
 - 1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
 - 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
 - 3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - 4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
 - 5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.
- I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.7 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

- 1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
- 2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
- 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
 - a. Use containers intended for holding waste materials of type to be stored.
- 4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
 - 1. Remove liquid spills promptly.
 - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 017419 "Construction Waste Management and Disposal."
- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- J. Limiting Exposures: Supervise construction operations to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.8 STARTING AND ADJUSTING

- A. Coordinate startup and adjusting of equipment and operating components with requirements in Section 019113 "General Commissioning Requirements."
- B. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- C. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
- D. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- E. Manufacturer's Field Service: Comply with qualification requirements in Section 014000 "Quality Requirements."

3.9 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Protection of Existing Items: Provide protection and ensure that existing items to remain undisturbed by construction are maintained in condition that existed at commencement of the Work.
- C. Comply with manufacturer's written instructions for temperature and relative humidity.

SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 SUMMARY

A. Reduce construction and demolition waste on job site and minimize waste sent to landfills through implementation of Construction Waste Management Plan as required by Enterprise Green Communities criterion 6.12 and as outlined within this Section and in the Sections referenced herein.

B. Related sections:

- 1. Section 024119 Selective Structure Demolition
- C. All projects must commit to following a waste management plan that reduces non-hazardous construction and demolition waste through recycling, salvaging, or diversion strategies. Projects must meet the minimum requirements of at least one of the following Options, and may earn additional points for selecting additional pathways:
 - 1. Option 1: Provide a waste plan that diverts at least75%.

1.2 SUBMITTALS

- A. Construction and Demolition Waste Management (CWM) Plan: Prior to any waste removal and within 30 days of Contract award, submit for approval a detailed CWM Plan in accordance with criterion 6.3 and 6.4 as outlined in this Section:
 - 1. Analysis of estimated job-site waste to be generated, including types and quantities of compostable, recyclable, and salvageable materials.
 - 2. Description of means and methods to achieve the mandatory requirement documented under 1.1C.
 - 3. Identification of recycling contractors and haulers proposed for use in the project and locations accepting construction waste materials or entities providing related services.
- B. Waste Management Progress Reports: Submit monthly, concurrent with each Application for Payment.
 - 1. Project title, name of party completing report, and dates of period covered by the report.
 - 2. Amount (by weight or volume) of project waste material landfilled to date and identity of the landfill(s).
- C. Final Waste Management Report: Submit at completion of construction and prior to contract close-out, in electronic format.
 - 1. All information required in Waste Management Progress Reports.
 - 2. Legible copies of on-site logs, manifests, weight tickets, and receipts.
 - 3. Final calculations and/or summaries that demonstrate compliance with the mandatory and optional pathways chosen under Criterion 6.12 as detailed in Section 018113.33.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 WASTE MANAGEMENT PLAN IMPLEMENTATION

- A. Training and Coordination
 - 1. Provide copies of approved CWM Plan to all on-site supervisors, each subcontractor, Owner, and Architect.
 - a. Contractors, sub-contractors, and other entities responsible for implementing the CWM Plan must return a signed agreement stating that they will comply.

- 2. Instruction: Provide on-site instruction of appropriate separation, handling, recycling, salvage, reuse, and return methods to be used by all entities at the appropriate stages of the project.
- 3. Meetings: Include construction waste management on the agenda of all required regularly scheduled construction meetings.
- B. Facilities: Provide designated facilities for co-mingling or separation and storage of materials for recycling, salvage, reuse, return, and waste disposal, per approved CWM Plan for use by all contractors and installers.
 - 1. Provide signage in English (Spanish, Vietnamese, etc.) and graphics to indicate recycling procedure.
 - 2. Provide materials for barriers and enclosures that are non-hazardous, recyclable, or reusable to the maximum extent possible; reuse project construction waste materials if possible.
 - 3. Provide adequate space, convenient to subcontractors, for pickup and delivery.
 - 4. Keep recycling and waste bin areas neat and clean to avoid contamination of materials.
- C. Methods of waste disposal that are not acceptable for meeting this criterion include:
 - 1. Burning or incinerating on or off project site.
 - 2. Burying on project site, other than fill.
 - 3. Dumping or burying on other property, public or private, other than official landfill.
 - 4. Illegal dumping or burying.
- D. Recycling Procedures:
 - 1. Co-mingle or separate, store, protect, and handle at the site identified recyclable waste products in order to prevent contamination of materials and to maximize recyclability of identified materials. Arrange for timely pickups from the site or deliveries to recycling facility in order to prevent contamination of recyclable materials.
 - 2. Coordinate work of recycling, composting, and salvaging waste haulers with other trades.
 - 3. Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall accrue to Contractor.

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Substantial Completion procedures.
 - 2. Final completion procedures.
 - 3. Warranties.
 - 4. Final cleaning.
 - 5. Repair of the Work.
- B. Related Requirements:
 - 1. Section 018113.33 Sustainable Design Requirements 2015 Green Communities
 - 2. Section 017823 "Operation and Maintenance Data" for additional operation and maintenance manual requirements.
 - 3. Section 017839 "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
 - 4. Section 017900 "Demonstration and Training" for requirements to train the Owner's maintenance personnel to adjust, operate, and maintain products, equipment, and systems.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of cleaning agent.
- B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- C. Certified List of Incomplete Items: Final submittal at final completion.

1.3 CLOSEOUT SUBMITTALS

- A. Green Communities Submittals
 - 1. Operations, Maintenance, and Resident Engagement
 - a. Refer to 018113.33 for submittals related to Enterprise Green Communities criterion 8.1 O&M Manual and Plan, 8.2 Emergency Management Manual.
- B. Certificates of Release: From authorities having jurisdiction.
- C. Certificate of Insurance: For continuing coverage.
- D. Field Report: For pest control inspection.

1.4 SUBSTANTIAL COMPLETION PROCEDURES

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.
- B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

- 1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
- 2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
- 3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
- 4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect. Label with manufacturer's name and model number.
- 5. Submit testing, adjusting, and balancing records.
- 6. Submit sustainable design submittals not previously submitted.
- 7. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
- C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
 - 1. Advise Owner of pending insurance changeover requirements.
 - 2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
 - 3. Complete startup and testing of systems and equipment.
 - 4. Perform preventive maintenance on equipment used prior to Substantial Completion.
 - 5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Section 017900 "Demonstration and Training."
 - 6. Advise Owner of changeover in utility services.
 - 7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
 - 8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 - 9. Complete final cleaning requirements.
 - 10. Touch up paint and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1.5 FINAL COMPLETION PROCEDURES

- A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:
 - 1. Submit a final Application for Payment according to Section 012900 "Payment Procedures."
 - 2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 - 3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 - 4. Submit pest-control final inspection report.

B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1.6 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
 - 1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
 - 2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
 - 3. Submit list of incomplete items in one of the following formats:
 - a. MS Excel electronic file. Architect will return annotated file.
 - b. PDF electronic file. Architect will return annotated file.
 - c. Web-based project software upload. Utilize software feature for creating and updating list of incomplete items (punch list).

1.7 SUBMITTAL OF PROJECT WARRANTIES

- A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, or when delay in submittal of warranties might limit Owner's rights under warranty.
- B. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
- C. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
 - 1. Submit on digital media acceptable to Architect.
- D. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

- 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - b. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - c. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - d. Sweep concrete floors broom clean in unoccupied spaces.
 - e. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
 - f. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
 - g. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
 - h. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
 - i. Leave Project clean and ready for occupancy.
- C. Pest Control: Comply with pest control requirements in Section 015000 "Temporary Facilities and Controls." Prepare written report.
- D. Construction Waste Disposal: Comply with waste disposal requirements in Section 017419 "Construction Waste Management and Disposal."
- 3.2 REPAIR OF THE WORK
 - A. Complete repair and restoration operations, before requesting inspection for determination of Substantial Completion.
 - B. Repair, or remove and replace, defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.

SECTION 017823 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
 - 1. Operation and maintenance documentation directory manuals.
 - 2. Emergency manuals.
 - 3. Systems and equipment operation manuals.
 - 4. Systems and equipment maintenance manuals.
 - 5. Product maintenance manuals.
- B. Related sections:
 - 1. Section 018113.33 Sustainable Design Requirements 2015 Green Communities

1.2 CLOSEOUT SUBMITTALS

- A. Submit operation and maintenance manuals indicated. Provide content for each manual as specified in individual Specification Sections, and as reviewed and approved at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
 - 1. Architect will comment on whether content of operation and maintenance submittals is acceptable.
 - 2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.
- B. Format: Submit operation and maintenance manuals in the following format:
 - 1. Submit on digital media acceptable to Architect. Enable reviewer comments on draft submittals.
- C. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. Architect will return copy with comments.
 - 1. Correct or revise each manual to comply with Architect's comments. Submit copies of each corrected manual within 15 days of receipt of Architect's comments and prior to commencing demonstration and training.
- D. Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

1.3 FORMAT OF OPERATION AND MAINTENANCE MANUALS

- A. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
 - 1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
 - 2. File Names and Bookmarks: Bookmark individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.
- B. Manuals, Paper Copy: Submit manuals in the form of hard-copy, bound and labeled volumes.

- 1. Binders: Heavy-duty, three-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
- 2. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
 - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
 - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

1.4 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

- A. Organization of Manuals: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
 - 1. Title page.
 - 2. Table of contents.
 - 3. Manual contents.
- B. Title Page: Include the following information:
 - 1. Subject matter included in manual.
 - 2. Name and address of Project.
 - 3. Name and address of Owner.
 - 4. Date of submittal.
 - 5. Name and contact information for Contractor.
 - 6. Name and contact information for Construction Manager.
 - 7. Name and contact information for Architect.
 - 8. Name and contact information for Commissioning Authority.
 - 9. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
 - 10. Cross-reference to related systems in other operation and maintenance manuals.
- C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
- D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
- E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

1.5 EMERGENCY MANUALS

- A. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
- B. Content: Organize manual into a separate section for each of the following:
 - 1. Type of emergency.
 - 2. Emergency instructions.
 - 3. Emergency procedures.

- C. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
 - 1. Fire.
 - 2. Flood.
 - 3. Gas leak.
 - 4. Water leak.
 - 5. Power failure.
 - 6. Water outage.
 - 7. System, subsystem, or equipment failure.
 - 8. Chemical release or spill.
- D. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.
- E. Emergency Procedures: Include the following, as applicable:
 - 1. Instructions on stopping.
 - 2. Shutdown instructions for each type of emergency.
 - 3. Operating instructions for conditions outside normal operating limits.
 - 4. Required sequences for electric or electronic systems.
 - 5. Special operating instructions and procedures.

1.6 SYSTEMS AND EQUIPMENT OPERATION MANUALS

- A. Systems and Equipment Operation Manual: Assemble a complete set of data indicating operation of each system, subsystem, and piece of equipment not part of a system. Include information required for daily operation and management, operating standards, and routine and special operating procedures.
- B. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
 - 1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
 - 2. Performance and design criteria if Contractor has delegated design responsibility.
 - 3. Operating standards.
 - 4. Operating procedures.
 - 5. Operating logs.
 - 6. Wiring diagrams.
 - 7. Control diagrams.
 - 8. Piped system diagrams.
 - 9. Precautions against improper use.
 - 10. License requirements including inspection and renewal dates.
- C. Descriptions: Include the following:
 - 1. Product name and model number. Use designations for products indicated on Contract Documents.
 - 2. Manufacturer's name.
 - 3. Equipment identification with serial number of each component.
 - 4. Equipment function.
 - 5. Operating characteristics.
 - 6. Limiting conditions.
 - 7. Performance curves.
 - 8. Engineering data and tests.
 - 9. Complete nomenclature and number of replacement parts.
- D. Operating Procedures: Include the following, as applicable:
 - 1. Startup procedures.

- 2. Equipment or system break-in procedures.
- 3. Routine and normal operating instructions.
- 4. Regulation and control procedures.
- 5. Instructions on stopping.
- 6. Normal shutdown instructions.
- 7. Seasonal and weekend operating instructions.
- 8. Required sequences for electric or electronic systems.
- 9. Special operating instructions and procedures.
- E. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
- F. Piped Systems: Diagram piping as installed and identify color coding where required for identification.

1.7 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

- A. Systems and Equipment Maintenance Manuals: Assemble a complete set of data indicating maintenance of each system, subsystem, and piece of equipment not part of a system. Include manufacturers' maintenance documentation, preventive maintenance procedures and frequency, repair procedures, wiring and systems diagrams, lists of spare parts, and warranty information.
- B. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranties and bonds, as described below.
- C. Manufacturers' Maintenance Documentation: Include the following information for each component part or piece of equipment:
 - 1. Standard maintenance instructions and bulletins; include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
 - a. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
 - 2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
 - 3. Identification and nomenclature of parts and components.
 - 4. List of items recommended to be stocked as spare parts.
- D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
 - 1. Test and inspection instructions.
 - 2. Troubleshooting guide.
 - 3. Precautions against improper maintenance.
 - 4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 - 5. Aligning, adjusting, and checking instructions.
 - 6. Demonstration and training video recording, if available.
- E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

- F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- G. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
 - 1. Include procedures to follow and required notifications for warranty claims.
- H. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.

1.8 PRODUCT MAINTENANCE MANUALS

- A. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- B. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
- C. Product Information: Include the following, as applicable:
 - 1. Product name and model number.
 - 2. Manufacturer's name.
 - 3. Color, pattern, and texture.
 - 4. Material and chemical composition.
 - 5. Reordering information for specially manufactured products.
- D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
 - 1. Inspection procedures.
 - 2. Types of cleaning agents to be used and methods of cleaning.
 - 3. List of cleaning agents and methods of cleaning detrimental to product.
 - 4. Schedule for routine cleaning and maintenance.
 - 5. Repair instructions.
- E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
 - 1. Include procedures to follow and required notifications for warranty claims.
- PART 2 PRODUCTS (Not Used)
- PART 3 EXECUTION (Not Used)

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

1

- A. Section includes administrative and procedural requirements for project record documents, including the following:
 - 1. Record Drawings.
 - 2. Record Specifications.
 - 3. Record Product Data.
- B. Related Requirements:
 - 1. Section 017823 "Operation and Maintenance Data" for operation and maintenance manual requirements.

1.2 CLOSEOUT SUBMITTALS

- A. Record Drawings: Comply with the following:
 - Number of Copies: Submit copies of record Drawings as follows:
 - a. Initial Submittal:
 - 1) Submit PDF electronic files of scanned record prints and one of file prints.
 - 2) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
 - b. Final Submittal:
 - 1) Submit PDF electronic files of scanned record prints and three set(s) of prints.
 - 2) Print each drawing, whether or not changes and additional information were recorded.
- B. Record Specifications: Submit annotated PDF electronic files of Project's Specifications, including addenda and contract modifications.
- C. Record Product Data: Submit annotated PDF electronic files and directories of each submittal.
 - 1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.

1.3 RECORD DRAWINGS

- A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.
 - 1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Accurately record information in an acceptable drawing technique.
 - c. Record data as soon as possible after obtaining it.
 - d. Record and check the markup before enclosing concealed installations.
 - e. Cross-reference record prints to corresponding photographic documentation.
 - 2. Content: Types of items requiring marking include, but are not limited to, the following:
 - a. Dimensional changes to Drawings.
 - b. Revisions to details shown on Drawings.
 - c. Depths of foundations.

- d. Locations and depths of underground utilities.
- e. Revisions to routing of piping and conduits.
- f. Revisions to electrical circuitry.
- g. Actual equipment locations.
- h. Duct size and routing.
- i. Locations of concealed internal utilities.
- j. Changes made by Change Order or Construction Change Directive.
- k. Changes made following Architect's written orders.
- 1. Details not on the original Contract Drawings.
- m. Field records for variable and concealed conditions.
- n. Record information on the Work that is shown only schematically.
- 3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
- 4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
- 5. Mark important additional information that was either shown schematically or omitted from original Drawings.
- 6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
 - 1. Record Prints: Organize record prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
 - 2. Format: Annotated PDF electronic file with comment function enabled.
 - 3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
 - 4. Identification: As follows:
 - a. Project name.
 - b. Date.
 - c. Designation "PROJECT RECORD DRAWINGS."
 - d. Name of Architect.
 - e. Name of Contractor.

1.4 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
 - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 - 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 - 3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
 - 4. For each principal product, indicate whether record Product Data has been submitted in operation and maintenance manuals instead of submitted as record Product Data.
 - 5. Note related Change Orders, record Product Data, and record Drawings where applicable.
- B. Format: Submit record Specifications as annotated PDF electronic file.

1.5 RECORD PRODUCT DATA

A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.

- B. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
 - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 - 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
 - 3. Note related Change Orders, record Specifications, and record Drawings where applicable.
- C. Format: Submit record Product Data as annotated PDF electronic file.
 - 1. Include record Product Data directory organized by Specification Section number and title, electronically linked to each item of record Product Data.

1.6 MAINTENANCE OF RECORD DOCUMENTS

A. Maintenance of Record Documents: Store record documents in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect's reference during normal working hours.

PART 2 - PRODUCTS

PART 3 - EXECUTION

SECTION 017900 - DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
 - 1. Instruction in operation and maintenance of systems, subsystems, and equipment.
 - 2. Demonstration and training video recordings.

B. Related sections:

1. Section 018113.33 Sustainable Design Requirements - 2015 Green Communities

1.2 INFORMATIONAL SUBMITTALS

- A. Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.
 - 1. Indicate proposed training modules using manufacturer-produced demonstration and training video recordings for systems, equipment, and products in lieu of video recording of live instructional module.

1.3 CLOSEOUT SUBMITTALS

- A. Demonstration and Training Video Recordings: Submit two copies within seven days of end of each training module.
 - 1. At completion of training, submit complete training manual(s) for Owner's use prepared in same paper and PDF file format required for operation and maintenance manuals specified in Section 017823 "Operation and Maintenance Data."

1.4 QUALITY ASSURANCE

- A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.
- B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Section 014000 "Quality Requirements," experienced in operation and maintenance procedures and training.
- C. Preinstruction Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination."

1.5 COORDINATION

- A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.
- B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data have been reviewed and approved by Architect.

1.6 INSTRUCTION PROGRAM

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.
- B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:
 - 1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
 - a. System, subsystem, and equipment descriptions.
 - b. Performance and design criteria if Contractor is delegated design responsibility.
 - c. Operating standards.
 - d. Regulatory requirements.
 - e. Equipment function.
 - f. Operating characteristics.
 - g. Limiting conditions.
 - h. Performance curves.
 - 2. Documentation: Review the following items in detail:
 - a. Emergency manuals.
 - b. Systems and equipment operation manuals.
 - c. Systems and equipment maintenance manuals.
 - d. Product maintenance manuals.
 - e. Project Record Documents.
 - f. Identification systems.
 - g. Warranties and bonds.

3.

- h. Maintenance service agreements and similar continuing commitments.
 - Emergencies: Include the following, as applicable:
 - a. Instructions on meaning of warnings, trouble indications, and error messages.
 - b. Instructions on stopping.
 - c. Shutdown instructions for each type of emergency.
 - d. Operating instructions for conditions outside of normal operating limits.
 - e. Sequences for electric or electronic systems.
 - f. Special operating instructions and procedures.
- 4. Operations: Include the following, as applicable:
 - a. Startup procedures.
 - b. Equipment or system break-in procedures.
 - c. Routine and normal operating instructions.
 - d. Regulation and control procedures.
 - e. Control sequences.
 - f. Safety procedures.
 - g. Instructions on stopping.
 - h. Normal shutdown instructions.
 - i. Operating procedures for emergencies.
 - j. Operating procedures for system, subsystem, or equipment failure.
 - k. Seasonal and weekend operating instructions.
 - 1. Required sequences for electric or electronic systems.
 - m. Special operating instructions and procedures.
- 5. Adjustments: Include the following:
 - a. Alignments.
 - b. Checking adjustments.
 - c. Noise and vibration adjustments.
 - d. Economy and efficiency adjustments.

7.

- 6. Troubleshooting: Include the following:
 - a. Diagnostic instructions.
 - b. Test and inspection procedures.
 - Maintenance: Include the following:
 - a. Inspection procedures.
 - b. Types of cleaning agents to be used and methods of cleaning.
 - c. List of cleaning agents and methods of cleaning detrimental to product.
 - d. Procedures for routine cleaning.
 - e. Procedures for preventive maintenance.
 - f. Procedures for routine maintenance.
 - g. Instruction on use of special tools.
- 8. Repairs: Include the following:
 - a. Diagnosis instructions.
 - b. Repair instructions.
 - c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 - d. Instructions for identifying parts and components.
 - e. Review of spare parts needed for operation and maintenance.

1.7 PREPARATION

- A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual organized in coordination with requirements in Section 017823 "Operation and Maintenance Data."
- B. Set up instructional equipment at instruction location.

1.8 INSTRUCTION

- A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.
- B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
- C. Scheduling: Provide instruction at mutually agreed-on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
 - 1. Schedule training with Owner with at least seven days' advance notice.
- D. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.
- E. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of a demonstration performance-based test.
- F. Cleanup: Collect used and leftover educational materials and give to Owner. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

1.9 DEMONSTRATION AND TRAINING VIDEO RECORDINGS

A. General: Engage a qualified commercial videographer to record demonstration and training video recordings. Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.

- 1. At beginning of each training module, record each chart containing learning objective and lesson outline.
- B. Digital Video Recordings: Provide high-resolution, digital video in MPEG format, produced by a digital camera with minimum sensor resolution of 12 megapixels and capable of recording in full HD mode with vibration reduction technology.
 - 1. Submit video recordings on CD-ROM or thumb drive.
- C. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to adequately cover area of demonstration and training. Display continuous running time.
- D. Light Levels: Verify light levels are adequate to properly light equipment. Verify equipment markings are clearly visible prior to recording.
- E. Preproduced Video Recordings: Provide video recordings used as a component of training modules in same format as recordings of live training.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

SECTION 024119 - 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.

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 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 environmental protection, for dust control and, for noise control. Indicate proposed locations and construction of barriers.
- C. Schedule of selective demolition activities with starting and ending dates for each activity.
- D. Pre-demolition photographs or video.
- E. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician.

1.4 CLOSEOUT SUBMITTALS

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

1.5 QUALITY ASSURANCE

A. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.

1.6 FIELD CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.

- 1. 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.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI/ASSP A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. 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.

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.
- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.
 - 1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
 - 2. 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 two (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. Comply with requirements in Section 017419 "Construction Waste Management and Disposal."
- B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
- C. 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 017419 "Construction Waste Management and Disposal."
 - 1. Do not allow demolished materials to accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

- 3. Comply with requirements specified in Section 017419 "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.

SECTION 033053 - MISCELLANEOUS CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

- 1.1 SUMMARY
 - A. Section includes cast-in-place concrete, including reinforcement, concrete materials, mixture design, placement procedures, and finishes.
- 1.2 ACTION SUBMITTALS
 - A. Product Data: For each type of product.
 - B. Design Mixtures: For each concrete mixture.
- 1.3 QUALITY ASSURANCE
 - A. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
- PART 2 PRODUCTS
- 2.1 CONCRETE, GENERAL
 - A. Comply with ACI 301.
 - B. Comply with ACI 117.
 - C. Comply with ACI 305 "Hot Weather Concreting" under appropriate conditions.
 - D. Comply with ACI 306 "Cold Weather Concreting" under appropriate conditions.
- 2.2 STEEL REINFORCEMENT
 - A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.
 - B. Plain-Steel Welded-Wire Reinforcement: ASTM A 1064/A 1064M, plain, fabricated from as-drawn steel wire into flat sheets.

2.3 CONCRETE MATERIALS

- A. Cementitious Materials:
 - 1. Portland Cement: ASTM C 150/C 150M, Type I/II.
 - 2. Fly Ash: ASTM C 618, Class C or F.
 - 3. Slag Cement: ASTM C 989/C 989M, Grade 100 or 120.
- B. Normal-Weight Aggregate: ASTM C 33/C 33M, 1-inch nominal maximum aggregate size.
- C. Air-Entraining Admixture: ASTM C 260/C 260M.
- D. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures and that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

- 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
- 2. Retarding Admixture: ASTM C 494/C 494M, Type B.
- 3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
- 4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
- 5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
- 6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.
- E. Water: ASTM C 94/C 94M.

2.4 RELATED MATERIALS

- A. Vapor Retarder: Plastic sheet, ASTM E 1745, Class A or B.
- B. Vapor Retarder: Polyethylene sheet, ASTM D 4397, not less than 8 mils thick; or plastic sheet, ASTM E 1745, Class C.
- C. Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber, or ASTM D 1752, cork or self-expanding cork.

2.5 CURING MATERIALS

- A. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- B. Water: Potable.
- C. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B.
- D. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

2.6 CONCRETE MIXTURES

- A. Normal-Weight Concrete:
 - 1. Minimum Compressive Strength: As indicated on the Drawings or 3500 psi at 28 days.
 - 2. Maximum W/C Ratio: 0.50.
 - 3. Cementitious Materials: Use fly ash, pozzolan, slag cement, and silica fume as needed to reduce the total amount of portland cement, which would otherwise be used, by not less than 40 percent.
 - 4. Slump Limit: 4 inches, plus or minus 1 inch.
 - 5. Air Content: Maintain within range permitted by ACI 301. Do not allow air content of trowelfinished floor slabs to exceed 3 percent.

2.7 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116/C 1116, and furnish batch ticket information.
 - 1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes.
 - 2. When air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 FORMWORK INSTALLATION

A. Design, construct, erect, brace, and maintain formwork according to ACI 301.

3.2 EMBEDDED ITEM INSTALLATION

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

3.3 VAPOR-RETARDER INSTALLATION

- A. Install, protect, and repair vapor retarders according to ASTM E 1643; place sheets in position with longest dimension parallel with direction of pour.
 - 1. Lap joints 6 inches and seal with manufacturer's recommended adhesive or joint tape.

3.4 STEEL REINFORCEMENT INSTALLATION

- A. Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
 - 1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

3.5 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness
- C. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
 - 1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated.

3.6 CONCRETE PLACEMENT

- A. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.
- B. Do not add water to concrete during delivery, at Project site, or during placement.
- C. Consolidate concrete with mechanical vibrating equipment according to ACI 301.

3.7 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections exceeding 1/2 inch.
 - 1. Apply to concrete surfaces not exposed to public view.
- B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defective areas. Remove fins and other projections exceeding 1/8 inch.
 - 1. Apply to concrete surfaces exposed to public view, to receive a rubbed finish, or to be covered with a coating or covering material applied directly to concrete.

- C. Rubbed Finish: Apply the following rubbed finish, defined in ACI 301, to smooth-formed-finished ascast concrete where indicated:
 - 1. Smooth-rubbed finish.
 - 2. Grout-cleaned finish.
 - 3. Cork-floated finish.
- D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.
- 3.8 FINISHING UNFORMED SURFACES
 - A. General: Comply with ACI 302.1R for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
 - B. Screed surfaces with a straightedge and strike off. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane before excess moisture or bleedwater appears on surface.
 1. Do not further disturb surfaces before starting finishing operations.
 - C. Scratch Finish: Apply scratch finish to surfaces indicated and surfaces to receive concrete floor topping or mortar setting beds for ceramic or quarry tile, portland cement terrazzo, and other bonded cementitious floor finishes unless otherwise indicated.
 - D. Float Finish: Apply float finish to surfaces indicated, to surfaces to receive trowel finish, and to floor and slab surfaces to be covered with fluid-applied or sheet waterproofing, fluid-applied or direct-to-deck-applied membrane roofing, or sand-bed terrazzo.
 - E. Trowel Finish: Apply a hard trowel finish to surfaces indicated and to floor and slab surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin film-finish coating system.
 - F. Trowel and Fine-Broom Finish: Apply a partial trowel finish, stopping after second troweling, to surfaces indicated and to surfaces where ceramic or quarry tile is to be installed by either thickset or thinset methods. Immediately after second troweling, and when concrete is still plastic, slightly scarify surface with a fine broom.
 - G. Slip-Resistive Broom Finish: Apply a slip-resistive finish to surfaces indicated and to exterior concrete platforms, steps, and ramps. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route.

3.9 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and with ACI 301 for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

- D. Curing Methods: Cure formed and unformed concrete for at least seven days by one or a combination of the following methods:
 - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - b. Continuous water-fog spray.
 - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
 - 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period, using cover material and waterproof tape.
 - 3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
 - 4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.10 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- B. Tests: Perform according to ACI 301.
 - 1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.
 - 2. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mixture placed each day.

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; 4 to 6 gpm.
- B. Medium-Pressure Spray: 400 to 800 psi; 4 to 6 gpm.
- C. High-Pressure Spray: 800 to 1200 psi; 4 to 6 gpm.
- 1.3 ACTION SUBMITTALS
 - A. Product Data: For each type of product.
- 1.4 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. 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 CLEANING MATERIALS
 - A. Water: Potable.
 - B. Hot Water: Water heated to a temperature of 140 to 160 deg F.
 - C. Detergent Solution, Job Mixed: Solution prepared by mixing 2 cups of tetrasodium pyrophosphate (TSPP), 1/2 cup of laundry detergent, and 20 quarts of hot water for every 5 gal. of solution required.
 - D. Mold, Mildew, and Algae Remover, Job Mixed: Solution prepared by mixing 2 cups of tetrasodium pyrophosphate (TSPP), 5 quarts of 5 percent sodium hypochlorite (bleach), and 15 quarts of hot water for every 5 gal. of solution required.
 - E. 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. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>American Building Restoration Products, Inc.</u>
 - b. <u>Cathedral Stone Products, Inc</u>.

- c. <u>Diedrich Technologies, Inc.; a Hohmann & Barnard company</u>.
- d. <u>Dumond Chemicals, Inc</u>.
- e. <u>Hydroclean; Hydrochemical Techniques, Inc</u>.
- f. <u>Price Research, Ltd</u>.
- g. <u>PROSOCO, Inc</u>.

2.2 CHEMICAL CLEANING SOLUTIONS

A. Dilute chemical cleaners with water to produce solutions not exceeding concentration recommended in writing by chemical-cleaner manufacturer.

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 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 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 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. 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. Removing Plant Growth: Completely remove visible plant, moss, and shrub growth from masonry surfaces. Carefully remove plants, creepers, and vegetation by cutting at roots and allowing remaining growth to dry as long as possible before removal. Remove loose soil and plant debris from open joints to whatever depth they occur.
- B. 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.

3.4 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 hotwater applied by low-pressure spray to remove detergent solution and soil.
 - 4. Repeat cleaning procedure above where required to produce cleaning effect established by mockup.
- B. Nonacidic Liquid 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 hotwater applied by low-pressure spray to remove chemicals and soil.
 - 5. Repeat cleaning procedure above where required to produce cleaning effect established by mockup. Do not repeat more than once. If additional cleaning is required, use steam cleaning.

SECTION 040120.64 - BRICK MASONRY REPOINTING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes repointing joints with mortar.
- 1.2 ACTION SUBMITTALS
 - A. Product Data: For each type of product.
 - B. Samples: For each exposed product and for each color and texture specified.

1.3 INFORMATIONAL SUBMITTALS

A. Quality-control program.

1.4 QUALITY ASSURANCE

- A. Brick Masonry Repointing Specialist Qualifications: Engage an experienced brick masonry repointing firm to perform work of this Section. Firm shall have completed work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance. Experience in only installing masonry is insufficient experience for masonry repointing work.
- B. Quality-Control Program: Prepare a written quality-control program for this Project to systematically demonstrate the ability of personnel to properly follow methods and use materials and tools without damaging masonry. Include provisions for supervising performance and preventing damage.
- C. Mockups: Prepare mockups of brick masonry repointing to demonstrate aesthetic effects and to set quality standards for materials and execution.
 - 1. Repointing: Rake out joints in two separate areas, each approximately 36 inches high by 48 inches wide, unless otherwise indicated, for each type of repointing required, and repoint one of the areas.

PART 2 - PRODUCTS

2.1 MORTAR MATERIALS

- A. Portland Cement: ASTM C 150/C 150M, Type I or Type II, except Type III may be used for coldweather construction; white or gray, or both where required for color matching of mortar.
 - 1. Provide cement containing not more than 0.60 percent total alkali when tested according to ASTM C 114.
- B. Hydrated Lime: ASTM C 207, Type S.
- C. Masonry Cement: ASTM C 91/C 91M.
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. $\underline{\text{Cemex S.A.B. de C.V}}$.
 - b. <u>Essroc</u>.
 - c. <u>Hanson Brick and Tile;Lehigh Hanson</u>.
 - d. <u>Holcim (US) Inc</u>.
 - e. <u>Lafarge North America Inc</u>.
 - f. <u>QUIKRETE</u>.

- D. Mortar Sand: ASTM C 144.
 - 1. Match size, texture, and gradation of existing mortar sand as closely as possible. Blend several sands if necessary to achieve suitable match.
 - 2. Color: Provide natural sand or ground marble, granite, or other sound stone of color necessary to produce required mortar color.
- E. Mortar Pigments: ASTM C 979/C 979M, compounded for use in mortar mixes, and having a record of satisfactory performance in masonry mortars.
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>Davis Colors</u>.
 - b. <u>LANXESS Corporation</u>.
 - c. <u>Solomon Colors, Inc</u>.
- F. Water: Potable.

2.2 MORTAR MIXES

- A. Measurement and Mixing: Measure cementitious materials and sand in a dry condition by volume or equivalent weight. Do not measure by shovel; use known measure. Mix materials in a clean, mechanical batch mixer.
 - 1. Mixing Pointing Mortar: Thoroughly mix cementitious materials and sand together before adding any water. Then mix again, adding only enough water to produce a damp, unworkable mix that retains its form when pressed into a ball. Maintain mortar in this dampened condition for 15 to 30 minutes. Add remaining water in small portions until mortar reaches desired consistency. Use mortar within one hour of final mixing; do not retemper or use partially hardened material.
- B. Colored Mortar: Produce mortar of color required by using specified ingredients. Do not alter specified proportions without Architect's approval.
 - 1. Mortar Pigments: Where mortar pigments are indicated, do not add pigment exceeding 10 percent by weight of the cementitious or binder materials, except for carbon black which is limited to 2 percent.
- C. Do not use admixtures in mortar unless otherwise indicated.
- D. Mixes: Mix mortar materials in the following proportions:
 - 1. Pointing Mortar by Type: ASTM C 270, Proportion Specification, Type N unless otherwise indicated; with cementitious material limited to portland cement and lime or masonry cement. Add mortar pigments to produce mortar colors required.

PART 3 - EXECUTION

3.

3.1 REPOINTING MASONRY

- A. Rake out and repoint joints to the following extent:
 - 1. All joints in areas indicated.
 - 2. Joints indicated as sealant-filled joints. Seal joints according to Section 079200 "Joint Sealants."
 - Joints at locations of the following defects:
 - a. Holes and missing mortar.
 - b. Cracks that can be penetrated 1/4 inch or more by a knife blade 0.027 inch thick.
 - c. Cracks 1/16 inch or more in width and of any depth.
 - d. Hollow-sounding joints when tapped by metal object.
 - e. Eroded surfaces 1/4 inch or more deep.
 - f. Deterioration to point that mortar can be easily removed by hand, without tools.
 - g. Joints filled with substances other than mortar.

- B. Do not rake out and repoint joints where not required.
- C. Rake out joints as follows, according to procedures demonstrated in approved mockup:
 - 1. Remove mortar from joints to depth of 2 times joint width, but not less than 3/4 inch or not less than that required to expose sound, unweathered mortar. Do not remove unsound mortar more than 2 inches deep; consult Architect for direction.
 - 2. Remove mortar from masonry surfaces within raked-out joints to provide reveals with square backs and to expose masonry for contact with pointing mortar. Brush, vacuum, or flush joints to remove dirt and loose debris.
 - 3. Do not spall edges of masonry units or widen joints. Replace or patch damaged masonry units as directed by Architect.
- D. Notify Architect of unforeseen detrimental conditions including voids in mortar joints, cracks, loose masonry units, rotted wood, rusted metal, and other deteriorated items.
- E. Pointing with Mortar:
 - 1. Rinse joint surfaces with water to remove dust and mortar particles. Time rinsing application so, at time of pointing, joint surfaces are damp but free of standing water. If rinse water dries, dampen joint surfaces before pointing.
 - 2. Apply pointing mortar first to areas where existing mortar was removed to depths greater than surrounding areas. Apply in layers not greater than 3/8 inch until a uniform depth is formed. Fully compact each layer, and allow it to become thumbprint hard before applying next layer.
 - 3. After deep areas have been filled to same depth as remaining joints, point joints by placing mortar in layers not greater than 3/8 inch. Fully compact each layer and allow to become thumbprint hard before applying next layer. Where existing masonry units have worn or rounded edges, slightly recess finished mortar surface below face of masonry to avoid widened joint faces. Take care not to spread mortar beyond joint edges onto exposed masonry surfaces or to featheredge the mortar.
 - 4. When mortar is thumbprint hard, tool joints to match original appearance of joints as demonstrated in approved mockup. Remove excess mortar from edge of joint by brushing.
 - 5. Cure mortar by maintaining in thoroughly damp condition for at least 72 consecutive hours, including weekends and holidays.
 - 6. Hairline cracking within mortar or mortar separation at edge of a joint is unacceptable. Completely remove such mortar and repoint.
- F. Where repointing work precedes cleaning of existing masonry, allow mortar to harden at least 30 days before beginning cleaning work.

END OF SECTION 040120.64

SECTION 042000 - UNIT MASONRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:1. Clay face brick.

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 exposed masonry unit and colored mortar.

1.4 INFORMATIONAL SUBMITTALS

- A. Material Certificates: For each type and size of product. For masonry units, include data on material properties.
- 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 C 109/C 109M for compressive strength, ASTM C 1506 for water retention, and ASTM C 91/C 91M for air content.
 - 2. Include test reports, according to ASTM C 1019, for grout mixes required to comply with compressive strength requirement.

1.5 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 36 inches long by 36 inches high by full thickness.

1.6 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.
- 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 BRICK

- A. General: Provide shapes indicated and as follows, with exposed surfaces matching finish and color of exposed faces of adjacent units:
 - 1. For ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces, provide units without cores or frogs and with exposed surfaces finished.
 - 2. Provide special shapes for applications where shapes produced by sawing would result in sawed surfaces being exposed to view.
- B. Clay Face Brick: Facing brick complying with ASTM C 216 or hollow brick complying with ASTM C 652, Class H40V (void areas between 25 and 40 percent of gross cross-sectional area).
 - 1. Grade: SW.
 - 2. Type: FBX or HBX.
 - 3. Initial Rate of Absorption: Less than 30 g/30 sq. in. per minute when tested according to ASTM C 67.
 - 4. Efflorescence: Provide brick that has been tested according to ASTM C 67 and is rated "not effloresced."
 - 5. Size: Match existing brick.

2.3 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C 150/C 150M, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
- B. Hydrated Lime: ASTM C 207, Type S.
- C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.
- D. Masonry Cement: ASTM C 91/C 91M.
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>Cemex S.A.B. de C.V</u>.
 - b. <u>Essroc</u>.
 - c. <u>Holcim (US) Inc</u>.
 - d. <u>Lafarge North America Inc</u>.
 - e. <u>Lehigh Hanson; HeidelbergCement Group</u>.
- E. Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes and complying with ASTM C 979/C 979M. Use only pigments with a record of satisfactory performance in masonry mortar.
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>Davis Colors</u>.
 - b. Euclid Chemical Company (The); an RPM company.
 - c. <u>Lanxess Corporation</u>.
 - d. <u>Solomon Colors, Inc</u>.
- F. Colored Cement Products: Packaged blend made from portland cement and hydrated lime or masonry cement and mortar pigments, all complying with specified requirements, and containing no other ingredients.
 - 1. Colored Masonry Cement:
 - a. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - 1) Cemex S.A.B. de C.V.
 - 2) <u>Essroc</u>.
 - 3) <u>Holcim (US) Inc</u>.
 - 4) <u>Lafarge North America Inc</u>.
 - 5) <u>Lehigh Hanson; HeidelbergCement Group</u>.
- G. Aggregate for Mortar: ASTM C 144.
 - 1. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 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.
- H. Aggregate for Grout: ASTM C 404.
- I. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C 494/C 494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>BASF Corporation</u>.
 - b. <u>Euclid Chemical Company (The); an RPM company</u>.
 - c. <u>GCP Applied Technologies Inc</u>.
- J. Water: Potable.

2.4 REINFORCEMENT

- A. Uncoated-Steel Reinforcing Bars: ASTM A 615/A 615M or ASTM A 996/A 996M, Grade 60.
- B. Masonry-Joint Reinforcement, General: ASTM A 951/A 951M.
 - 1. Interior Walls: Hot-dip galvanized carbon steel.
 - 2. Exterior Walls: Hot-dip galvanized carbon steel.
 - 3. Wire Size for Side Rods: 0.187-inch diameter.
 - 4. Wire Size for Cross Rods: 0.187-inch diameter.
 - 5. Wire Size for Veneer Ties: 0.187-inch diameter.
 - 6. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than 16 inches o.c.
 - 7. Provide in lengths of not less than 10 feet, with prefabricated corner and tee units.

- C. Masonry-Joint Reinforcement for Single-Wythe Masonry: Ladder or truss 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 wide, plus one side rod at each wythe of masonry 4 inches wide or less.
 - 2. Tab type, either ladder or truss design, with one side rod at each face shell of backing wythe and with rectangular tabs sized to extend at least halfway through facing wythe, but with at least 5/8-inch cover on outside face.
 - 3. Adjustable (two-piece) type, either ladder or truss design, with one side rod at each face shell of backing wythe and with separate adjustable ties with pintle-and-eye connections having a maximum horizontal play of 1/16 inch and maximum vertical adjustment of 1-1/4 inches. Size ties to extend at least halfway through facing wythe but with at least 5/8-inch cover on outside face. Ties have hooks or clips to engage a continuous horizontal wire in the facing wythe.
- E. Masonry-Joint Reinforcement for Veneers Anchored with Seismic Masonry-Veneer Anchors: Single 0.187-inch-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 into veneer but with at least a 5/8-inch 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 A 82/A 82M, with ASTM A 153/A 153M, Class B-2 coating.
 - 2. Steel Sheet, Galvanized after Fabrication: ASTM A 1008/A 1008M, Commercial Steel, with ASTM A 153/A 153M, Class B coating.
 - 3. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- C. Individual Wire Ties: Rectangular units with closed ends and not less than 4 inches wide.
 - 1. Wire: Fabricate from 3/16-inch- diameter, hot-dip galvanized-steel wire.

2.6 EMBEDDED FLASHING MATERIALS

- A. Metal Flashing: Provide metal flashing complying with Section 076200 "Sheet Metal Flashing and Trim" and as follows:
 - 1. Fabricate metal drip edges from stainless steel. Extend at least 3 inches into wall and 1/2 inch out from wall, with outer edge bent down 30 degrees and hemmed.
 - 2. Fabricate metal sealant stops from stainless steel. Extend at least 3 inches into wall and out to exterior face of wall. At exterior face of wall, bend metal back on itself for 3/4 inch and down into joint 1/4 inch to form a stop for retaining sealant backer rod.
 - 3. Fabricate metal expansion-joint strips from stainless steel to shapes indicated.
- B. Flexible Flashing: Use one of the following unless otherwise indicated:
 - 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.
 - a. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - 1) <u>Advanced Building Products Inc</u>.
 - 2) <u>Carlisle Coatings & Waterproofing Inc</u>.
 - 3) <u>Fiberweb, Clark Hammerbeam Corp</u>.
 - 4) <u>GCP Applied Technologies Inc</u>.

1.

- 5) <u>Heckmann Building Products, Inc</u>.
- 6) <u>Hohmann & Barnard, Inc</u>.
- 7) <u>Polyguard Products, Inc</u>.
- 8) <u>W.R. Meadows, Inc</u>.
- 9) <u>Williams Products, Inc</u>.
- 10) <u>Wire-Bond</u>.
- 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.
 - a. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - 1) <u>DuPont Safety and Construction</u>.
 - 2) <u>GCP Applied Technologies Inc</u>.
 - 3) <u>Protecto Wrap Company</u>.
 - 4) <u>Raven Industries, Inc</u>.
 - 5) <u>Wire-Bond</u>.
- 3. Elastomeric Thermoplastic Flashing: Composite flashing product consisting of a polyesterreinforced ethylene interpolymer alloy.
 - a. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - 1) <u>Hohmann & Barnard, Inc</u>.
 - 2) <u>Hyload, Inc</u>.
 - 3) <u>Mortar Net Solutions</u>.
 - 4) <u>Wire-Bond</u>.
- 4. EPDM Flashing: Sheet flashing product made from ethylene-propylene-diene terpolymer, complying with ASTM D 4637/D 4637M, 0.040 inch thick.
 - a. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - 1) <u>Carlisle Coatings & Waterproofing Inc</u>.
 - 2) <u>Firestone Specialty Products</u>.
 - 3) <u>Heckmann Building Products, Inc</u>.
 - 4) <u>Hohmann & Barnard, Inc</u>.
 - 5) <u>Sandell Manufacturing Co., Inc</u>.
 - 6) <u>Wire-Bond</u>.
- 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 D 1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from [neoprene] [urethane] [or] [PVC].
- B. Preformed Control-Joint Gaskets: Made from [styrene-butadiene-rubber compound, complying with ASTM D 2000, Designation M2AA-805] [or] [PVC, complying with ASTM D 2287, Type PVC-65406] and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.
- C. Bond-Breaker Strips: Asphalt-saturated felt complying with ASTM D 226/D 226M, Type I (No. 15 asphalt felt).
- D. Weep/Cavity Vent Products: Use one of the following unless otherwise indicated:

- 1. Cellular Plastic Weep/Vent: One-piece, flexible extrusion made from UV-resistant polypropylene copolymer, full height and width of head joint and depth 1/8 inch less than depth of outer wythe, in color selected from manufacturer's standard.
 - a. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - 1) <u>Advanced Building Products Inc</u>.
 - 2) <u>Heckmann Building Products, Inc</u>.
 - 3) <u>Hohmann & Barnard, Inc</u>.
 - 4) <u>Wire-Bond</u>.
- 2. Mesh Weep/Vent: Free-draining mesh; made from polyethylene strands, full height and width of head joint and depth 1/8 inch less than depth of outer wythe; in color selected from manufacturer's standard.
 - a. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - 1) Advanced Building Products Inc.
 - 2) <u>CavClear/Archovations, Inc</u>.
 - 3) <u>Keene Building Products</u>.
 - 4) <u>Mortar Net Solutions</u>.
- 3. Vinyl Weep Hole/Vent: Units made from flexible PVC, designed to fit into a head joint and consisting of a louvered vertical leg, flexible wings to seal against ends of masonry units, and a top flap to keep mortar out of the head joint; in color selected by Architect.
 - a. <u>Manufacturers:</u> Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - 1) Hohmann & Barnard, Inc.
 - 2) <u>Williams Products, Inc</u>.
 - 3) <u>Wire-Bond</u>.
- E. Cavity Drainage Material: Free-draining mesh, made from polymer strands that will not degrade within the wall cavity.
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>Advanced Building Products Inc</u>.
 - b. <u>CavClear/Archovations, Inc</u>.
 - c. <u>Heckmann Building Products, Inc</u>.
 - d. <u>Hohmann & Barnard, Inc</u>.
 - e. <u>Mortar Net Solutions</u>.
 - f. <u>Wire-Bond</u>.
 - 2. Configuration: Provide one of the following:
 - a. Strips, full depth of cavity and 10 inches high, with dovetail shaped notches 7 inches deep that prevent clogging with mortar droppings.

2.8 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. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>Diedrich Technologies, Inc.; a Hohmann & Barnard company</u>.
 - b. <u>EaCo Chem, Inc</u>.
 - c. <u>PROSOCO, Inc</u>.

2.9 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, waterrepellent 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 C 270, Proportion Specification. Provide the following types of mortar for applications stated unless another type is indicated.
 - 1. For masonry below grade or in contact with earth, use Type M.
 - 2. For reinforced masonry, use Type S.
 - 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. 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.
 - 2. Pigments shall not exceed 5 percent of masonry cement by weight.
 - 3. Mix to match Architect's sample.
 - 4. Application: Use pigmented mortar for exposed mortar joints with the following units:a. Clay face brick.
- E. Grout for Unit Masonry: Comply with ASTM C 476.
 - 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 C 476, Table 1 orparagraph 4.2.2 for specified 28-day compressive strength indicated, but not less than 2000 psi.
 - 3. Provide grout with a slump of 8 to 11 inches as measured according to ASTM C 143/C 143M.

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. per minute when tested according to ASTM C 67. 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 or minus 1/4 inch.
 - 2. For location of elements in plan, do not vary from that indicated by more than plus or minus 1/2 inch.
 - 3. For location of elements in elevation, do not vary from that indicated by more than plus or minus 1/4 inch in a story height or 1/2 inch total.
- B. Lines and Levels:
 - 1. For bed joints and top surfaces of bearing walls, do not vary from level by more than 1/4 inch in 10 feet, or 1/2-inch maximum.
 - 2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2-inch maximum.
 - 3. For vertical lines and surfaces, do not vary from plumb by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2-inch maximum.
 - 4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2-inch maximum.
 - 5. For lines and surfaces, do not vary from straight by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2-inch maximum.

C. Joints:

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

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 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 under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.

3.4 MORTAR BEDDING AND JOINTING

- A. Lay hollow brick and 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 and hollow brick 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. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.
- D. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint) unless otherwise indicated.

3.5 ANCHORED MASONRY VENEERS

- A. Anchor masonry veneers to concrete and masonry backup with masonry-veneer anchors to comply with the following requirements:
 - 1. Embed tie sections in masonry joints.
 - 2. Locate anchor sections to allow maximum vertical differential movement of ties up and down.
 - 3. Space anchors as indicated, but not more than 18 inches o.c. vertically and 24 inches o.c. horizontally, with not less than one anchor for each 2 sq. ft. of wall area. Install additional anchors within 12 inches of openings and at intervals, not exceeding 8 inches, around perimeter.

3.6 MASONRY-JOINT REINFORCEMENT

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

3.7 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 8 inches, and through inner wythe to within 1/2 inch 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 on interior face.

- 3. At lintels and shelf angles, extend flashing a minimum of 6 inches into masonry at each end. At heads and sills, extend flashing 6 inches at ends and turn up not less than 2 inches to form end dams.
- 4. Install metal drip edges beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch back from outside face of wall, and adhere flexible flashing to top of metal drip edge.
- 5. Install metal flashing termination beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch back from outside face of wall, and adhere flexible flashing to top of metal flashing termination.
- 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 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 and airspace behind veneers to comply with configuration requirements for cavity drainage material in "Miscellaneous Masonry Accessories" Article.
- E. Install cavity vents in head joints in exterior wythes at spacing indicated. Use specified weep/cavity vent products to form cavity vents.
 - 1. Close cavities off vertically and horizontally with blocking in manner indicated. Install throughwall flashing and weep holes above horizontal blocking.

3.8 PARGING

- A. Parge exterior faces of below-grade masonry walls, where indicated, in two uniform coats to a total thickness of 3/4 inch. 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. 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.

3.9 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. 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.
 - 6. 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 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 055000 - METAL FABRICATIONS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Miscellaneous steel framing and supports.
 - 2. Miscellaneous steel trim.
 - 3. Metal bollards.
 - 4. Loose bearing and leveling plates.
- B. Products furnished, but not installed, under this Section include the following:
 - 1. Loose steel lintels.
 - 2. Anchor bolts, steel pipe sleeves, slotted-channel inserts, and wedge-type inserts indicated to be cast into concrete or built into unit masonry.

1.2 ACTION SUBMITTALS

A. Shop Drawings: Show fabrication and installation details. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.
 - 1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.2 METALS

- A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.
- B. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- C. Stainless-Steel Bars and Shapes: ASTM A 276, Type 304.
- D. Rolled-Steel Floor Plate: ASTM A 786/A 786M, rolled from plate complying with ASTM A 36/A 36M or ASTM A 283/A 283M, Grade C or D.
- E. Rolled-Stainless-Steel Floor Plate: ASTM A 793.
- F. Steel Tubing: ASTM A 500/A 500M, cold-formed steel tubing.
- G. Steel Pipe: ASTM A 53/A 53M, Standard Weight (Schedule 40) unless otherwise indicated.
- H. Slotted Channel Framing: Cold-formed metal box channels (struts) complying with MFMA-4.
 - 1. Size of Channels: 1-5/8 by 1-5/8 inches or As indicated.
 - 2. Material: Galvanized steel, ASTM A 653/A 653M, commercial steel, Type B, with G90 coating; 0.108-inch nominal thickness.

- 3. Material: Cold-rolled steel, ASTM A 1008/A 1008M, commercial steel, Type B; 0.0677-inch minimum thickness; unfinished.
- I. Cast Iron: Either gray iron, ASTM A 48/A 48M, or malleable iron, ASTM A 47/A 47M, unless otherwise indicated.
- J. Aluminum Extrusions: ASTM B 221, Alloy 6063-T6.
- K. Aluminum-Alloy Rolled Tread Plate: ASTM B 632/B 632M, Alloy 6061-T6.
- L. Aluminum Castings: ASTM B 26/B 26M, Alloy 443.0-F.

2.3 FASTENERS

- A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use and zincplated fasteners with coating complying with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.
 - 1. Provide stainless-steel fasteners for fastening aluminum.
 - 2. Provide stainless-steel fasteners for fastening stainless steel.
 - 3. Provide stainless-steel fasteners for fastening nickel silver.
 - 4. Provide bronze fasteners for fastening bronze.
- B. Cast-in-Place Anchors in Concrete: Either threaded type or wedge type unless otherwise indicated; galvanized ferrous castings, either ASTM A 47/A 47M malleable iron or ASTM A 27/A 27M cast steel. Provide bolts, washers, and shims as needed, all hot-dip galvanized per ASTM F 2329.
- C. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors.
 - 1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5, unless otherwise indicated.
 - 2. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 stainlesssteel bolts, ASTM F 593, and nuts, ASTM F 594.

2.4 MISCELLANEOUS MATERIALS

- A. Shop Primers: Provide primers that comply with Section 099113 "Exterior Painting." And Section 099123 Interior Painting."
- B. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.
 - 1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.
- C. Water-Based Primer: Emulsion type, anticorrosive primer for mildly corrosive environments that is resistant to flash rusting when applied to cleaned steel, complying with MPI#107 and compatible with topcoat.
- D. Epoxy Zinc-Rich Primer: Complying with MPI#20 and compatible with topcoat.
- E. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.
- F. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M.
- G. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.5 FABRICATION, GENERAL

- A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Use connections that maintain structural value of joined pieces.
- B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges. Remove sharp or rough areas on exposed surfaces.
- C. Weld corners and seams continuously to comply with the following:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. At exposed connections, finish exposed welds and surfaces smooth and blended.
- D. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Locate joints where least conspicuous.
- E. Fabricate seams and other connections that are exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.
- F. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors not less than 8 inches from ends and corners of units and 24 inches o.c.

2.6 MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.
- B. Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.
- C. Fabricate steel girders for wood frame construction from continuous steel shapes of sizes indicated.
 1. Where wood nailers are attached to girders with bolts or lag screws, drill or punch holes at 24 inches o.c.
- D. Fabricate steel pipe columns for supporting wood frame construction from steel pipe with steel baseplates and top plates as indicated. Drill or punch baseplates and top plates for anchor and connection bolts and weld to pipe with fillet welds all around. Make welds the same size as pipe wall thickness unless otherwise indicated.

2.7 MISCELLANEOUS STEEL TRIM

- A. Unless otherwise indicated, fabricate units from steel shapes, plates, and bars of profiles shown with continuously welded joints and smooth exposed edges. Miter corners and use concealed field splices where possible.
- B. Provide cutouts, fittings, and anchorages as needed to coordinate assembly and installation with other work.
- C. Galvanize exterior miscellaneous steel trim.
- D. Prime miscellaneous steel trim with zinc-rich primer.

2.8 METAL BOLLARDS

- A. Fabricate metal bollards from Schedule 40 steel pipe.
 1. Cap bollards with 1/4-inch-thick steel plate.
- B. Fabricate bollards with 3/8-inch-thick steel baseplates for bolting to concrete slab. Drill baseplates at all four corners for 3/4-inch anchor bolts.
- C. Fabricate sleeves for bollard anchorage from steel pipe or tubing with 1/4-inch-thick steel plate welded to bottom of sleeve.
- D. Prime bollards with zinc-rich primer.

2.9 LOOSE BEARING AND LEVELING PLATES

A. Provide loose bearing and leveling plates for steel items bearing on masonry or concrete construction. Drill plates to receive anchor bolts and for grouting.

2.10 LOOSE STEEL LINTELS

- A. Fabricate loose steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated.
- B. Galvanize loose steel lintels located in exterior walls.
- C. Prime loose steel lintels located in exterior walls with zinc-rich primer.
- 2.11 STEEL WELD PLATES AND ANGLES
 - A. Provide steel weld plates and angles not specified in other Sections, for items supported from concrete construction as needed to complete the Work. Provide each unit with no fewer than two integrally welded steel strap anchors for embedding in concrete.
- 2.12 FINISHES, GENERAL
 - A. Finish metal fabrications after assembly.
- 2.13 STEEL AND IRON FINISHES
 - A. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A 153/A 153M for steel and iron hardware and with ASTM A 123/A 123M for other steel and iron products.
 - B. Shop prime iron and steel items not indicated to be galvanized unless they are to be embedded in concrete, sprayed-on fireproofing, or masonry, or unless otherwise indicated.
 - 1. Shop prime with primers specified in Section 099123 "Interior Painting" unless zinc-rich primer is indicated.
 - C. Preparation for Shop Priming: Prepare surfaces to comply with requirements indicated below:
 - 1. Exterior Items: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
 - 2. Other Items: SSPC-SP 3, "Power Tool Cleaning."
 - D. Shop Priming: Apply shop primer to comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
- B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
- C. Field Welding: Comply with the following requirements:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction.
- E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.
- 3.2 INSTALLING METAL BOLLARDS
 - A. Fill metal-capped bollards solidly with concrete and allow concrete to cure seven days before installing.
 - B. Anchor bollards to existing construction with expansion anchors. Provide four 3/4-inch bolts at each bollard unless otherwise indicated.
 - C. Anchor bollards in place with concrete footings. Place concrete and vibrate or tamp for consolidation. Support and brace bollards in position until concrete has cured.
 - D. Fill bollards solidly with concrete, mounding top surface to shed water.

3.3 INSTALLING BEARING AND LEVELING PLATES

- A. Clean concrete and masonry bearing surfaces of bond-reducing materials, and roughen to improve bond to surfaces. Clean bottom surface of plates.
- B. Set bearing and leveling plates on wedges, shims, or leveling nuts. After bearing members have been positioned and plumbed, tighten anchor bolts. Do not remove wedges or shims but, if protruding, cut off flush with edge of bearing plate before packing with nonshrink grout. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.
- 3.4 ADJUSTING AND CLEANING
 - A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780/A 780M.

END OF SECTION 055000

SECTION 055213 - PIPE AND TUBE RAILINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Steel pipe and tube railings.

1.2 ACTION SUBMITTALS

- A. Product Data: For the following:
 - 1. Manufacturer's product lines of mechanically connected railings.
 - 2. Railing brackets.
 - 3. Grout, anchoring cement, and paint products.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

PART 2 - PRODUCTS

1.

2.1 MANUFACTURERS

- A. Steel Pipe and Tube Railings:
 - <u>Manufacturers</u>: Subject to compliance with requirements, provide products by one of the following:
 - a. R & B Wagner, Inc.
 - b. VIVA Railings, LLC.

2.2 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Railings, including attachment to building construction, shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
 - 1. Handrails and Top Rails of Guards:
 - a. Uniform load of 50 lbf/ ft. applied in any direction.
 - b. Concentrated load of 200 lbf applied in any direction.
 - c. Uniform and concentrated loads need not be assumed to act concurrently.
 - 2. Infill of Guards:
 - a. Concentrated load of 50 lbf applied horizontally on an area of 1 sq. ft..
 - b. Infill load and other loads need not be assumed to act concurrently.

2.3 METALS, GENERAL

- A. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails unless otherwise indicated.
 - 1. Provide type of bracket with predrilled hole for exposed bolt anchorage and that provides 2-1/4inch clearance from inside face of handrail to finished wall surface.
- 2.4 STEEL AND IRON
 - A. Tubing: ASTM A 500 (cold formed) or ASTM A 513.
 - B. Pipe: ASTM A 53/A 53M, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.
 - 1. Provide galvanized finish for exterior installations and where indicated.

- C. Plates, Shapes, and Bars: ASTM A 36/A 36M.
- D. Cast Iron: Either gray iron, ASTM A 48/A 48M, or malleable iron, ASTM A 47/A 47M, unless otherwise indicated.
- E. Expanded Metal: ASTM F 1267, Type II (expanded and flattened), Class 1 (uncoated).
 1. Style Designation: 3/4 number 13.
- F. Woven-Wire Mesh: Intermediate-crimp, square pattern, 2-inch woven-wire mesh, made from 0.134-inchdiameter wire complying with ASTM A 510.

2.5 FASTENERS

- A. General: Provide the following:
 - 1. Ungalvanized-Steel Railings: Plated steel fasteners complying with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5 for zinc coating.
 - 2. Hot-Dip Galvanized Railings: Type 304 stainless-steel or hot-dip zinc-coated steel fasteners complying with ASTM A 153/A 153M or ASTM F 2329 for zinc coating.
- B. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors capable of sustaining, without failure, a load equal to 6 times the load imposed when installed in unit masonry and 4 times the load imposed when installed in concrete, as determined by testing according to ASTM E 488/E 488M, conducted by a qualified independent testing agency.
 - 1. Material for Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5, unless otherwise indicated.
 - 2. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 stainlesssteel bolts, ASTM F 593, and nuts, ASTM F 594.
- 2.6 MISCELLANEOUS MATERIALS
 - A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
 - B. Etching Cleaner for Galvanized Metal: Complying with MPI#25.
 - C. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.
 - D. Shop Primers: Provide primers that comply with Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."
 - E. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.
 - F. Epoxy Zinc-Rich Primer: Complying with MPI#20 and compatible with topcoat.
 - G. Shop Primer for Galvanized Steel: Primer formulated for exterior use over zinc-coated metal and compatible with finish paint systems indicated.
 - H. Epoxy Intermediate Coat: Complying with MPI #77 and compatible with primer and topcoat.
 - I. Polyurethane Topcoat: Complying with MPI #72 and compatible with undercoat.
 - J. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M.

K. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.7 FABRICATION

- A. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- B. Form work true to line and level with accurate angles and surfaces.
- C. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove flux immediately.
 - 4. At exposed connections, finish exposed surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces.
- D. Nonwelded Connections: Connect members with concealed mechanical fasteners and fittings. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.
- E. Form changes in direction by bending or by inserting prefabricated elbow fittings.
- F. For changes in direction made by bending, use jigs to produce uniform curvature for each repetitive configuration required. Maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.
- G. Close exposed ends of railing members with prefabricated end fittings.
- H. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated.
- I. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.
 - 1. At brackets and fittings fastened to plaster or gypsum board partitions, provide crush-resistant fillers or other means to transfer loads through wall finishes to structural supports and prevent bracket or fitting rotation and crushing of substrate.
- J. Expanded-Metal Infill Panels: Fabricate infill panels from expanded metal made from same metal as railings in which they are installed.
 - 1. Orient expanded metal with long dimension of diamonds as indicated on Drawings.
- K. Woven-Wire Mesh Infill Panels: Fabricate infill panels from woven-wire mesh crimped into 1-by-1/2-by-1/8-inch metal channel frames. Make wire mesh and frames from same metal as railings in which they are installed.
 - 1. Orient wire mesh with as indicated on Drawings.

2.8 STEEL AND IRON FINISHES

- A. Galvanized Railings:
 - 1. Hot-dip galvanize exterior steel railings, including hardware, after fabrication.
 - 2. Comply with ASTM A 123/A 123M for hot-dip galvanized railings.
 - 3. Comply with ASTM A 153/A 153M for hot-dip galvanized hardware.

- B. Preparing Galvanized Railings for Shop Priming: After galvanizing, thoroughly clean railings of grease, dirt, oil, flux, and other foreign matter, and treat with etching cleaner.
- C. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with SSPC-SP 3, "Power Tool Cleaning."
- D. Primer Application: Apply shop primer to prepared surfaces of railings unless otherwise indicated. Comply with requirements in SSPC-PA 1, "Shop, Field, and Maintenance Painting of Steel," for shop painting. Primer need not be applied to surfaces to be embedded in concrete or masonry.
 - 1. Do not apply primer to galvanized surfaces.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Set railings accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.
 - 1. Do not weld, cut, or abrade surfaces of railing components that are coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
 - 2. Set posts plumb within a tolerance of .
 - 3. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed .
- B. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.
 - 1. Coat, with a heavy coat of bituminous paint, concealed surfaces of aluminum that are in contact with grout, concrete, masonry, wood, or dissimilar metals.

3.2 ANCHORING POSTS

- A. Use metal sleeves preset and anchored into concrete for installing posts. After posts are inserted into sleeves, fill annular space between post and sleeve with non-shrink, nonmetallic grout or anchoring cement, mixed and placed to comply with anchoring material manufacturer's written instructions.
- B. Form or core-drill holes not less than deep and larger than OD of post for installing posts in concrete. Clean holes of loose material, insert posts, and fill annular space between post and concrete with nonshrink, nonmetallic grout or anchoring cement, mixed and placed to comply with anchoring material manufacturer's written instructions.

3.3 ATTACHING RAILINGS

- A. Attach railings to wall with wall brackets. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.
- B. Secure wall brackets and railing end flanges to building construction as follows:
 - 1. For concrete and solid masonry anchorage, use drilled-in expansion shields and hanger or lag bolts.
 - 2. For hollow masonry anchorage, use toggle bolts.
 - 3. For wood stud partitions, use hanger or lag bolts set into studs or wood backing between studs. Coordinate with carpentry work to locate backing members.
 - 4. For steel-framed partitions, use hanger or lag bolts set intowood backing between studs. Coordinate with stud installation to locate backing members.

3.4 ADJUSTING AND CLEANING

- A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop painting to comply with SSPC-PA 1 requirements for touching up shop-painted surfaces.
- B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas, and repair galvanizing to comply with ASTM A 780/A 780M.

END OF SECTION 055213

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. Rooftop equipment bases and support curbs.
- 4. Wood blocking, cants, and nailers.
- 5. Wood furring and grounds.
- 6. Wood sleepers.
- 7. Plywood backing panels.

1.2 ACTION SUBMITTALS

A. Product Data:

- 1. For each type of process and factory-fabricated product.
- 2. For preservative-treated wood products.

1.3 INFORMATIONAL SUBMITTALS

- A. Material Certificates:
 - 1. 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.
 - 2. For preservative-treated wood products. Indicate type of preservative used and net amount of preservative retained.
- 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: Comply with 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 or omit grade stamp and provide certificates of grade compliance issued by grading agency.
 - 3. Dress lumber, S4S, unless otherwise indicated.
- B. Maximum Moisture Content:
 - 1. Boards: 15 percent.

- 2. Dimension Lumber: 15 percent for 2-inch nominal thickness or less; 19 percent for more than 2-inch nominal thickness unless otherwise indicated.
- 3. Timber. 19 percent.
- 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, are to meet or exceed those indicated. Manufacturer's published values are to be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

2.2 PRESERVATIVE TREATMENT

- A. Preservative Treatment by Pressure Process: AWPA 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 above the ground in crawlspaces or unexcavated areas.
 - 5. Wood floor plates that are installed over concrete slabs-on-grade.

2.3 DIMENSION LUMBER FRAMING

- A. Non-Load-Bearing Interior Partitions by Grade: Construction or No. 2 grade.
 - 1. Application: Interior partitions not indicated as load bearing.
 - 2. Species:
 - a. Southern pine or mixed southern pine; SPIB.
 - b. Northern species; NLGA.
 - c. Eastern softwoods; NeLMA.
 - d. Western woods; WCLIB or WWPA.
- B. Framing Other Than Non-Load-Bearing Partitions by Grade: No. 2 grade.
 - 1. Application: Framing other than interior partitions not indicated as load bearing.
 - 2. Species:
 - a. Hem-fir (north); NLGA.
 - b. Southern pine; SPIB.
 - c. Douglas fir-larch; WCLIB or WWPA.
 - d. Southern pine or mixed southern pine; SPIB.
 - e. Spruce-pine-fir; NLGA.
 - f. Douglas fir-south; WWPA.

- g. Hem-fir; WCLIB or WWPA.
- h. Douglas fir-larch (north); NLGA.
- i. 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, knotholes, shake, splits, torn grain, and wane.
 - 1. Species and Grade: As indicated above for load-bearing construction of same type.

2.4 ENGINEERED WOOD PRODUCTS

- A. Laminated-Veneer Lumber: Structural composite lumber made from wood veneers with grain primarily parallel to member lengths, evaluated and monitored according to ASTM D5456 and manufactured with an exterior-type adhesive complying with ASTM D2559.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Boise Cascade.
 - b. Louisiana-Pacific Corporation.
 - c. Pacific Woodtech Corporation.
 - d. RedBuilt.
 - e. Roseburg.
 - f. West Fraser.
 - g. Weyerhaeuser Company.
 - 2. Extreme Fiber Stress in Bending, Edgewise: 2800 psi for 12-inch nominal-depth members.
 - 3. Modulus of Elasticity, Edgewise: 2,000,000 psi.
- B. Parallel Strand Lumber: Structural composite lumber made from wood veneers with grain primarily parallel to member lengths, evaluated and monitored according to ASTM D5456 and manufactured with an exterior-type adhesive complying with ASTM D2559.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Boise Cascade.
 - b. Louisiana-Pacific Corporation.
 - c. Pacific Woodtech Corporation.
 - d. RedBuilt.
 - e. Roseburg.
 - f. West Fraser.
 - g. Weyerhaeuser Company.
 - 2. Extreme Fiber Stress in Bending, Edgewise: 2,000 psi.
 - 3. Modulus of Elasticity, Edgewise: 2,000,000 psi.

2.5 MISCELLANEOUS LUMBER

- A. 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: 15 percent maximum moisture content and any of the following species and grades:
 1. Mixed southern pine or southern pine; No. 2 grade; SPIB.

- 2. Eastern softwoods; No. 2 Common grade; NeLMA.
- 3. Northern species; No. 2 Common grade; NLGA.
- 4. Western woods; Construction or No. 2 Common grade; WCLIB or WWPA.

2.6 PLYWOOD BACKING PANELS

A. Equipment Backing Panels: Plywood, DOC PS 1, Exterior, A-C, fire-retardant treated, in thickness indicated or, if not indicated, not less than 3/4-inch nominal thickness.

2.7 FASTENERS

- A. General: Fasteners are to be of size and type indicated and comply with requirements specified in this article for material and manufacture. Provide nails or screws, in sufficient length, to penetrate not less than 1-1/2 inches into wood substrate.
 - 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. Phoenix Metal Products, Inc.
 - 4. Simpson Strong-Tie Co., Inc.
 - 5. Tamlyn.
- B. Allowable design loads, as published by manufacturer, are to meet or exceed those of basis-of-design products. Manufacturer's published values are to be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency. Framing anchors are to 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 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 lowalloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G185 coating designation; and not less than 0.036 inch thick.
 - 1. Use for wood-preservative-treated lumber and where indicated.

2.9 MISCELLANEOUS MATERIALS

- A. Sill-Sealer Gaskets:
 - 1. Closed-cell neoprene foam, 1/4 inch thick, selected from manufacturer's standard widths to suit width of sill members indicated.

- 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.
- C. Adhesives for Gluing Furring and Sleepers to Concrete or Masonry: Formulation complying with ASTM D3498 that is approved for use indicated by adhesive manufacturer.
 - 1. Verify adhesives have a VOC content of 70 g/L or less.
 - 2. Verify adhesive complies with 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." Verify formaldehyde emissions does not exceed 9 mcg/cu. m or 7 ppb, whichever is less.

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 work 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 enough that moisture content exceeds that specified, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 061000

SECTION 061600 - SHEATHING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Wall sheathing.
 - 2. Roof sheathing.
 - 3. 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.
 - 2. Foam-plastic sheathing.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Resistance Ratings: As tested in accordance with ASTM E119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Fire-Resistance Ratings: Indicated by design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

2.2 WOOD PANEL PRODUCTS

A. Emissions: Products are to 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."

2.3 PRESERVATIVE-TREATED PLYWOOD

- A. Preservative Treatment by Pressure Process: AWPA 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.
- D. Kiln-dry material after treatment to a maximum moisture content of 15 percent.
- E. Identify fire-retardant-treated plywood with appropriate classification marking of qualified testing agency.
- F. Application: Treat plywood indicated on Drawings.

2.4 WALL SHEATHING

- A. Plywood Sheathing: , Exterior, Structural I sheathing.
- B. Oriented-Strand-Board Sheathing: DOC PS 2, Exposure 1, Structural I sheathing.
- 2.5 COMPOSITE INSULATING WALL SHEATHING
 - A. Composite Insulating Wall Sheathing: Oriented-strand-board Exposure 1 sheathing 7/16 inch (11.1 mm) thick, with factory-laminated water-resistive barrier exterior facer, and with rigid foam plastic insulating board laminated to interior face.
 - 1. Basis-of-Design Product: Provide Huber Engineered Woods LLC; ZIP System R Sheathing, or one of the following:
 - a. LP Building Solutions, NovaCore
 - 2. Thickness: 1-1/2 inch
 - 3. Thermal Resistivity (R Value): 6.6 deg F x h x sq. ft./Btu x in. at 75 deg F
 - 4. Exterior Facer: Medium-density, phenolic-impregnated polymer-modified sheet material meeting requirements for ASTM D779 Grade D weather-resistive barrier in accordance with ICC AC38 and AC310, with fastener spacing symbols on exterior facer for 16-inch and 24-inch on center spacing, with the following characteristics
 - a. Water Resistance of Coatings, ASTM D2247: Pass 14 day exposure test.
 - b. Moisture Vapor Transmission, ASTM E96: Not less than 12 perms.
 - c. Water Penetration, ASTM E331: Pass at 2.86 lbf/sq. ft. (137 Pa).
 - d. Wind Driven Rain, TAS-100: Pass.
 - e. Accelerated Weathering, ASTM G154: Pass.

2.6 ROOF SHEATHING

- A. Plywood Sheathing: , Exposure 1 sheathing.
- B. Oriented-Strand-Board Sheathing: DOC PS 2, Exposure 1 sheathing.
- 2.7 SHEATHING JOINT-AND-PENETRATION TREATMENT MATERIALS
 - A. Self-Adhering Seam and Flashing Tape: Pressure-sensitive, self-adhering, cold-applied, seam tape consisting of polyolefin film with acrylic adhesive, meeting ICC AC148.
 - 1. Use product compatible with panel system and as recommended by panel system manufacturer.

2.8 MISCELLANEOUS MATERIALS

- A. Adhesives for Field Gluing Panels to Wood Framing: Formulation complying with APA AFG-01 or ASTM D3498 that is approved for use with type of construction panel indicated by manufacturers of both adhesives and panels.
 - 1. <u>Verify adhesive has a VOC</u> content of 50 g/L or less.
 - 2. <u>Verify adhesive complies with the</u> 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." Verify formaldehyde emissions does not exceed 9 mcg/cu. m or 7 ppb, whichever is less.

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 2304.10.1, "Fastening Schedule," in the ICC's International Building Code.
 - 2. ICC-ES evaluation report for fastener.
- D. Coordinate wall, parapet, 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. Install sheathing panels in accordance with manufacturer's written instructions, requirements of applicable Evaluation Reports, and requirements of authorities having jurisdiction.
 - C. Air and Moisture Barrier: Coordinate sheathing installation with flashing and joint sealant installation and with adjacent building air and moisture barrier components to provide complete, continuous air- and moisture- barrier.
 - D. Install panels with laminated facer to exterior. Stagger end joints of adjacent panel runs.
 - E. Fastening Methods: Fasten panels as indicated below:
 - 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. Space panels 1/8 inch apart at edges and ends.
 - F. Apply seam tape at all panel seams, penetrations, and facer defects or cracks to form continuous weathertight surface. Apply tape according to manufacturer's written instructions and requirements of ICC-ES applicable to tape application.

END OF SECTION 061600

1.

SECTION 064600 - WOOD TRIM

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Interior standing and running trim.
 - 2. Closet and utility shelving.
- 1.2 ACTION SUBMITTALS
 - A. Product Data: For each type of product.
 - B. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.

1.3 FIELD CONDITIONS

A. Environmental Limitations for Interior Work: Do not deliver or install interior wood trim until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

PART 2 - PRODUCTS

- 2.1 WOOD TRIM, GENERAL
 - A. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades of wood trim indicated for construction, finishes, installation, and other requirements.

2.2 INTERIOR STANDING AND RUNNING TRIM FOR OPAQUE FINISH

- A. Grade: Economy.
- B. Wood Species: Any closed-grain hardwood.
- 2.3 CLOSET AND UTILITY SHELVING
 - A. Shelf Material: 3/4-inch veneer-faced panel product with solid-lumber edge.
 - B. Cleats: 3/4-inch solid lumber.
 - C. Wood Species: Any closed-grain hardwood.
 - D. Closet Rods: 1-5/16-inch-diameter, stainless-steel tubes complying with BHMA A156.16, L03131.

2.4 WOOD MATERIALS

- A. Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of wood trim and quality grade specified unless otherwise indicated.
 - 1. Wood Moisture Content for Interior Materials: 5 to 10 percent.

2.5 MISCELLANEOUS MATERIALS

- A. Interior Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln dried to less than 15 percent moisture content.
- B. Provide self-drilling screws for metal-framing supports.
- C. 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.
- D. Installation Adhesive: Product recommended by fabricator for each substrate for secure anchorage.

2.6 FABRICATION

- A. Fabricate wood trim to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:
 - 1. Edges of Solid-Wood (Lumber) Members: 1/16 inch unless otherwise indicated.
 - 2. Edges of Rails and Similar Members More Than 3/4 Inch Thick: 1/8 inch.
- B. Backout or groove backs of flat trim members and kerf backs of other wide, flat members except for members with ends exposed in finished work.
- C. Assemble casings in shop except where shipping limitations require field assembly.

PART 3 - EXECUTION

3.1 PREPARATION

A. Before installation, condition wood trim to average prevailing humidity conditions in installation areas.

3.2 INSTALLATION

- A. Grade: Install wood trim to comply with same grade as item to be installed.
- B. Install wood trim level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches.
- C. Scribe and cut wood trim to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
- D. Anchor wood trim to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork.
 - 1. For shop-finished items, use filler matching finish of items being installed.
- E. Standing and Running Trim: Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to greatest extent possible. Do not use pieces less than 60 inches long except where shorter single-length pieces are necessary. Scarf running joints and stagger in adjacent and related members.
 - 1. Install wall railings on indicated metal brackets securely fastened to wall framing.
 - 2. Install standing and running trim with no more variation from a straight line than 1/8 inch in 96 inches.

END OF SECTION 064600

SECTION 072100 - THERMAL INSULATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

- 1. Extruded polystyrene foam-plastic board insulation.
- 2. Glass-fiber blanket insulation.
- 3. Glass-fiber board insulation.
- 4. Mineral-wool blanket insulation.
- 5. Mineral-wool board insulation.

1.2 ACTION SUBMITTALS

- A. Product Data: For the following:
 - 1. Extruded polystyrene foam-plastic board insulation.
 - 2. Glass-fiber blanket insulation.
 - 3. Glass-fiber board insulation.
 - 4. Mineral-wool blanket insulation.
 - 5. Mineral-wool board insulation.

1.3 INFORMATIONAL SUBMITTALS

- A. Installer's Certification: Listing type, manufacturer, and R-value of insulation installed in each element of the building thermal envelope.
 - 1. Sign, date, and post the certification in a conspicuous location on Project site.
- B. Product test reports.
- C. Research reports.

PART 2 - PRODUCTS

2.1 EXTRUDED POLYSTYRENE FOAM-PLASTIC BOARD INSULATION

- A. Extruded Polystyrene Board Insulation, Type X: ASTM C578, Type X, 15-psi minimum compressive strength; unfaced.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. DiversiFoam Products.
 - b. Dow Chemical Company (The).
 - c. DuPont de Nemours, Inc.
 - d. 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 and wider in width.
- B. Extruded Polystyrene Board Insulation, Type IV: ASTM C578, Type IV, 25-psi minimum compressive strength; unfaced.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. DiversiFoam Products.
- b. Dow Chemical Company (The).
- c. DuPont de Nemours, Inc.
- d. 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 and wider in width.
- C. Extruded Polystyrene Board Insulation, Type VI: ASTM C578, Type VI, 40-psi minimum compressive strength
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. DiversiFoam Products.
 - b. Dow Chemical Company (The).
 - c. DuPont de Nemours, Inc.
 - d. 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. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches and wider in width.
- D. Extruded Polystyrene Board Insulation, Type VII: ASTM C578, Type VII, 60-psi minimum compressive strength.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. DiversiFoam Products.
 - b. Dow Chemical Company (The).
 - c. DuPont de Nemours, Inc.
 - d. 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. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches and wider in width.
- E. Extruded Polystyrene Board Insulation, Type V: ASTM C578, Type V, 100-psi minimum compressive strength.
 - 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. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches and wider in width.

2.2 GLASS-FIBER BLANKET INSULATION

A. Verify insulation complies with the 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." Verify formaldehyde emissions do not exceed 16.5 mcg/cu. m or 13.5 ppb, whichever is less, except for insulation manufactured without formaldehyde.

- B. Glass-Fiber Blanket Insulation, Unfaced: ASTM C665, Type I; passing ASTM E136 for combustion characteristics.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. CertainTeed Corporation; Saint-Gobain North America.
 - b. Johns Manville; a Berkshire Hathaway company.
 - c. Knauf Insulation.
 - d. Owens Corning.
 - 2. Flame-Spread Index: Not more than 25 when tested in accordance with ASTM E84.
 - 3. Smoke-Developed Index: Not more than 50 when tested in accordance with ASTM E84.
 - 4. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches and wider in width.
- C. Glass-Fiber Blanket Insulation, Polypropylene-Scrim-Kraft Faced: ASTM C665, Type II (nonreflective faced), Class A (faced surface with a flame-spread index of 25 or less); Category 1 (membrane is a vapor barrier).
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. CertainTeed Corporation; Saint-Gobain North America.
 - b. Johns Manville; a Berkshire Hathaway company.
 - c. Knauf Insulation.
 - d. Owens Corning.
 - 2. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches and wider in width.
- D. Glass-Fiber Blanket Insulation, Kraft Faced: ASTM C665, Type II (nonreflective faced), Class C (faced surface not rated for flame propagation); Category 1 (membrane is a vapor barrier).
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. CertainTeed Corporation; Saint-Gobain North America.
 - b. Johns Manville; a Berkshire Hathaway company.
 - c. Knauf Insulation.
 - d. Owens Corning.
 - 2. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches and wider in width.
- E. Glass-Fiber Blanket Insulation, Reinforced-Foil Faced: ASTM C665, Type III (reflective faced), Class A (faced surface with a flame-spread index of 25 or less); Category 1 (membrane is a vapor barrier), faced with foil scrim, foil-scrim kraft, or foil-scrim polyethylene.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. CertainTeed Corporation; Saint-Gobain North America.
 - b. Johns Manville; a Berkshire Hathaway company.
 - c. Knauf Insulation.
 - d. Owens Corning.
 - 2. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches and wider in width.
- F. Glass-Fiber Blanket Insulation, Foil Faced: ASTM C665, Type III (reflective faced), Class B (faced surface with a flame-propagation resistance of 0.12 W/sq. cm); Category 1 (membrane is a vapor barrier), faced with foil scrim, foil-scrim kraft, or foil-scrim polyethylene.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. CertainTeed Corporation; Saint-Gobain North America.
 - b. Johns Manville; a Berkshire Hathaway company.
 - c. Knauf Insulation.

- d. Owens Corning.
- 2. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches and wider in width.

2.3 GLASS-FIBER BOARD INSULATION

- A. Verify insulation complies with the 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." Verify formaldehyde emissions do not exceed 16.5 mcg/cu. m or 13.5 ppb, whichever is less, except for insulation manufactured without formaldehyde.
- B. Glass-Fiber Board Insulation, Unfaced <Insert drawing designation>: ASTM C612, Type IA; unfaced, passing ASTM E136 for combustion characteristics.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. CertainTeed Corporation; Saint-Gobain North America.
 - b. Johns Manville; a Berkshire Hathaway company.
 - c. Knauf Insulation.
 - d. Owens Corning.
 - 2. Flame-Spread Index: Not more than 25 when tested in accordance with ASTM E84.
 - 3. Smoke-Developed Index: Not more than 50 when tested in accordance with ASTM E84.
 - 4. Thermal Resistivity: 4.3 deg F x h x sq. ft./Btu x in. at 75 deg F.
 - 5. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches and wider in width.
- C. Glass-Fiber Board Insulation, Faced: ASTM C612, Type IA; faced on one side with foil-scrim-kraft or foil-scrim-polyethylene vapor retarder.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. CertainTeed Corporation; Saint-Gobain North America.
 - b. Johns Manville; a Berkshire Hathaway company.
 - c. Knauf Insulation.
 - d. Owens Corning.
 - 2. Flame-Spread Index: Not more than 25 when tested in accordance with ASTM E84.
 - 3. Smoke-Developed Index: Not more than 50 when tested in accordance with ASTM E84.
 - 4. Thermal Resistivity: 4.3 deg F x h x sq. ft./Btu x in. at 75 deg F.
 - 5. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches and wider in width.

2.4 MINERAL-WOOL BLANKET INSULATION

- A. Verify insulation complies with the 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." Verify formaldehyde emissions do not exceed 16.5 mcg/cu. m or 13.5 ppb, whichever is less, except for insulation manufactured without formaldehyde.
- B. Mineral-Wool Blanket Insulation, Unfaced: ASTM C665, Type I (blankets without membrane facing); consisting of fibers; passing ASTM E136 for combustion characteristics.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Johns Manville; a Berkshire Hathaway company.
 - b. Rockwool International.
 - c. Thermafiber, Inc.; an Owens Corning company.
 - 2. Flame-Spread Index: Not more than 25 when tested in accordance with ASTM E84.
 - 3. Smoke-Developed Index: Not more than 50 when tested in accordance with ASTM E84.

- 4. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches and wider in width.
- C. Mineral-Wool Blanket Insulation, Reinforced-Foil Faced: ASTM C665, Type III (reflective faced); Category 1 (membrane is a vapor barrier), faced with foil scrim, foil-scrim kraft, or foil-scrim polyethylene.
 - 1. <Double click here to find, evaluate, and insert list of manufacturers and products.>
 - 2. Flame-Spread Index: Not more than 25 when tested in accordance with ASTM E84.
 - 3. Smoke-Developed Index: Not more than 50 when tested in accordance with ASTM E84.
 - 4. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches and wider in width.

2.5 MINERAL-WOOL BOARD INSULATION

- A. Verify insulation complies with the 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." Verify formaldehyde emissions do not exceed 16.5 mcg/cu. m or 13.5 ppb, whichever is less, except for insulation manufactured without formaldehyde.
- B. Mineral-Wool Board Insulation, Types IA and IB, Unfaced: ASTM C612, Types IA and IB; passing ASTM E136 for combustion characteristics.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Johns Manville; a Berkshire Hathaway company.
 - b. Rockwool International.
 - c. Thermafiber, Inc.; an Owens Corning company.
 - 2. Nominal Density: 4 lb/cu. ft..
 - 3. Flame-Spread Index: Not more than 15 when tested in accordance with ASTM E84.
 - 4. Smoke-Developed Index: Not more than zero when tested in accordance with ASTM E84.
 - 5. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches and wider in width.
- C. Mineral-Wool Board Insulation, Types IA and IB, Faced: ASTM C612, Types IA and IB; faced on one side with foil-scrim or foil-scrim-polyethylene vapor retarder.
 - 1. <Double click here to find, evaluate, and insert list of manufacturers and products.>
 - 2. Nominal Density: 4 lb/cu. ft..
 - 3. Flame-Spread Index: Not more than 15 when tested in accordance with ASTM E84.
 - 4. Smoke-Developed Index: Not more than zero when tested in accordance with ASTM E84.
 - 5. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches and wider in width.
- D. Mineral-Wool Board Insulation, Type II, Unfaced: ASTM C612, Type II; passing ASTM E136 for combustion characteristics.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Johns Manville; a Berkshire Hathaway company.
 - b. Rockwool International.
 - c. Thermafiber, Inc.; an Owens Corning company.
 - 2. Nominal Density: 6 lb/cu. ft..
 - 3. Flame-Spread Index: Not more than 15 when tested in accordance with ASTM E84.
 - 4. Smoke-Developed Index: Not more than zero when tested in accordance with ASTM E84.
 - 5. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches and wider in width.
- E. Mineral-Wool Board Insulation, Type II, Faced: ASTM C612, Type II; faced on one side with foil-scrim or foil-scrim-polyethylene vapor retarder.

- 1. <Double click here to find, evaluate, and insert list of manufacturers and products.>
- 2. Nominal Density: 6 lb/cu. ft..
- 3. Flame-Spread Index: Not more than 15 when tested in accordance with ASTM E84.
- 4. Smoke-Developed Index: Not more than zero when tested in accordance with ASTM E84.
- 5. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches and wider in width.
- F. Mineral-Wool Board Insulation, Type III, Unfaced: ASTM C612, Type III; passing ASTM E136 for combustion characteristics.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Johns Manville; a Berkshire Hathaway company.
 - b. Rockwool International.
 - c. Thermafiber, Inc.; an Owens Corning company.
 - 2. Nominal Density: 8 lb/cu. ft..
 - 3. Flame-Spread Index: Not more than 15 when tested in accordance with ASTM E84.
 - 4. Smoke-Developed Index: Not more than zero when tested in accordance with ASTM E84.
 - 5. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches and wider in width.
- G. Mineral-Wool Board Insulation, Type III, Faced: ASTM C612, Type III; faced on one side with foilscrim or foil-scrim-polyethylene vapor retarder.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Johns Manville; a Berkshire Hathaway company.
 - b. Rockwool International.
 - c. Thermafiber, Inc.; an Owens Corning company.
 - 2. Nominal Density: 8 lb/cu. ft..
 - 3. Flame-Spread Index: Not more than 15 when tested in accordance with ASTM E84.
 - 4. Smoke-Developed Index: Not more than zero when tested in accordance with ASTM E84.
 - 5. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches and wider in width.

2.6 CELLULOSIC-FIBER INSULATION

A. Cellulosic-Fiber Loose-Fill Insulation: ASTM C 739; chemically treated for flame-resistance, processing, and handling characteristics.

2.7 ACCESSORIES

- A. Insulation for Miscellaneous Voids:
 - 1. Glass-Fiber Insulation: ASTM C764, Type II, loose fill; with maximum flame-spread and smokedeveloped indexes of 5, per ASTM E84.
 - 2. Spray Polyurethane Foam Insulation: ASTM C1029, Type II, closed cell, with maximum flamespread and smoke-developed indexes of 75 and 450, respectively, per ASTM E84.
- B. Insulation Anchors, Spindles, and Standoffs: As recommended by manufacturer.
- C. 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.
 - 1. Verify adhesives have a VOC content of 70 g/L or less.
 - 2. Verify adhesive complies with 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." Verify formaldehyde emissions does not exceed 9 mcg/cu. m or 7 ppb, whichever is less.
D. Eave Ventilation Troughs: Preformed, rigid fiberboard or plastic sheets designed and sized to fit between roof framing members and to provide ventilation between insulated attic spaces and vented eaves.

PART 3 - EXECUTION

- 3.1 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.

3.2 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.
- B. On horizontal surfaces, loosely lay insulation units according to manufacturer's written instructions. Stagger end joints and tightly abut insulation units.
- 3.3 INSTALLATION OF FOUNDATION WALL INSULATION
 - A. Butt panels together for tight fit.
 - B. Anchor Installation: Install board insulation on concrete substrates by adhesively attached, spindle-type insulation anchors.
 - C. Adhesive Installation: Install with adhesive or press into tacky waterproofing or dampproofing according to manufacturer's written instructions.

3.4 INSTALLATION OF CAVITY-WALL INSULATION

- A. Foam-Plastic Board Insulation: Install pads of adhesive spaced approximately 24 inches o.c. both ways on inside face and as recommended by manufacturer.
 - 1. Fit courses of insulation between wall ties and other obstructions, with edges butted tightly in both directions, and with faces flush.
 - 2. Press units firmly against inside substrates.
 - 3. Supplement adhesive attachment of insulation by securing boards with two-piece wall ties designed for this purpose and specified in Section 042000 "Unit Masonry."
- B. Mineral-Wool Board Insulation: Install insulation fasteners 4 inches from each corner of board insulation, at center of board, and as recommended by manufacturer.
 - 1. Fit courses of insulation between masonry wall ties and other obstructions, with edges butted tightly in both directions, and with faces flush.
 - 2. Press units firmly against inside substrates.

3.5 INSTALLATION OF INSULATION IN FRAMED CONSTRUCTION

- A. Blanket Insulation: Install in cavities formed by framing members according to the following requirements:
 - 1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends.
 - 2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
 - 3. Maintain 3-inch clearance of insulation around recessed lighting fixtures not rated for or protected from contact with insulation.
 - 4. For metal-framed wall cavities where cavity heights exceed 96 inches, support unfaced blankets mechanically and support faced blankets by taping flanges of insulation to flanges of metal studs.
 - 5. For wood-framed construction, install blankets according to ASTM C1320 and as follows:
 - a. With faced blankets having stapling flanges, lap blanket flange over flange of adjacent blanket to maintain continuity of vapor retarder once finish material is installed over it.
- B. 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..
 - 2. Spray Polyurethane Insulation: Apply according to manufacturer's written instructions.

3.6 INSTALLATION OF LOOSE-FILL INSULATION

- A. Install eave ventilation troughs between roof framing members in insulated attic spaces at vented eaves.
- B. Place loose-fill insulation to comply with ASTM C 1015.
 - 1. Comply with the CIMA's Special Report #3, "Standard Practice for Installing Cellulose Insulation."

END OF SECTION 072100

SECTION 073113 - ASPHALT SHINGLES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Glass-fiber-reinforced asphalt shingles.
 - 2. Underlayment materials.
 - 3. Ridge vents.
 - 4. Metal flashing and trim.

1.2 ACTION SUBMITTALS

- A. Product Data: For the following:
 - 1. Asphalt shingles.
 - 2. Underlayment materials.
 - 3. Ridge vents.
 - 4. Asphalt roofing cement.
 - 5. Elastomeric flashing sealant.
- B. Shop Drawings: For metal flashing and trim.
- C. Samples: For each exposed product and for each color and blend specified.

1.3 INFORMATIONAL SUBMITTALS

- A. Product test reports.
- B. Research reports for synthetic underlayment.
- C. Sample warranty.
- 1.4 CLOSEOUT SUBMITTALS
 - A. Maintenance data.
- 1.5 QUALITY ASSURANCE
 - A. Installer Qualifications: An authorized installer who is trained and approved by manufacturer.
- 1.6 WARRANTY
 - A. Materials Warranty: Manufacturer agrees to repair or replace asphalt shingles that fail within specified warranty period.

- 1. Materials Warranty Period: 35 years from date of Substantial Completion, prorated, with first 10 years nonprorated.
- 2. Wind-Speed Warranty Period: Asphalt shingles will resist blow-off or damage caused by wind speeds of up to 110 mph for 15 years from date of Substantial Completion.
- 3. Algae-Resistance Warranty Period: Asphalt shingles will not discolor for 10 years from date of Substantial Completion.
- 4. Workmanship Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

- 2.1 PERFORMANCE REQUIREMENTS
 - A. Exterior Fire-Test Exposure: Provide asphalt shingles and related roofing materials identical to those of assemblies tested for Class A fire resistance in accordance with ASTM E108 or UL 790 by Underwriters Laboratories or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify products with appropriate markings of applicable testing agency.
 - B. Wind Resistance: Provide asphalt shingles that comply with requirements of ASTM D3161/D3161M, Class F, and with ASTM D7158/D7158M, Class H.
 - C. Energy Performance, ENERGY STAR: Provide asphalt shingles that are listed on the DOE's "ENERGY STAR Roof Product List" for steep-slope roof products.

2.2 GLASS-FIBER-REINFORCED ASPHALT SHINGLES

- A. Laminated-Strip Asphalt Shingles: ASTM D3462/D3462M, laminated, multi-ply overlay construction; glass-fiber reinforced, mineral-granule surfaced, and self-sealing.
 - 1. <u>Basis-of-Design Product:</u> Subject to compliance with requirements, provide <u>GAF</u>; Timberline or a comparable product by one of the following:
 - a. <u>CertainTeed; SAINT-GOBAIN</u>.
 - b. <u>Owens Corning</u>.
 - c. <u>Tamko Building Products LLC</u>.
 - 2. Strip Size: Manufacturer's standard.
 - 3. Algae Resistance: Granules resist algae discoloration.
 - 4. Color and Blends: As selected by Architect from manufacturer's full range.
- B. Hip and Ridge Shingles: Manufacturer's standard units to match asphalt shingles.

2.3 UNDERLAYMENT MATERIALS

- A. Synthetic Underlayment: UV-resistant polypropylene, polyolefin, or polyethylene polymer fabric with surface coatings or treatments to improve traction underfoot and abrasion resistance; evaluated and documented to be suitable for use as a roof underlayment under applicable codes by a testing and inspecting agency acceptable to authorities having jurisdiction.
 - 1. <u>Basis-of-Design Product</u>: Subject to compliance with requirements, provide <u>GAF</u>; Deck-Armor or a comparable product by one of the following:
 - a. <u>CertainTeed; SAINT-GOBAIN</u>.

- b. <u>Owens Corning</u>.
- c. Tamko Building Products LLC.
- B. Self-Adhering, Polymer-Modified Bitumen Sheet: ASTM D1970/D1970M, minimum 40-mil- thick sheet; glass-fiber-mat-reinforced, polymer-modified asphalt; with slip-resistant top surface and release backing; cold applied.
 - 1. <u>Basis-of-Design Product:</u> Subject to compliance with requirements, provide <u>GAF</u>; Stormguard or a comparable product by one of the following:
 - a. <u>CertainTeed; SAINT-GOBAIN</u>.
 - b. <u>Owens Corning</u>.
 - c. Tamko Building Products LLC.

2.4 RIDGE VENTS

- A. Rigid Ridge Vent: Manufacturer's standard, rigid-section, high-density, UV-stabilized plastic ridge vent for use under ridge shingles.
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>Air Vent, Inc.; Gibraltar Industries, Inc</u>.
 - b. <u>Benjamin Obdyke Incorporated</u>.
 - c. <u>CertainTeed; SAINT-GOBAIN</u>.
 - d. <u>Cor-A-Vent, Inc</u>.
 - e. <u>GAF</u>.
 - f. <u>Lomanco, Inc</u>.
 - g. <u>Owens Corning</u>.
 - h. <u>Tamko Building Products LLC</u>.
 - i. <u>Tapco International Corporation; Mid-America Components</u>.
 - 2. Minimum Net Free Area: 15 square inches per linear foot.
 - 3. Width: manufacturer's standard.
 - 4. Thickness: manufacturer's standard.
 - 5. Features:
 - a. Nonwoven geotextile filter strips.
 - b. External deflector baffles.

2.5 ACCESSORIES

- A. Asphalt Roofing Cement: ASTM D4586/D4586M Type II, asbestos free.
- B. Elastomeric Flashing Sealant: ASTM C920, Type S, Grade NS, one-part, non-sag, elastomeric polymer sealant; of class and use classifications required to seal joints and remain watertight; recommended in writing by manufacturer for installation of flashing systems.
- C. Roofing Nails: ASTM F1667, aluminum, stainless steel, copper, or hot-dip galvanized-steel wire shingle nails, minimum 0.120-inch-diameter, sharp-pointed, with a 3/8- to 7/16-inch-diameter flat head and of sufficient length to penetrate 3/4 inch into solid wood decking or extend at least 1/8 inch through sheathing less than 3/4 inch thick.
 - 1. Where nails are in contact with metal flashing, use nails made from same metal as flashing.

- D. Underlayment Nails: Aluminum, stainless steel, or hot-dip galvanized-steel wire nails with low-profile metal or plastic caps, 1-inch-minimum diameter.
 - 1. Provide with minimum 0.0134-inch-thick metal cap, 0.010-inch-thick power-driven metal cap, or 0.035-inch-thick plastic cap; and with minimum 0.083-inch-thick ring shank or 0.091-inch-thick smooth shank of length to penetrate at least 3/4 inch into roof sheathing or to penetrate through roof sheathing less than 3/4 inch thick.

2.6 METAL FLASHING AND TRIM

- A. Comply with requirements in Section 076200 "Sheet Metal Flashing and Trim."
 - 1. Sheet Metal: Aluminum, mill finished.
- B. Fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of the item unless otherwise indicated on Drawings.
 - 1. Vent-Pipe Flashings: Pre-manufactured neoprene boot bonded to metal base flashing.

PART 3 - EXECUTION

3.1 INSTALLATION OF UNDERLAYMENT MATERIALS

- A. Comply with asphalt shingle and underlayment manufacturers' written installation instructions and with recommendations in NRCA's "The NRCA Roofing Manual: Steep-Slope Roof Systems" applicable to products and applications indicated unless more stringent requirements are specified in this Section or indicated on Drawings.
- B. Synthetic Underlayment:
 - 1. Install on roof deck parallel with and starting at the eaves.
 - a. Lap sides and ends as recommended in writing by manufacturer, but not less than 2 inches for side laps and 6 inches for end laps.
 - b. Stagger end laps between succeeding courses at interval recommended in writing by manufacturer, but not less than 72 inches.
 - c. Fasten with underlayment nails in accordance with manufacturer's written instructions.
 - d. Cover underlayment within period recommended in writing by manufacturer.
 - 2. Install in single layer on roofs sloped at 4:12 and greater.
 - 3. Install in double layer on roofs sloped at less than 4:12.
 - 4. Terminate synthetic underlayment extended up not less than 4 inches against sidewalls, curbs, chimneys, and other roof projections.
- C. Metal-Flashed, Open-Valley Underlayment: Install two layers of minimum 36-inch-wide underlayment centered in valley.
 - 1. Use same underlayment as installed on field of roof.
 - 2. Stagger end laps between layers at least 72 inches.
 - 3. Lap ends of each layer at least 12 inches in direction that sheds water, and seal with asphalt roofing cement.

- 4. Fasten each layer to roof deck with underlayment nails located as far from valley center as possible and only to extent necessary to hold underlayment in place until installation of valley flashing.
- 5. Lap roof-deck underlayment over first layer of valley underlayment at least 6 inches.

3.2 INSTALLATION OF METAL FLASHING AND TRIM

- A. Install metal flashings and trim to comply with requirements in Section 076200 "Sheet Metal Flashing and Trim."
 - 1. Install metal flashings in accordance with recommendations in ARMA's "Asphalt Roofing Residential Manual Design and Application Methods" and NRCA's "NRCA Guidelines for Asphalt Shingle Roof Systems."
 - 2. Bed flanges of metal flashings using asphalt roofing cement or elastomeric flashing sealant.
- B. Pipe Flashings: Form flashing around pipe penetrations and asphalt shingles. Fasten and seal to asphalt shingles as recommended by manufacturer.

3.3 INSTALLATION OF ASPHALT SHINGLES

- A. Install asphalt shingles in accordance with manufacturer's written instructions and recommendations in ARMA's "Asphalt Roofing Residential Manual - Design and Application Methods" and NRCA's "NRCA Guidelines for Asphalt Shingle Roof Systems."
- B. Install starter strip along lowest roof edge, consisting of an asphalt shingle strip at least 7 inches wide with self-sealing strip face up at roof edge.
 - 1. Extend asphalt shingles 1/2 inch over fasciae at eaves and rakes.
 - 2. Install starter strip along rake edge.
- C. Install first and remaining courses of laminated asphalt shingles stair-stepping diagonally across roof deck with manufacturer's recommended offset pattern at succeeding courses, maintaining uniform exposure.
- D. Install first and remaining courses of three-tab-strip asphalt shingles stair-stepping diagonally across roof deck with manufacturer's recommended offset pattern at succeeding courses, maintaining uniform exposure.
- E. Fasten asphalt shingle strips with a minimum of four roofing nails, but not less than the number indicated in manufacturer's written instructions for roof slope and design wind speed indicated on Drawings and for warranty requirements specified in this Section.
 - 1. Locate fasteners in accordance with manufacturer's written instructions.
 - 2. Where roof slope is less than 4:12, hand seal self-sealing asphalt shingles to improve the shingles' positive bond by applying asphalt roofing cement spots between course overlaps after nailing the upper course.
 - 3. When ambient temperature during installation is below 50 deg F, hand seal self-sealing asphalt shingles by applying asphalt roofing cement spots between course overlaps after nailing the upper course.

- F. Closed-Cut Valleys: Extend asphalt shingle strips from one side of valley 12 inches beyond center of valley.
 - 1. Use one-piece shingle strips without joints in valley.
 - 2. Fasten with extra nail in upper end of shingle. Install asphalt shingle courses from other side of valley and cut back to a straight line 2 inches short of valley centerline.
 - 3. Trim upper concealed corners of cut-back shingle strips.
 - 4. Do not nail asphalt shingles within 6 inches of valley center.
 - 5. Set trimmed, concealed-corner asphalt shingles in a 3-inch-wide bed of asphalt roofing cement.
- G. Ridge Vents: Install continuous ridge vents over asphalt shingles in accordance with manufacturer's written instructions. Fasten with roofing nails of sufficient length to penetrate sheathing.
- H. Hip and Ridge Shingles: Maintain same exposure of cap shingles as roofing-shingle exposure. Lap cap shingles at ridges to shed water away from direction of prevailing winds.
 - 1. Fasten with roofing nails of sufficient length to penetrate sheathing.
 - 2. Fasten ridge cap asphalt shingles to cover ridge vent without obstructing airflow.

END OF SECTION 073113

SECTION 074113.16 - STANDING-SEAM METAL ROOF PANELS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:1. Standing-seam metal roof panels.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
- C. Samples: For each type of metal panel indicated.

1.3 INFORMATIONAL SUBMITTALS

- A. Product test reports.
- B. Warranties: Sample of special warranties.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
- B. UL-Certified, Portable Roll-Forming Equipment: UL-certified, portable roll-forming equipment capable of producing metal panels warranted by manufacturer to be the same as factory-formed products. Maintain UL certification of portable roll-forming equipment for duration of work.

1.6 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal panel systems that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: Two years from date of Substantial Completion.
- B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
 - 1. Finish Warranty Period: 10 years from date of Substantial Completion.
- C. Special Weathertightness Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace standing-seam metal roof panel assemblies that fail to remain weathertight, including leaks, within specified warranty period.
 - 1. Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. **Energy Performance:**
 - Provide roof panels that are listed on the EPA/DOE's ENERGY STAR "Roof Product List" for 1 steep-slope roof products. 2.
 - Provide roof panels according to one of the following when tested according to CRRC-1:
 - Three-year, aged solar reflectance of not less than 0.55 and emissivity of not less than 0.75. a.
 - Three-year, aged Solar Reflectance Index of not less than 64 when calculated according to b. ASTM E1980.
- В. Structural Performance: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E1592:
 - Wind Loads: As indicated on Drawings. 1.
 - 2. Other Design Loads: [As indicated on Drawings] < Insert loads>.
 - Deflection Limits: For wind loads, no greater than 1/240 of the span. 3.
- С. Air Infiltration: Air leakage of not more than 0.06 cfm/sq. ft. when tested according to ASTM E1680 or ASTM E283 at the following test-pressure difference:
 - Test-Pressure Difference: 6.24 lbf/sq. ft.. 1.
- D. Water Penetration under Static Pressure: No water penetration when tested according to ASTM E1646 or ASTM E331 at the following test-pressure difference:
 - Test-Pressure Difference: 6.24 lbf/sq. ft.. 1
- Hydrostatic-Head Resistance: No water penetration when tested according to ASTM E2140. E.
- F. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for wind-upliftresistance class indicated.
 - Uplift Rating: UL 60. 1.
- G. FM Global Listing: Provide metal roof panels and component materials that comply with requirements in FM Global 4471 as part of a panel roofing system and that are listed in FM Global's "Approval Guide" for Class 1 or noncombustible construction, as applicable. Identify materials with FM Global markings.
 - Fire/Windstorm Classification: Class 1A-90. 1.
 - 2. Hail Resistance: MH.
- H. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

2.2 STANDING-SEAM METAL ROOF PANELS

- Provide factory-formed metal roof panels designed to be installed by lapping and interconnecting raised Α. side edges of adjacent panels with joint type indicated and mechanically attaching panels to supports using concealed clips in side laps. Include clips, cleats, pressure plates, and accessories required for weathertight installation.
 - 1. Steel Panel Systems: Unless more stringent requirements are indicated, comply with ASTM E1514.
- В. Vertical-Rib, Snap-Joint, Standing-Seam Metal Roof Panels: Formed with vertical ribs at panel edges and intermediate stiffening ribs symmetrically spaced between ribs; designed for sequential installation by

mechanically attaching panels to supports using concealed clips located under one side of panels, engaging opposite edge of adjacent panels, and snapping panels together.

- 1. <u>Basis-of-Design Product:</u> Subject to compliance with requirements, provide <u>PAC-CLAD</u>; <u>Petersen</u> <u>Aluminum Corporation</u>; a <u>Carlisle company</u>; Snap-On Standing Seam or a comparable product by one of the following:
 - a. <u>ATAS International, Inc</u>.
 - b. <u>CENTRIA, a Nucor Brand</u>.
 - c. Fabral; a brand of OmniMax International.
- 2. Metallic-Coated Steel Sheet: Zinc-coated (galvanized) steel sheet complying with ASTM A653/A653M, G90 coating designation, or aluminum-zinc alloy-coated steel sheet complying with ASTM A792/A792M, Class AZ50 coating designation; structural quality. Prepainted by the coil-coating process to comply with ASTM A755/A755M.
 - a. Nominal Thickness: 24 gauge.
 - b. Exterior Finish: Two-coat fluoropolymer.
 - c. Color: As selected by Architect from manufacturer's full range.
- 3. Clips: One-piece fixed or Two-piece floating to accommodate thermal movement.
- 4. Material:
 - a. 0.028-inch-nominal thickness, zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet.
- 5. Panel Coverage: 18 inches.
- 6. Panel Height: 1.0 inch.

2.3 UNDERLAYMENT MATERIALS

- A. Self-Adhering, High-Temperature Underlayment: Provide self-adhering, cold-applied, sheet underlayment, a minimum of 30 mils thick, consisting of slip-resistant, polyethylene-film top surface laminated to a layer of butyl or SBS-modified asphalt adhesive, with release-paper backing. Provide primer when recommended by underlayment manufacturer.
 - 1. Thermal Stability: Stable after testing at 240 deg F; ASTM D1970.
 - 2. Low-Temperature Flexibility: Passes after testing at minus 20 deg F; ASTM D1970.
 - 3. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>Carlisle WIP Products; a brand of Carlisle Construction Materials</u>.
 - b. <u>GCP Applied Technologies Inc</u>.
 - c. <u>Henry Company; a Carlisle company</u>.
- B. Felt Underlayment: ASTM D226/D226M, Type II (No. 30), asphalt-saturated organic felts.
- C. Slip Sheet: Manufacturer's recommended slip sheet, of type required for application.

2.4 MISCELLANEOUS MATERIALS

- A. Miscellaneous Metal Subframing and Furring: ASTM C645; cold-formed, metallic-coated steel sheet, ASTM A653/A653M, G90 hot-dip galvanized coating designation or ASTM A792/A792M, Class AZ50 coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.
- B. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.
 - 1. Closures: Provide closures at eaves and ridges, fabricated of same metal as metal panels.
 - 2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
 - 3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closedcell laminated polyethylene; minimum 1-inch-thick, flexible closure strips; cut or premolded to

match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.

- C. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers. Finish flashing and trim with same finish system as adjacent metal panels.
- D. Gutters and Downspouts: Formed from same material as roof panels according to SMACNA's "Architectural Sheet Metal Manual." Finish to match metal roof panels.
- E. Panel Fasteners: Self-tapping screws designed to withstand design loads.
- F. Panel Sealants: Provide sealant type recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.
 - 1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing; 1/2 inch wide and 1/8 inch thick.
 - 2. Joint Sealant: ASTM C920; as recommended in writing by metal panel manufacturer.
 - 3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C1311.

2.5 FABRICATION

- A. Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.
- B. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.
- C. Fabricate metal panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.
- D. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.

2.6 FINISHES

- A. Panels and Accessories:
 - 1. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat.
 - 2. Concealed Finish: White or light-colored acrylic or polyester backer finish.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C754 and metal panel manufacturer's written recommendations.
- 3.2 INSTALLATION OF UNDERLAYMENT
 - A. Self-Adhering Sheet Underlayment: Apply primer if required by manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation. Apply at locations indicated below, wrinkle free, in shingle fashion to shed water, and with end laps of not less than 6 inches staggered 24 inches

between courses. Overlap side edges not less than 3-1/2 inches. Roll laps with roller. Cover underlayment within 14 days.

- 1. Apply over the roof area indicated below:
 - a. Roof perimeter for a distance up from eaves of 36 inches beyond interior wall line.
 - b. Valleys, from lowest point to highest point, for a distance on each side of 18 inches. Overlap ends of sheets not less than 6 inches.
 - c. Rake edges for a distance of 18 inches.
 - d. Hips and ridges for a distance on each side of 12 inches.
 - e. Roof-to-wall intersections for a distance from wall of 18 inches.
 - f. Around dormers, chimneys, skylights, and other penetrating elements for a distance from element of 18 inches.
- B. Felt Underlayment: Apply at locations indicated below, in shingle fashion to shed water, and with lapped joints of not less than 2 inches.
 - 1. Apply over the entire roof surface.
- C. Slip Sheet: Apply slip sheet over underlayment before installing metal roof panels.
- D. Flashings: Install flashings to cover underlayment to comply with requirements specified in Section 076200 "Sheet Metal Flashing and Trim."

3.3 INSTALLATION OF STANDING-SEAM METAL ROOF PANELS

- A. Standing-Seam Metal Roof Panel Installation: Fasten metal roof panels to supports with concealed clips at each standing-seam joint at location, spacing, and with fasteners recommended in writing by manufacturer.
 - 1. Install clips to supports with self-tapping fasteners.
 - 2. Install pressure plates at locations indicated in manufacturer's written installation instructions.
 - 3. Snap Joint: Nest standing seams and fasten together by interlocking and completely engaging factory-applied sealant.
 - 4. Watertight Installation:
 - a. Apply a continuous ribbon of sealant or tape to seal joints of metal panels, using sealant or tape as recommend in writing by manufacturer as needed to make panels watertight.
 - b. Provide sealant or tape between panels and protruding equipment, vents, and accessories.
 - c. At panel splices, nest panels with minimum 6-inch end lap, sealed with sealant and fastened together by interlocking clamping plates.
- B. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.
- C. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

3.4 CLEANING AND PROTECTION

A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.

END OF SECTION 074113.16

SECTION 075423 - THERMOPLASTIC-POLYOLEFIN (TPO) ROOFING

PART 1 - GENERAL

1.1 **SUMMARY**

- A. Section Includes:
 - 1. Adhered thermoplastic polyolefin (TPO) roofing system.
 - 2. Roof insulation.
 - 3. Cover board.
 - Walkways. 4.
- B. **Related Sections:**
 - Section 018113.33 Sustainable Design Requirements 2015 Green Communities 1

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - For insulation and roof system component fasteners, include copy of FM Approvals' RoofNav 1. listing.
- Shop Drawings: Include roof plans, sections, details, and attachments to other work, including the Β. following:
 - Layout and thickness of insulation. 1.
 - Base flashings and membrane termination details. 2.
 - Flashing details at penetrations. 3.
 - Tapered insulation layout, thickness, and slopes. 4.
 - Insulation fastening patterns for corner, perimeter, and field-of-roof locations. 5.
- C. Samples: For the following products:
 - 1. Roof membrane and flashings, of color required.
 - 2. Walkway pads or rolls, of color required.
- Wind Uplift Resistance Submittal: For roofing system, indicating compliance with wind uplift D. performance requirements.

1.3 INFORMATIONAL SUBMITTALS

- Manufacturer Certificates: Α.
 - Performance Requirement Certificate: Signed by roof membrane manufacturer, certifying that 1. roofing system complies with requirements specified in "Performance Requirements" Article. Submit evidence of compliance with performance requirements. a.
 - 2. Special Warranty Certificate: Signed by roof membrane manufacturer, certifying that all materials supplied under this Section are acceptable for special warranty.
- В. Product Test Reports: For roof membrane and insulation, for tests performed by a qualified testing agency, indicating compliance with specified requirements.
- C. Research reports.
- D. Field Test Reports:
 - 1. Concrete internal relative humidity test reports.
 - 2. Fastener-pullout test results and manufacturer's revised requirements for fastener patterns.

- E. Field quality-control reports.
- F. Sample warranties.
- 1.4 CLOSEOUT SUBMITTALS
 - A. Maintenance data.
 - B. Certified statement from existing roof membrane manufacturer stating that existing roof warranty has not been affected by Work performed under this Section.
- 1.5 QUALITY ASSURANCE
 - A. Manufacturer Qualifications: A qualified manufacturer that is UL listed for roofing system identical to that used for this Project.
 - B. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.
- 1.6 WARRANTY
 - A. Special Warranty: Manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

3.

- 2.1 PERFORMANCE REQUIREMENTS
 - A. Accelerated Weathering: Roof membrane shall withstand 2000 hours of exposure when tested according to ASTM G 152, ASTM G 154, or ASTM G 155.
 - B. Impact Resistance: Roof membrane shall resist impact damage when tested according to ASTM D 3746, ASTM D 4272, or the "Resistance to Foot Traffic Test" in FM Approvals 4470.
 - C. Wind Uplift Resistance: Design roofing system to resist the following wind uplift pressures when tested according to FM Approvals 4474, UL 580, or UL 1897:
 - 1. Zone 1 (Roof Area Field): 40 lbf/sq. ft..
 - 2. Zone 2 (Roof Area Perimeter): 60 lbf/sq. ft..
 - a. Location: From roof edge to 8 feet inside roof edge.
 - Zone 3 (Roof Area Corners): 90 lbf/sq. ft..
 - a. Location: 12 feet in each direction from building corner.
 - D. FM Approvals' RoofNav Listing: Roof membrane, base flashings, and component materials shall comply with requirements in FM Approvals 4450 or FM Approvals 4470 as part of a roofing system, and shall be listed in FM Approvals' RoofNav for Class 1 or noncombustible construction, as applicable. Identify materials with FM Approvals Certification markings.
 - 1. Fire/Windstorm Classification: Class 1A-90.
 - 2. Hail-Resistance Rating: MH.
 - E. ENERGY STAR Listing: Roofing system shall be listed on the DOE's ENERGY STAR "Roof Products Qualified Product List" for low-slope roof products.

- F. Energy Performance: Roofing system shall have an initial solar reflectance of not less than 0.70 and an emissivity of not less than 0.75 when tested according to CRRC-1.
- G. Exterior Fire-Test Exposure: ASTM E 108 or UL 790, Class A; for application and roof slopes indicated; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
- H. Fire-Resistance Ratings: Comply with fire-resistance-rated assembly designs indicated. Identify products with appropriate markings of applicable testing agency.

2.2 THERMOPLASTIC POLYOLEFIN (TPO) ROOFING

- A. TPO Sheet: ASTM D 6878/D 6878M, internally fabric- or scrim-reinforced, TPO sheet.
 - 1. <u>Basis-of-Design Product</u>: Subject to compliance with requirements, provide <u>GAF</u>; EverGuard Extreme® 50 mil TPO or a comparable product by one of the following:
 - a. <u>Carlisle Syntec Systems</u>.
 - b. Johns Manville; a Berkshire Hathaway company.
 - c. Mule-Hide Products Co., Inc.
 - 2. Thickness: 50 mils, nominal.
 - 3. Exposed Face Color: White.

2.3 AUXILIARY ROOFING MATERIALS

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with other roofing components.
 - 1. Adhesive and Sealants: Comply with VOC limits of authorities having jurisdiction.
- B. Sheet Flashing: Manufacturer's standard unreinforced TPO sheet flashing, 55 mils thick, minimum, of same color as TPO sheet.
- C. Prefabricated Pipe Flashings: As recommended by roof membrane manufacturer.
- D. Bonding Adhesive: Manufacturer's standard, water based, weather permitting.
 - 1. The use of solvent based bonding adhesive, subject to compliance with the VOC limits for adhesives, will be acceptable when weather conditions do not allow for the use of water based bonding adhesive.
- E. Metal Termination Bars: Manufacturer's standard, predrilled stainless steel or aluminum bars, approximately 1 by 1/8 inch thick; with anchors.
- F. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roofing components to substrate, and acceptable to roofing system manufacturer.
- G. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, lap sealants, termination reglets, and other accessories.

2.4 ROOF INSULATION

- A. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class 2, Grade 2, felt or glass-fiber mat facer on both major surfaces.
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>Carlisle SynTec Incorporated</u>.

- b. <u>Firestone Building Products</u>.
- c. <u>GAF</u>
- d. Johns Manville; a Berkshire Hathaway company.
- 2. Size: 48 by 48 inches or 48 by 96 inches as recommended by manufacturer.
- B. Tapered Insulation: Provide factory-tapered insulation boards.
 - 1. Material: Match roof insulation.
 - 2. Minimum Thickness: 1/4 inch.
 - 3. Slope:
 - a. Roof Field: 1/4 inch per foot unless otherwise indicated on Drawings.
 - b. Saddles and Crickets: 1/2 inch per foot unless otherwise indicated on Drawings.

2.5 INSULATION ACCESSORIES

- A. Insulation Adhesive: Insulation manufacturer's recommended adhesive formulated to attach roof insulation to substrate or to another insulation layer as follows:
 - 1. Full-spread, spray-applied, low-rise, two-component urethane adhesive.
- B. Cover Board: ASTM C 208, Type II, Grade 2, cellulosic-fiber insulation board, 1/2 inch thick.
- C. Cover Board: ASTM C 1289 Type II, Class 4, Grade 1, 1/2-inch-thick polyisocyanurate, with a minimum compressive strength of 80 psi.
- D. Protection Mat: Woven or nonwoven polypropylene, polyolefin, or polyester fabric; water permeable and resistant to UV degradation; type and weight as recommended by roofing system manufacturer for application.

2.6 WALKWAYS

A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads or rolls, approximately 3/16 inch thick and acceptable to roofing system manufacturer.
 Color: Light Grey or Safety Yellow.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.
 - 1. Verify that concrete substrate is visibly dry and free of moisture, and that minimum concrete internal relative humidity is not more than 75 percent, or as recommended by roofing system manufacturer, when tested according to ASTM F 2170.
 - a. Test Frequency: One test probe per each 1000 sq. ft., or portion thereof, of roof deck, with not less than three tests probes.
 - b. Submit test reports within 24 hours after performing tests.

3.2 ROOFING INSTALLATION, GENERAL

- A. Install roofing system according to roofing system manufacturer's written instructions, FM Approvals' RoofNav assembly requirements, and FM Global Property Loss Prevention Data Sheet 1-29.
- B. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at end of workday or when rain is forecast. Remove and discard temporary seals before beginning Work on adjoining roofing.

3.3 INSULATION INSTALLATION

- A. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at end of workday.
- B. Comply with roofing system and roof insulation manufacturer's written instructions for installing roof insulation.
- C. Installation Over Wood Panel Decking:
 - 1. Install base layer of insulation with joints staggered not less than 24 inches in adjacent rows.
 - a. Where installing composite and noncomposite insulation in two or more layers, install noncomposite board insulation for bottom layer and intermediate layers, if applicable, and install composite board insulation for top layer.
 - b. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
 - c. Make joints between adjacent insulation boards not more than 1/4 inch in width.
 - d. At internal roof drains, slope insulation to create a square drain sump with each side equal to the diameter of the drain bowl plus 24 inches.
 - 1) Trim insulation so that water flow is unrestricted.
 - e. Fill gaps exceeding 1/4 inch with insulation.
 - f. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
 - g. Loosely lay base layer of insulation units over substrate.
 - 2. Mechanically attach base layer of insulation using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to wood panel decks.
 - a. Fasten insulation according to requirements in FM Approvals' RoofNav for specified Windstorm Resistance Classification.
 - b. Fasten insulation to resist specified uplift pressure at corners, perimeter, and field of roof.
 - 3. Install upper layers of insulation and tapered insulation with joints of each layer offset not less than 12 inches from previous layer of insulation.
 - a. Staggered end joints within each layer not less than 24 inches in adjacent rows.
 - b. Install with long joints continuous and with end joints staggered not less than 12 inches in adjacent rows.
 - c. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
 - d. Make joints between adjacent insulation boards not more than 1/4 inch in width.
 - e. At internal roof drains, slope insulation to create a square drain sump with each side equal to the diameter of the drain bowl plus 24 inches.
 - 1) Trim insulation so that water flow is unrestricted.
 - f. Fill gaps exceeding 1/4 inch with insulation.
 - g. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
 - h. Adhere each layer of insulation to substrate using adhesive according to FM Approvals' RoofNav assembly requirements and FM Global Property Loss Prevention Data Sheet 1-29 for specified Windstorm Resistance Classification, as follows:
 - 1) Set each layer of insulation in a uniform coverage of full-spread insulation adhesive, firmly pressing and maintaining insulation in place.

3.4 INSTALLATION OF COVER BOARDS

- A. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches in each direction.
 - 1. Trim cover board neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
 - 2. At internal roof drains, conform to slope of drain sump.
 - a. Trim cover board so that water flow is unrestricted.
 - 3. Cut and fit cover board tight to nailers, projections, and penetrations.

- 4. Adhere cover board to substrate using adhesive according to FM Approvals' RoofNav assembly requirements and FM Global Property Loss Prevention Data Sheet 1-29 for specified Windstorm Resistance Classification, as follows:
 - a. Set cover board in a uniform coverage of full-spread insulation adhesive, firmly pressing and maintaining insulation in place.

3.5 ADHERED ROOFING INSTALLATION

- A. Adhere roof membrane over area to receive roofing according to roofing system manufacturer's written instructions.
- B. Unroll roof membrane and allow to relax before installing.
- C. Accurately align roof membrane, and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.
- D. Bonding Adhesive: Apply to substrate and underside of roof membrane at rate required by manufacturer, and allow to partially dry before installing roof membrane. Do not apply to splice area of roof membrane.
- E. Apply roof membrane with side laps shingled with slope of roof deck where possible.
- F. Seams: Clean seam areas, overlap roof membrane, and hot-air weld side and end laps of roof membrane and sheet flashings, to ensure a watertight seam installation.
 - 1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of roof membrane and sheet flashings.
 - 2. Verify field strength of seams a minimum of twice daily, and repair seam sample areas.
 - 3. Repair tears, voids, and lapped seams in roof membrane that do not comply with requirements.
- G. Spread sealant bed over deck-drain flange at roof drains, and securely seal roof membrane in place with clamping ring.

3.6 BASE FLASHING INSTALLATION

- A. Install sheet flashings and preformed flashing accessories, and adhere to substrates according to roofing system manufacturer's written instructions.
- B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate, and allow to partially dry. Do not apply to seam area of flashing.
- C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.
- D. Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.
- E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

3.7 WALKWAY INSTALLATION

- A. Flexible Walkways:
 - 1. Install flexible walkways at the following locations:
 - a. Perimeter of each rooftop unit.
 - b. Between each rooftop unit location, creating a continuous path connecting rooftop unit locations.
 - c. Between each roof hatch and each rooftop unit location or path connecting rooftop unit locations.

- d. Top and bottom of each roof access ladder.
- e. Between each roof access ladder and each rooftop unit location or path connecting rooftop unit locations.
- f. Locations indicated on Drawings.
- g. As required by roof membrane manufacturer's warranty requirements.
- 2. Provide 6-inch clearance between adjoining pads.
- 3. Heat weld to substrate or adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

3.8 PROTECTING AND CLEANING

- A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction does not affect or endanger roofing system, inspect roofing system for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.
- B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 075423

SECTION 076200 - SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Formed roof-drainage sheet metal fabrications.
 - 2. Formed low-slope roof sheet metal fabrications.
 - 3. Formed steep-slope roof sheet metal fabrications.
 - 4. Formed wall sheet metal fabrications.
- 1.2 ACTION SUBMITTALS
 - A. Product Data: For each type of product.
 - B. Shop Drawings: For sheet metal flashing and trim.
 - 1. Include plans, elevations, sections, and attachment details.
 - 2. Distinguish between shop- and field-assembled work.
 - 3. Include identification of finish for each item.
 - 4. Include pattern of seams and details of termination points, expansion joints and expansion-joint covers, direction of expansion, roof-penetration flashing, and connections to adjoining work.
 - C. Samples: For each exposed product and for each color and texture specified.

1.3 INFORMATIONAL SUBMITTALS

- A. Product certificates.
- B. Product test reports.
- C. Sample warranty.
- 1.4 CLOSEOUT SUBMITTALS
 - A. Maintenance data.

1.5 QUALITY ASSURANCE

- A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.
- 1.6 WARRANTY
 - A. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.
 1. Finish Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. General: Sheet metal flashing and trim assemblies shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.
- B. Sheet Metal Standard for Flashing and Trim: Comply with NRCA's "The NRCA Roofing Manual" and SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.
- C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.
 1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.2 SHEET METALS

- A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.
- B. Aluminum Sheet: ASTM B 209, alloy as standard with manufacturer for finish required, with temper as required to suit forming operations and performance required.
 - 1. Exposed Coil-Coated Finish:
 - a. Siliconized Polyester: Epoxy primer and silicone-modified, polyester-enamel topcoat; with dry film thickness of not less than 0.2 mil for primer and 0.8 mil for topcoat.
 - 2. Color: As selected by Architect from manufacturer's full range.
- C. Stainless-Steel Sheet: ASTM A 240/A 240M, Type 304, dead soft, fully annealed; 2D (dull, cold rolled) finish.
- 2.3 UNDERLAYMENT MATERIALS
 - A. Felt: ASTM D 226/D 226M, Type II (No. 30), asphalt-saturated organic felt; nonperforated.
 - B. Self-Adhering, High-Temperature Sheet: Minimum 30 mils thick, consisting of a slip-resistant polyethylene- or polypropylene-film top surface laminated to a layer of butyl- or SBS-modified asphalt adhesive, with release-paper backing; specifically designed to withstand high metal temperatures beneath metal roofing. Provide primer according to written recommendations of underlayment manufacturer.
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>Carlisle Coatings & Waterproofing Inc</u>.
 - b. <u>GCP Applied Technologies Inc</u>.
 - c. <u>Owens Corning</u>.
 - 2. Thermal Stability: ASTM D 1970; stable after testing at 240 deg F or higher.
 - 3. Low-Temperature Flexibility: ASTM D 1970; passes after testing at minus 20 deg F or lower.

2.4 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, solder, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal or manufactured item unless otherwise indicated.

- B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal or manufactured item.
 - 1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.
 - a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factoryapplied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.
 - b. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.
 - c. Spikes and Ferrules: Same material as gutter; with spike with ferrule matching internal gutter width.
 - 2. Fasteners for Aluminum Sheet: Aluminum or Series 300 stainless steel.
 - 3. Fasteners for Stainless-Steel Sheet: Series 300 stainless steel.
- C. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with releasepaper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.
- D. Elastomeric Sealant: ASTM C 920, elastomeric polyurethane polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.
- E. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.
- F. Epoxy Seam Sealer: Two-part, noncorrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior nonmoving joints, including riveted joints.
- G. Bituminous Coating: Cold-applied asphalt emulsion according to ASTM D 1187.
- H. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required for application.
- 2.5 FABRICATION, GENERAL
 - A. General: Custom fabricate sheet metal flashing and trim to comply with details shown and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required. Fabricate sheet metal flashing and trim in shop to greatest extent possible.
 - 1. Obtain field measurements for accurate fit before shop fabrication.
 - 2. Form sheet metal flashing and trim to fit substrates without excessive oil canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
 - 3. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.
 - B. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.
 - 1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with butyl sealant concealed within joints.
 - 2. Use lapped expansion joints only where indicated on Drawings.
 - C. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal to provide for proper installation of elastomeric sealant according to cited sheet metal standard.
 - D. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.

- E. Fabricate cleats and attachment devices of sizes as recommended by cited sheet metal standard for application, but not less than thickness of metal being secured.
- F. Seams: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use. Rivet joints where necessary for strength.

2.6 ROOF-DRAINAGE SHEET METAL FABRICATIONS

- A. Hanging Gutters: Fabricate to cross section required, complete with end pieces, outlet tubes, and other accessories as required. Fabricate in minimum 96-inch-long sections. Furnish flat-stock gutter brackets and gutter spacers and straps fabricated from same metal as gutters, of size recommended by cited sheet metal standard but with thickness not less than twice the gutter thickness. Fabricate expansion joints, expansion-joint covers, and gutter accessories from same metal as gutters. Shop fabricate interior and exterior corners.
 - 1. Accessories: Wire-ball downspout strainer and Valley baffles.
- B. Downspouts: Fabricate rectangular downspouts to dimensions indicated, complete with mitered elbows. Furnish with metal hangers from same material as downspouts and anchors. Shop fabricate elbows.
 - 1. Fabricate from the following materials:
 - a. Aluminum: 0.024 inch thick.
- C. Parapet Scuppers: Fabricate scuppers to dimensions required, with closure flange trim to exterior, 4-inchwide wall flanges to interior, and base extending 4 inches beyond cant or tapered strip into field of roof. Fabricate from the following materials:
 - 1. Aluminum: 0.032 inch thick.
- D. Conductor Heads: Fabricate conductor heads with flanged back and stiffened top edge and of dimensions and shape required, complete with outlet tubes. Fabricate from the following materials:
 1. Aluminum: 0.032 inch thick.
- E. Splash Pans: Fabricate to dimensions and shape required and from the following materials:1. Aluminum: 0.040 inch thick.

2.7 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

- A. Roof Edge Flashing (Gravel Stop): Fabricate in minimum 96-inch-long, but not exceeding 12-foot-long sections. Furnish with 6-inch-wide, joint cover plates.
 - 1. Fabricate from the Following Materials:
 - a. Aluminum: 0.050 inch thick.
- B. Copings: Fabricate in minimum 96-inch-long, but not exceeding 12-foot-long, sections. Fabricate joint plates of same thickness as copings. Furnish with continuous cleats to support edge of external leg and interior leg. Miter corners, fasten and seal watertight. Shop fabricate interior and exterior corners.
 - 1. Fabricate from the Following Materials:
 - a. Aluminum: 0.050 inch thick.
- C. Base Flashing: Shop fabricate interior and exterior corners. Fabricate from the following materials:
 1. Aluminum: 0.040 inch thick.
- D. Counterflashing: Fabricate from the following materials:1. Aluminum: 0.032 inch thick.
- E. Roof-Drain Flashing: Fabricate from the following materials:1. Stainless Steel: 0.016 inch thick.

2.8 STEEP-SLOPE ROOF SHEET METAL FABRICATIONS

- A. Apron, Step, Cricket, and Backer Flashing: Fabricate from the following materials:
 1. Aluminum: 0.032 inch thick.
- B. Valley Flashing: Fabricate from the following materials:1. Stainless Steel: 0.019 inch thick.
- C. Drip Edges: Fabricate from the following materials:1. Aluminum: 0.032 inch thick.
- D. Eave, Rake Flashing: Fabricate from the following materials:1. Aluminum: 0.032 inch thick.

2.9 WALL SHEET METAL FABRICATIONS

- A. Through-Wall Flashing: Fabricate continuous flashings in minimum 96-inch-long, but not exceeding 12foot-long, sections, under copings, and at shelf angles. Fabricate discontinuous lintel, sill, and similar flashings to extend 6 inches beyond each side of wall openings; and form with 2-inch-high, end dams. Fabricate from the following materials:
 - 1. Stainless Steel: 0.016 inch thick.

PART 3 - EXECUTION

3.1 UNDERLAYMENT INSTALLATION

- A. Felt Underlayment: Install felt underlayment, wrinkle free, using adhesive to minimize use of mechanical fasteners under sheet metal flashing and trim. Apply in shingle fashion to shed water, with lapped joints of not less than 2 inches.
- B. Synthetic Underlayment: Install synthetic underlayment, wrinkle free, according to manufacturers' written instructions, and using adhesive where possible to minimize use of mechanical fasteners under sheet metal.
- C. Self-Adhering Sheet Underlayment: Install self-adhering sheet underlayment, wrinkle free. Prime substrate if recommended by underlayment manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation; use primer for installing underlayment at low temperatures. Apply in shingle fashion to shed water, with end laps of not less than 6 inches staggered 24 inches between courses. Overlap side edges not less than 3-1/2 inches. Roll laps and edges with roller. Cover underlayment within 14 days.

3.2 INSTALLATION, GENERAL

- A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
 - 1. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
 - 2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
 - 3. Space cleats not more than 12 inches apart. Attach each cleat with at least two fasteners. Bend tabs over fasteners.
 - 4. Install exposed sheet metal flashing and trim with limited oil canning, and free of buckling and tool marks.
 - 5. Torch cutting of sheet metal flashing and trim is not permitted.

- B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.
 - 1. Coat concealed side of [uncoated-aluminum] [and] [stainless-steel] sheet metal flashing and trim with bituminous coating where flashing and trim contact wood, ferrous metal, or cementitious construction.
 - 2. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet.
- C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at maximum of 10 feet with no joints within 24 inches of corner or intersection.
 - 1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with sealant concealed within joints.
 - 2. Use lapped expansion joints only where indicated on Drawings.
- D. Fasteners: Use fastener sizes that penetrate substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.
- E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.
- F. Seal joints as required for watertight construction. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."
- G. Rivets: Rivet joints in uncoated aluminum where necessary for strength.

3.3 ROOF-DRAINAGE SYSTEM INSTALLATION

- A. General: Install sheet metal roof-drainage items to produce complete roof-drainage system according to cited sheet metal standard unless otherwise indicated. Coordinate installation of roof perimeter flashing with installation of roof-drainage system.
- B. Hanging Gutters: Join sections with joints sealed with sealant. Provide for thermal expansion. Attach gutters at eave or fascia to firmly anchor them in position. Provide end closures and seal watertight with sealant. Slope to downspouts.
 - 1. Install gutter with expansion joints at locations indicated, but not exceeding, 50 feet apart. Install expansion-joint caps.
- C. Downspouts: Join sections with 1-1/2-inch telescoping joints. Provide hangers with fasteners designed to hold downspouts securely to walls. Locate hangers at top and bottom and at approximately 60 inches o.c.
- D. Splash Pans: Install where downspouts discharge on low-slope roofs. Set in elastomeric sealant compatible with the substrate.
- E. Parapet Scuppers: Continuously support scupper, set to correct elevation, and seal flanges to interior wall face, over cants or tapered edge strips, and under roofing membrane.
- F. Conductor Heads: Anchor securely to wall, with elevation of conductor head rim at minimum of 1 inch below scupper discharge.
- G. Expansion-Joint Covers: Install expansion-joint covers at locations and of configuration indicated. Lap joints minimum of 4 inches in direction of water flow.

3.4 ROOF FLASHING INSTALLATION

- A. General: Install sheet metal flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and cited sheet metal standard. Provide concealed fasteners where possible, and set units true to line, levels, and slopes. Install work with laps, joints, and seams that are permanently watertight and weather resistant.
- B. Roof Edge Flashing: Anchor to resist uplift and outward forces according to recommendations in cited sheet metal standard unless otherwise indicated. Interlock bottom edge of roof edge flashing with continuous cleat anchored to substrate.
- C. Copings: Anchor to resist uplift and outward forces according to recommendations in cited sheet metal standard unless otherwise indicated.
- D. Pipe or Post Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending minimum of 4 inches over base flashing. Install stainless-steel draw band and tighten.
- E. Counterflashing: Coordinate installation of counterflashing with installation of base flashing. Insert counterflashing in reglets or receivers and fit tightly to base flashing. Extend counterflashing 4 inches over base flashing. Lap counterflashing joints minimum of 4 inches.
- F. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Seal with elastomeric or butyl sealant and clamp flashing to pipes that penetrate roof.

3.5 WALL FLASHING INSTALLATION

- A. General: Install sheet metal wall flashing to intercept and exclude penetrating moisture according to cited sheet metal standard unless otherwise indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.
- B. Through-Wall Flashing: Installation of through-wall flashing is specified in Section 042000 "Unit Masonry."
- C. Reglets: Installation of reglets is specified in
- D. Opening Flashings in Frame Construction: Install continuous head, sill, and similar flashings to extend 4 inches beyond wall openings.

3.6 CLEANING AND PROTECTION

- A. Retain first paragraph below for metal surfaces unless metal is painted, coated, or lacquered.
- B. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- C. Retain first paragraph below for soldered joints.
- D. Clean off excess sealants.
- E. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions.

END OF SECTION 076200

SECTION 077253 - SNOW GUARDS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:1. Pad-type, flat-mounted metal snow guards.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: Include roof plans showing layouts and attachment details of snow guards.
 1. Include details of rail-type snow guards.
- C. Samples:
 - 1. Pad-Type Snow Guards: Full-size unit with installation hardware.
 - a. For units with factory-applied finishes, submit manufacturer's standard color selections.
 - 2. Include calculation of number and location of snow guards.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Performance Requirements: Provide snow guards that withstand exposure to weather and resist thermally induced movement without failure, rattling, or fastener disengagement due to defective manufacture, fabrication, installation, or other defects in construction.
 - 1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.
- B. Structural Performance: Snow guards shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated.
 - 1. Snow Loads: As indicated on Drawings.

2.2 PAD-TYPE SNOW GUARDS

- A. Pad-Type, Flat-Mounted Metal Snow Guards:
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>IceBlox Inc</u>.
 - b. <u>Rocky Mountain Snow Guards, Inc</u>.
 - c. <u>TRA Snow and Sun, Inc</u>.
 - 2. Material: a. As
 - ASTM A653/A653M metallic-coated steel sheet with G90 coating, 0.022 inch thick.
 - 1) Finish: High-performance organic two-coat fluoropolymer finish complying with AAMA 2605 and containing not less than 70 percent PVDF resin by weight in color coat.
 - a) Color: Match sheet metal roofing.
 - b. ASTM A792/A792M, Class AZ50 aluminum-zinc alloy-coated steel sheet, Grade 40ot less than 0.022 inch thick.
 - 1) Finish: High-performance organic two-coat fluoropolymer finish complying with AAMA 2605 and containing not less than 70 percent PVDF resin by weight in color coat.
 - a) Color: Match sheet metal roofing.

3. Attachment: Manufacturer's tested system, capable of resisting design loads.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install snow guards according to manufacturer's written instructions.1. Space rows as recommended by manufacturer.
- B. Attachment for Standing-Seam Metal Roofing:
 - 1. Do not use fasteners that will penetrate metal roofing or fastening methods that void metal roofing finish warranty.
 - 2. Pad-Type, Flat-Mounted Snow Guards:
 - a. Adhere to metal roofing according to manufacturer's instructions.

END OF SECTION 077253

SECTION 078413 - PENETRATION FIRESTOPPING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Penetrations in fire-resistance-rated walls.
 - 2. Penetrations in horizontal assemblies.
 - 3. Penetrations in smoke barriers.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Product Schedule: For each penetration firestopping system. Include location, illustration of firestopping system, and design designation of qualified testing and inspecting agency.
 - 1. Engineering Judgments: Where Project conditions require modification to a qualified testing and inspecting agency's illustration for a particular penetration firestopping system, submit illustration, with modifications marked, approved by penetration firestopping system manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly. Obtain approval of authorities having jurisdiction prior to submittal.

1.3 INFORMATIONAL SUBMITTALS

- A. Product test reports.
- 1.4 CLOSEOUT SUBMITTALS
 - A. Installer Certificates: From Installer indicating that penetration firestopping systems have been installed in compliance with requirements and manufacturer's written instructions.
- 1.5 QUALITY ASSURANCE
 - A. Installer Qualifications: A firm that has been approved by FM Global according to FM Global 4991, "Approval of Firestop Contractors," or been evaluated by UL and found to comply with its "Qualified Firestop Contractor Program Requirements."

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics:
 - 1. Perform penetration firestopping system tests by a qualified testing agency acceptable to authorities having jurisdiction.
 - 2. Test per testing standards referenced in "Penetration Firestopping Systems" Article. Provide rated systems complying with the following requirements:
 - a. Penetration firestopping systems shall bear classification marking of a qualified testing agency.
 - 1) UL in its "Fire Resistance Directory."
 - 2) Intertek Group in its "Directory of Listed Building Products."
 - 3) FM Global in its "Building Materials Approval Guide."

2.2 PENETRATION FIRESTOPPING SYSTEMS

- Penetration Firestopping Systems: Systems that resist spread of fire, passage of smoke and other gases, A. and maintain original fire-resistance rating of construction penetrated. Penetration firestopping systems shall be compatible with one another, with the substrates forming openings, and with penetrating items if any.
 - Manufacturers: Subject to compliance with requirements, provide products by one of the 1. following:
 - 3M Fire Protection Products. a.
 - Hilti, Inc. b.
 - c. Tremco, Inc.
- Β. Penetrations in Fire-Resistance-Rated Walls: Penetration firestopping systems with ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg. 1
 - F-Rating: Not less than the fire-resistance rating of constructions penetrated.
- C. Penetrations in Horizontal Assemblies: Penetration firestopping systems with ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg.
 - F-Rating: At least one hour, but not less than the fire-resistance rating of constructions penetrated. 1.
 - 2. T-Rating: At least one hour, but not less than the fire-resistance rating of constructions penetrated except for floor penetrations within the cavity of a wall.
 - 3. W-Rating: Provide penetration firestopping systems showing no evidence of water leakage when tested according to UL 1479.
- D. Penetrations in Smoke Barriers: Penetration firestopping systems with ratings determined per UL 1479, based on testing at a positive pressure differential of 0.30-inch wg.
 - L-Rating: Not exceeding 5.0 cfm/sq. ft. of penetration opening at and no more than 50-cfm 1. cumulative total for any 100 sq. ft. at both ambient and elevated temperatures.
- E. Exposed Penetration Firestopping Systems: Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, per ASTM E 84.
- F. Accessories: Provide components for each penetration firestopping system that are needed to install fill materials and to maintain ratings required. Use only those components specified by penetration firestopping system manufacturer and approved by qualified testing and inspecting agency for conditions indicated.

PART 3 - EXECUTION

3.1 **INSTALLATION**

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of the Work.
- B. General: Install penetration firestopping systems to comply with manufacturer's written installation instructions and published drawings for products and applications.
- C. Install forming materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings.
 - 1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not forming permanent components of firestopping.
- D. Install fill materials by proven techniques to produce the following results:

- 1. Fill voids and cavities formed by openings, forming materials, accessories and penetrating items to achieve required fire-resistance ratings.
- 2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
- 3. For fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.2 IDENTIFICATION

- A. Wall Identification: Permanently label walls containing penetration firestopping systems with the words "FIRE AND/OR SMOKE BARRIER PROTECT ALL OPENINGS," using lettering not less than 3 inches high and with minimum 0.375-inch strokes.
 - 1. Locate in accessible concealed floor, floor-ceiling, or attic space at 15 feet from end of wall and at intervals not exceeding 30 feet.
- B. Penetration Identification: Identify each penetration firestopping system with legible metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches of penetration firestopping system edge so labels are visible to anyone seeking to remove penetrating items or firestopping systems. Use mechanical fasteners or self-adhering-type labels with adhesives capable of permanently bonding labels to surfaces on which labels are placed. Include the following information on labels:
 - 1. The words "Warning Penetration Firestopping Do Not Disturb. Notify Building Management of Any Damage."
 - 2. Contractor's name, address, and phone number.
 - 3. Designation of applicable testing and inspecting agency.
 - 4. Date of installation.
 - 5. Manufacturer's name.
 - 6. Installer's name.

END OF SECTION 078413

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. Sample warranties.
- 1.4 QUALITY ASSURANCE
 - A. Testing Agency Qualifications: Qualified according to ASTM C 1021 to conduct the testing indicated.

1.5 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 C 920, Type S, Grade NS, Class 50, Use NT.
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>GE Construction Sealants; Momentive Performance Materials Inc</u>.
 - b. <u>Pecora Corporation</u>.
 - c. <u>Sika Corporation; Joint Sealants</u>.
 - d. <u>The Dow Chemical Company</u>.
- B. Silicone, S, NS, 25, NT: Single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 25, Use NT.
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>GE Construction Sealants; Momentive Performance Materials Inc</u>.
 - b. <u>Pecora Corporation</u>.
 - c. <u>The Dow Chemical Company</u>.
- C. Silicone, S, NS, 100/50, T, NT: Single-component, nonsag, plus 100 percent and minus 50 percent movement capability, traffic- and nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 100/50, Uses T and NT.
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>Pecora Corporation</u>.
 - b. <u>Sika Corporation; Joint Sealants</u>.
 - c. <u>The Dow Chemical Company</u>.

2.3 NONSTAINING SILICONE JOINT SEALANTS

- A. Nonstaining Joint Sealants: No staining of substrates when tested according to ASTM C 1248.
- B. Silicone, Nonstaining, S, NS, 100/50, NT: Nonstaining, single-component, nonsag, plus 100 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 100/50, Use NT.
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>Pecora Corporation</u>.
 - b. <u>Sika Corporation; Joint Sealants</u>.
 - c. <u>Tremco Incorporated</u>.
- C. 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 C 920, Type S, Grade NS, Class 50, Use NT.
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>GE Construction Sealants; Momentive Performance Materials Inc</u>.
 - b. <u>Pecora Corporation</u>.
 - c. <u>Sika Corporation; Joint Sealants</u>.
 - d. <u>The Dow Chemical Company</u>.
 - e. <u>Tremco Incorporated</u>.

2.4 URETHANE JOINT SEALANTS

- A. Urethane, S, NS, 25, NT: Single-component, nonsag, nontraffic-use, plus 25 percent and minus 25 percent movement capability, urethane joint sealant; ASTM C 920, Type S, Grade NS, Class 25, Use NT.
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>BASF Corporation</u>.
 - b. <u>Pecora Corporation</u>.
 - c. <u>Sika Corporation; Joint Sealants</u>.
 - d. <u>Tremco Incorporated</u>.
 - e.
- B. Urethane, M, P, 25, T, NT: Multicomponent, pourable, plus 25 percent and minus 25 Urethane, M, P, 25, T, NT: Multicomponent, pourable, plus 25 percent and minus 25 percent movement capability, trafficand nontraffic-use, urethane joint sealant; ASTM C 920, Type M, Grade P, Class 25, Uses T and NT.
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>BASF Corporation; Construction Systems</u>.
 - b. <u>Pecora Corporation</u>.
 - c. <u>Sika Corporation; Joint Sealants</u>.
 - d. <u>Tremco Incorporated</u>.

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 C 920, Type S, Grade NS, Class 25, Use NT.
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>GE Construction Sealants; Momentive Performance Materials Inc</u>.
 - b. <u>Pecora Corporation</u>.
 - c. <u>The Dow Chemical Company</u>.
 - d. <u>Tremco Incorporated</u>.
- C. Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>Pecora Corporation</u>.
 - b. <u>Sherwin-Williams Company (The)</u>.
 - c. <u>Tremco Incorporated</u>.

2.6 JOINT-SEALANT BACKING

- A. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), Type O (open-cell material), Type B (bicellular material with a surface skin), or any of the preceding types, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>Adfast</u>.
 - b. BASF Corporation.
 - c. <u>Construction Foam Products; a division of Nomaco, Inc.</u>

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 C 1193 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 C 1193 unless otherwise indicated.
3.3 FIELD QUALITY CONTROL

3.4 JOINT-SEALANT SCHEDULE

- A. Provide joint sealants in accordance with the following schedule. Where specific project conditions are not covered by the following schedule, provide joint sealants recommend by material manufacturer, compatible with adjacent materials, and in compliance with the requirements of this section.
 - 1. Unless otherwise noted or indicated, provide joint sealants at all dissimilar material joints and as directed by the Architect.
- B. Joint-Sealant Application: Exterior joints in horizontal traffic surfaces.
 - 1. Joint Locations:
 - a. Control and expansion joints in brick pavers.
 - b. Isolation and contraction joints in cast-in-place concrete slabs.
 - c. Joints between plant-precast architectural concrete paving units.
 - d. Joints in stone paving units[, including steps].
 - e. Tile control and expansion joints.
 - f. Joints between different materials listed above.
 - g. <Insert other joints>.
 - h. Other joints as indicated on Drawings.
 - 2. Joint Sealant: Urethane, M, P, 50, T, NT.
 - 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- C. Joint-Sealant Application: Exterior joints in horizontal traffic surfaces subject to water immersion.
 - 1. Joint Locations:
 - a. Joints in pedestrian plazas.
 - b. Joints in swimming pool decks.
 - c. Other joints as indicated on Drawings.
 - 2. Joint Sealant: Urethane, immersible, S, P, 25, T, NT, I.
 - 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- D. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces.
 - 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. Joints in dimension stone cladding.
 - e. <Insert other joints>.
 - f. 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.
- E. Joint-Sealant Application: Interior joints in horizontal traffic surfaces.
 - 1. Joint Locations:
 - a. Isolation joints in cast-in-place concrete slabs.
 - b. Control and expansion joints in stone flooring.
 - c. Control and expansion joints in brick flooring.
 - d. Control and expansion joints in tile flooring.
 - e. Other joints as indicated on Drawings.
 - 2. Joint Sealant: Urethane, S, P, 25, T, NT.
 - 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- F. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces.
 1. Joint Locations:
 - a. Control and expansion joints on exposed interior surfaces of exterior walls.
 - b. Tile control and expansion joints.

- c. Vertical joints on exposed surfaces of unit masonry or concrete walls and partitions.
- d. Other joints as indicated on Drawings.
- 2. Joint Sealant: Urethane, S, NS, 25, NT.
- 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- G. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces not subject to significant movement.
 - 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, windows, and elevator entrances.
 - 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.
- H. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces.
 - 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.
- I. Joint-Sealant Application: Concealed mastics.
 - 1. Joint Locations:
 - a. Aluminum thresholds.
 - b. Sill plates.
 - c. Other joints as indicated on Drawings.
 - 2. Joint Sealant: Butyl-rubber based.
 - 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

END OF SECTION 079200

SECTION 081113 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

- 1. Interior standard steel doors and frames.
- 2. Exterior standard steel doors and frames.
- 3. Interior custom hollow-metal doors and frames.
- 4. Exterior custom hollow-metal doors and frames.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: Include the following:
 - 1. Elevations of each door type.
 - 2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
 - 3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
- C. Product Schedule: For hollow-metal doors and frames, prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final door hardware schedule.

1.3 INFORMATIONAL SUBMITTALS

A. Product test reports.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - 1. <u>Ceco Door; ASSA ABLOY</u>.
 - 2. <u>Curries Company; ASSA ABLOY</u>.
 - 3. <u>Mesker Door Inc</u>.
 - 4. <u>Republic Doors and Frames</u>.
 - 5. <u>Steelcraft; an Allegion brand</u>.

2.2 PERFORMANCE REQUIREMENTS

- A. Fire-Rated Assemblies: Complying with NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings and temperature-rise limits indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.
 - 1. Smoke- and Draft-Control Assemblies: Provide assemblies with gaskets listed and labeled for smoke and draft control by a qualified testing agency acceptable to authorities having jurisdiction, based on testing according to UL 1784 and installed in compliance with NFPA 105.
- B. Fire-Rated, Borrowed-Lite Assemblies: Complying with NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 257 or UL 9.

C. Thermally Rated Door Assemblies: Provide door assemblies with U-factor of not more than 0.38 deg Btu/F x h x sq. ft. when tested according to ASTM C 518.

2.3 INTERIOR STANDARD STEEL DOORS AND FRAMES

- A. Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.
- B. Heavy-Duty Doors and Frames: SDI A250.8, Level 2; SDI A250.4, Level B.
 - 1. Doors:
 - a. Type: As indicated in the Door and Frame Schedule.
 - b. Thickness: 1-3/4 inches.
 - c. Face: Uncoated steel sheet, minimum thickness of 0.042 inch.
 - d. Edge Construction: Model 1, Full Flush.
 - e. Core: Manufacturer's standard.
 - f. Fire-Rated Core: Manufacturer's standard core for fire-rated and temperature-rise-rated doors.
 - 2. Frames:
 - a. Materials: Uncoated steel sheet, minimum thickness of 0.053 inch.
 - b. Sidelite and Transom Frames: Fabricated from same thickness material as adjacent door frame.
 - c. Construction: Knocked down.

2.4 EXTERIOR STANDARD STEEL DOORS AND FRAMES

- A. Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.
- B. Extra-Heavy-Duty Doors and Frames: SDI A250.8, Level 3; SDI A250.4, Level A.
 - 1. Doors:
 - a. Type: As indicated in the Door and Frame Schedule.
 - b. Thickness: 1-3/4 inches.
 - c. Face: Metallic-coated steel sheet, minimum thickness of 0.053 inch, with minimum A60 coating.
 - d. Edge Construction: Model 2, Seamless.
 - e. Top Edge Closures: Close top edges of doors with flush closures of same material as face sheets. Seal joints against water penetration.
 - f. Bottom Edges: Close bottom edges of doors with end closures or channels of same material as face sheets. Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape.
 - g. Core: Manufacturer's standard to achieve the target thermal performance.
 - h. Fire-Rated Core: Manufacturer's standard vertical steel stiffener with insulation core for fire-rated doors.
 - 2. Frames:
 - a. Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch, with minimum A60coating.
 - b. Construction: Full profile welded.

2.5 BORROWED LITES

- A. Fabricate of uncoated steel sheet, minimum thickness of 0.042 inch.
- B. Construction: Full profile welded.

- C. Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as metal as frames.
- D. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.

2.6 FRAME ANCHORS

- A. Jamb Anchors:
 - 1. Type: Anchors of minimum size and type required by applicable door and frame standard, and suitable for performance level indicated.
 - 2. Quantity: Minimum of three anchors per jamb, with one additional anchor for frames with no floor anchor. Provide one additional anchor for each 24 inches of frame height above 7 feet.
 - 3. Postinstalled Expansion Anchor: Minimum 3/8-inch-diameter bolts with expansion shields or inserts, with manufacturer's standard pipe spacer.
- B. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor.
- C. Floor Anchors for Concrete Slabs with Underlayment: Adjustable-type anchors with extension clips, allowing not less than 2-inch height adjustment. Terminate bottom of frames at top of underlayment.
- D. Material: ASTM A 879/A 879M, Commercial Steel (CS), 04Z coating designation; mill phosphatized.
 1. For anchors built into exterior walls, steel sheet complying with ASTM A 1008/A 1008M or ASTM A 1011/A 1011M; hot-dip galvanized according to ASTM A 153/A 153M, Class B.

2.7 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- B. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- C. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B.
- D. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.
- E. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.
- F. Mineral-Fiber Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.
- G. Glazing: Comply with requirements in Section 088000 "Glazing."

2.8 FABRICATION

A. Door Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted or as required to comply with published listing of qualified testing agency.

- B. Hollow-Metal Frames: Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as frames.
 - 1. Sidelite and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by welding, or by rigid mechanical anchors.
 - 2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
 - 3. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.
 - a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
 - b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.
- C. Hardware Preparation: Factory prepare hollow-metal doors and frames to receive templated mortised hardware, and electrical wiring; include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, the Door Hardware Schedule, and templates.
 - 1. Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
 - 2. Comply with BHMA A156.115 for preparing hollow-metal doors and frames for hardware.
- D. Glazed Lites: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted or mitered hairline joints.
 - 1. Provide stops and moldings flush with face of door, and with beveled stops unless otherwise indicated.
 - 2. Multiple Glazed Lites: Provide fixed and removable stops and moldings so that each glazed lite is capable of being removed independently.
 - 3. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames. Provide loose stops and moldings on inside of hollow-metal doors and frames.
 - 4. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.
 - 5. Provide stops for installation with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches o.c. and not more than 2 inches o.c. from each corner.

2.9 STEEL FINISHES

- A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.
 - 1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces. Touch up factory-applied finishes where spreaders are removed.
- B. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.2 INSTALLATION

A. Hollow-Metal Frames: Comply with SDI A250.11.

- 1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces without damage to completed Work.
 - a. Where frames are fabricated in sections, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces. Touch-up finishes.
 - b. Install frames with removable stops located on secure side of opening.
- 2. Fire-Rated Openings: Install frames according to NFPA 80.
- 3. Floor Anchors: Secure with postinstalled expansion anchors.
 - a. Floor anchors may be set with power-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.
- 4. Solidly pack mineral-fiber insulation inside frames.
- 5. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout or mortar.
- 6. In-Place Concrete or Masonry Construction: Secure frames in place with postinstalled expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
- 7. Installation Tolerances: Adjust hollow-metal frames to the following tolerances:
 - a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 - b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
 - c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 - d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.
- B. Hollow-Metal Doors: Fit and adjust hollow-metal doors accurately in frames, within clearances specified below.
 - 1. Non-Fire-Rated Steel Doors: Comply with SDI A250.8.
 - 2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.
 - 3. Smoke-Control Doors: Install doors according to NFPA 105.
- C. Glazing: Comply with installation requirements in Section 088000 "Glazing" and with hollow-metal manufacturer's written instructions.

3.3 CLEANING AND TOUCHUP

- A. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.
- B. Metallic-Coated Surface Touchup: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.
- C. Touchup Painting: Cleaning and touchup painting of abraded areas of paint are specified in painting Sections.

END OF SECTION 081113

SECTION 083313 - COILING COUNTER DOORS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:1. Counter door assemblies.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type and size of coiling counter door and accessory.
- B. Shop Drawings: For each installation and for special components not dimensioned or detailed in manufacturer's product data.
 - 1. Include points of attachment and their corresponding static and dynamic loads imposed on structure.
 - 2. Show locations of controls, locking devices, detectors or replaceable fusible links, and other accessories.
- C. Samples: For each exposed product and for each color and texture specified.

1.3 CLOSEOUT SUBMITTALS

- A. Maintenance data.
- 1.4 QUALITY ASSURANCE
 - A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer for both installation and maintenance of units required for this Project.

PART 2 - PRODUCTS

2.1 COUNTER DOOR ASSEMBLY

- A. Counter Door: Coiling counter door formed with curtain of interlocking metal slats.
 - 1. <u>Basis-of-Design Product:</u> Subject to compliance with requirements, provide <u>Overhead Door</u> <u>Corporation</u>; 652 Series or a comparable product by one of the following:
 - a. <u>C.H.I. Overhead Doors, Inc</u>.
 - b. <u>Cornell; a CornellCookson company</u>.
 - c. <u>Lawrence Roll-Up Doors, Inc</u>.
- B. Operation Cycles: Door components and operators capable of operating for not less than 10,000.
- C. Door Curtain Material: Aluminum.
- D. Door Curtain Slats: Manufacturer's standard.
- E. Bottom Bar: Manufacturer's standard continuous channel or tubular shape, fabricated aluminum extrusion and finished to match door.
- F. Curtain Jamb Guides: Aluminumwith exposed finish matching curtain slats. Provide continuous integral wear strips to prevent metal-to-metal contact and to minimize operational noise.

- G. Hood: Match curtain material and finish.
- H. Integral Frame, Hood, and Fascia: Manufacturer's standard.1. Mounting: Between jambs.
- I. Sill Configuration: No sill.
- J. Locking Devices: Equip door with locking device assembly.
 1. Locking Device Assembly: Single-jamb side locking bars, operable from inside with thumbturn.
- K. Manual Door Operator: Push-up operation.

L. Door Finish:

- 1. Aluminum Finish: Clear anodized.
- 2. Interior Curtain-Slat Facing: Match finish of exterior curtain-slat face.

2.2 DOOR CURTAIN MATERIALS AND FABRICATION

- A. Door Curtains: Fabricate coiling counter door curtain of interlocking metal slats in a continuous length for width of door without splices. Unless otherwise indicated, provide slats of thickness and mechanical properties recommended by door manufacturer for performance, size, and type of door indicated, and as follows:
 - 1. Metal Interior Curtain-Slat Facing: Match metal of exterior curtain-slat face.
- B. Curtain Jamb Guides: Manufacturer's standard angles or channels and angles of same material and finish as curtain slats unless otherwise indicated, with sufficient depth and strength to retain curtain, to allow curtain to operate smoothly, and to withstand loading. Slot bolt holes for guide adjustment. Provide removable stops on guides to prevent overtravel of curtain.

2.3 HOODS

A. General: Form sheet metal hood to entirely enclose coiled curtain and operating mechanism at opening head. Contour to fit end brackets to which hood is attached. Roll and reinforce top and bottom edges for stiffness. Form closed ends for surface-mounted hoods and fascia for any portion of between-jamb mounting that projects beyond wall face. Equip hood with intermediate support brackets as required to prevent sagging.

2.4 LOCKING DEVICES

- A. Locking Device Assembly: Fabricate with cylinder lock, spring-loaded dead bolt, operating handle, cam plate, and adjustable locking bars to engage through slots in tracks.
 - 1. Lock Cylinders: As standard with manufacturer.
 - 2. Keys: Three for each cylinder.

2.5 CURTAIN ACCESSORIES

- A. Push/Pull Handles: Equip each push-up-operated or emergency-operated door with lifting handles on each side of door, finished to match door.
- B. Pull-Down Strap: Provide pull-down straps for doors more than 84 inches high.

2.6 COUNTERBALANCE MECHANISM

A. General: Counterbalance doors by means of manufacturer's standard mechanism with an adjustabletension, steel helical torsion spring mounted around a steel shaft and contained in a spring barrel connected to top of curtain with barrel rings. Use grease-sealed bearings or self-lubricating graphite bearings for rotating members.

B. Brackets: Manufacturer's standard mounting brackets of either cast iron or cold-rolled steel plate.

2.7 MANUAL DOOR OPERATORS

- A. General: Equip door with manual door operator by door manufacturer.
- B. Push-up Door Operation: Design counterbalance mechanism so that required lift or pull for door operation does not exceed 25 lbf.

PART 3 - EXECUTION

- 3.1 INSTALLATION, GENERAL
 - A. Install coiling counter doors and operating equipment complete with necessary hardware, anchors, inserts, hangers, and equipment supports; according to manufacturer's written instructions and as specified.
- 3.2 DEMONSTRATION
 - A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain coiling counter doors.

END OF SECTION 083313

SECTION 084113 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Storefront framing.
 - 2. Manual-swing entrance doors.

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, fullsize details, and attachments to other work.
 - 1. Show connection to and continuity with adjacent thermal, weather, air, and vapor barriers.
- C. Samples: For each type of exposed finish required.

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. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
 - B. Testing Agency Qualifications: Qualified according to ASTM E 699 for testing indicated [and accredited by the International Accreditation Service or the International Laboratory Accreditation Cooperation Mutual Recognition Arrangement as complying with ISO/IEC 17025].
 - C. 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.
- B. Special Finish Warranty: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of factory-applied finishes within specified warranty period.
 - 1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. General Performance: Comply with performance requirements specified, as determined by testing of aluminum-framed entrances and storefronts representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.
 - 1. Aluminum-framed entrances and storefronts shall withstand movements of supporting structure, including, but not limited to, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads.
 - 2. Failure also includes the following:
 - a. Thermal stresses transferring to building structure.
 - b. Glass breakage.
 - c. Noise or vibration created by wind and thermal and structural movements.
 - d. Loosening or weakening of fasteners, attachments, and other components.
 - e. Failure of operating units.
- B. Structural Loads:
 - 1. Wind Loads: As indicated on Drawings.
 - 2. Other Design Loads: As indicated on Drawings.
- C. Deflection of Framing Members: At design wind pressure, as follows:
 - 1. Deflection Normal to Wall Plane: Limited to edge of glass in a direction perpendicular to glass plane not exceeding 1/175 of the glass edge length for each individual glazing lite or an amount that restricts edge deflection of individual glazing lites to 3/4 inch, whichever is less.
 - 2. Deflection Parallel to Glazing Plane: Limited to 1/360 of clear span or 1/8 inch, whichever is smaller.
- D. Air Infiltration: Test according to ASTM E 283 for infiltration as follows:
 - 1. Fixed Framing and Glass Area:
 - a. Maximum air leakage of 0.06 cfm/sq. ft. at a static-air-pressure differential of 1.57 lbf/sq. ft.,
 - 2. Entrance Doors:
 - a. Single Doors: Maximum air leakage of 0.5 cfm/sq. ft. at a static-air-pressure differential of 1.57 lbf/sq. ft..
- E. Water Penetration under Static Pressure: Test according to ASTM E 331 as follows:
 - 1. No evidence of water penetration through fixed glazing and framing areas, including entrance doors, when tested according to a minimum static-air-pressure differential of 20 percent of positive wind-load design pressure, but not less than 6.24 lbf/sq. ft..
- F. Energy Performance: Certify and label energy performance according to NFRC as follows:

- 1. Thermal Transmittance (U-factor): Fixed glazing and framing areas as a system shall have U-factor of not more than 0.41 Btu/sq. ft. x h x deg F as determined according to NFRC 100.
- 2. Solar Heat Gain Coefficient (SHGC): Fixed glazing and framing areas as a system shall have SHGC of no greater than 0.40 as determined according to NFRC 200.
- 3. Condensation Resistance: Fixed glazing and framing areas as a system shall have an NFRCcertified condensation resistance rating of no less than 45 as determined according to NFRC 500.
- G. Thermal Movements: Allow for thermal movements resulting from ambient and surface temperature changes.
 - 1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.2 STOREFRONT SYSTEMS

- A. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - 1. <u>Kawneer North America, an Arconic company</u>.
 - 2. <u>U.S. Aluminum; a brand of C.R. Laurence</u>.
 - 3. <u>YKK AP America Inc</u>.
- 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. Glazing System: Retained mechanically with gaskets on four sides.
 - 3. Finish: Clear anodic finish, Color anodic finish, Baked-enamel, or powder-coat finish as selected by Architect.
 - 4. Fabrication Method: Field-fabricated stick system.
 - 5. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
 - 6. 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.

2.3 ENTRANCE DOOR SYSTEMS

- A. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - 1. Kawneer North America, an Arconic company.
 - 2. <u>U.S. Aluminum; a brand of C.R. Laurence</u>.
 - 3. <u>YKK AP America Inc</u>.
- B. Entrance Doors: Manufacturer's standard glazed entrance doors for manual-swing or automatic operation.
 - 1. Door Construction: 1-3/4-inch overall thickness, with minimum 0.125-inch- thick, extrudedaluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deeply penetrated and fillet welded or that incorporate concealed tie rods.
 - a. Thermal Construction: High-performance plastic connectors separate aluminum members exposed to the exterior from members exposed to the interior.
 - 2. Door Design: Wide stile; 5-inch nominal width.
 - 3. Glazing Stops and Gaskets: Beveled or Square, snap-on, extruded-aluminum stops and preformed gaskets.
 - a. Provide nonremovable glazing stops on outside of door.

2.4 ENTRANCE DOOR HARDWARE

- A. Entrance Door Hardware: Hardware not specified in this Section is specified in Section 087100 "Door Hardware."
- B. Weather Stripping: Manufacturer's standard replaceable components.
 - 1. Compression Type: Made of ASTM D 2000 molded neoprene or ASTM D 2287 molded PVC.
 - 2. Sliding Type: AAMA 701/702, made of wool, polypropylene, or nylon woven pile with nylon-fabric or aluminum-strip backing.
- C. Weather Sweeps: Manufacturer's standard exterior-door bottom sweep with concealed fasteners on mounting strip.

2.5 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.
 - 1. <u>Sealant shall have a VOC</u> content of 250 g/L or less.
 - Sealant shall comply with 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." Formaldehyde emissions shall not exceed 9 mcg/cu. m or 7 ppb, whichever is less.

2.6 MATERIALS

- A. Sheet and Plate: ASTM B 209.
- B. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221.
- C. Extruded Structural Pipe and Tubes: ASTM B 429/B 429M.
- D. Structural Profiles: ASTM B 308/B 308M.

E. Steel Reinforcement:

- 1. Structural Shapes, Plates, and Bars: ASTM A 36/A 36M.
- 2. Cold-Rolled Sheet and Strip: ASTM A 1008/A 1008M.
- 3. Hot-Rolled Sheet and Strip: ASTM A 1011/A 1011M.
- 4. Primer: Manufacturer's standard zinc-rich, corrosion-resistant primer complying with SSPC-PS Guide No. 12.00; applied immediately after surface preparation and pretreatment. Select surface preparation methods according to recommendations in SSPC-SP COM, and prepare surfaces according to applicable SSPC standard.

2.7 FABRICATION

- A. Form or extrude aluminum shapes before finishing.
- B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.
- C. 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 interior for vision glass and exterior for spandrel glazing or metal panels.
- 6. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.
- D. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.
- E. Entrance Door Frames: Reinforce as required to support loads imposed by door operation and for installing entrance door hardware.
- F. Entrance Doors: Reinforce doors as required for installing entrance door hardware.
- G. 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.
- H. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.8 ALUMINUM FINISHES

- A. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.
- B. Color Anodic Finish: AAMA 611, AA-M12C22A32/A34, Class II, 0.010 mm or thicker.
- C. Color: As selected by Architect from full range of industry colors and color densities.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General:
 - 1. Comply with manufacturer's written instructions.
 - 2. Do not install damaged components.
 - 3. Fit joints to produce hairline joints free of burrs and distortion.
 - 4. Rigidly secure nonmovement joints.
 - 5. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.
 - 6. Seal perimeter and other joints watertight unless otherwise indicated.
- B. 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.
- C. Set continuous sill members and flashing in full sealant bed, as specified in Section 079200 "Joint Sealants," to produce weathertight installation.
- D. Install components plumb and true in alignment with established lines and grades.

- E. Install operable units level and plumb, securely anchored, and without distortion. Adjust weatherstripping contact and hardware movement to produce proper operation.
- F. Install glazing as specified in Section 088000 "Glazing."
- G. Entrance Doors: Install 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.

3.2 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.
 - 2. Perform a minimum of two tests in areas as directed by Architect.
 - 3. Air Infiltration: ASTM E 783 at 1.5 times the rate specified for laboratory testing in "Performance Requirements" Article but not more than 0.09 cfm/sq. ft. at a static-air-pressure differential of 1.57 lbf/sq. ft..
 - 4. Water Penetration: ASTM E 1105 at a minimum uniform and cyclic 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., 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 085313 - VINYL WINDOWS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes vinyl-framed windows.
- 1.2 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.

1.3 INFORMATIONAL SUBMITTALS

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

1.4 WARRANTY

- A. Manufacturer's Warranty: Manufacturer agrees to repair or replace vinyl 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.

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: 25.
- C. Thermal Transmittance: NFRC 100 maximum whole-window U-factor of 0.28 Btu/sq. ft. x h x deg F.
- D. Solar Heat-Gain Coefficient (SHGC): NFRC 200 maximum whole-window SHGC of 0.40.

2.2 VINYL WINDOWS

- A. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 <u>Andersen Windows, Inc.; Andersen Corporation</u>.
 - 2. Crystal Window & Door Systems, Ltd.
 - 3. JELD-WEN, Inc.

CARVER COMMUNITY CENTER

- 4. <u>MI Windows and Doors, LLC</u>.
- 5. <u>Pella Corporation</u>.
- B. Operating Types: As indicated on Drawings.
- C. Frames and Sashes: Impact-resistant, UV-stabilized PVC complying with AAMA/WDMA/CSA 101/I.S.2/A440.
 - 1. Finish: Integral color, white.
 - 2. Gypsum Board Returns: Provide at interior face of frame.
- D. Glass: Clear annealed glass, ASTM C1036, Type 1, Class 1, q3.
- E. Insulating-Glass Units: ASTM E2190.
 - 1. Glass: ASTM C1036, Type 1, Class 1, q3.
 - a. Tint: Clear.
 - 2. Lites: Two.
 - 3. Filling: Fill space between glass lites with argon.
 - 4. Low-E Coating: Sputtered on second or third 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. 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.
- I. Weather Stripping: Provide full-perimeter weather stripping for each operable sash unless otherwise indicated.
- J. 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 ACCESSORIES

- A. Dividers (False Muntins): Provide divider grilles in designs indicated for each sash lite.
 - 1. Quantity and Type: One permanently located between insulating-glass lites.
 - 2. Material: Manufacturer's standard.
 - 3. Pattern: As indicated on Drawings.
 - 4. Profile: As selected by Architect from manufacturer's full range.
 - 5. Color: As selected by Architect from manufacturer's full range.

2.4 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:
 - a. Full, outside for double-hung sashes.
 - b. Half, outside for single-hung sashes.
 - c. Half, outside for sliding 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 or 18-by-16 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.

2.5 FABRICATION

- A. Fabricate vinyl windows in sizes indicated. Include a complete system for installing and anchoring windows.
- B. Glaze vinyl windows in the factory.
- C. Weather strip each operable sash to provide weathertight installation.
- D. Mullions: Provide mullions and cover plates, compatible with 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. Provide manufacturer's standard finish to match window units.
- E. Hardware: Mount hardware through double walls of vinyl extrusions or provide corrosion-resistant reinforcement.
- F. 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 085313

SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Mechanical door hardware for the following:
 - a. Swinging doors.
 - b. Sliding doors.
 - 2. Cylinders for door hardware specified in other Sections.
 - 3. Electrified door hardware.

1.2 PREINSTALLATION MEETINGS

A. Keying Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For electrified door hardware.
 - 1. Include diagrams for power, signal, and control wiring.
 - 2. Include details of interface of electrified door hardware and building safety and security systems.
- C. Samples: For each exposed product in each finish specified.
- D. Door hardware schedule.
- E. Keying schedule.
- 1.4 INFORMATIONAL SUBMITTALS
 - A. Sample warranty.
- 1.5 CLOSEOUT SUBMITTALS
 - A. Maintenance data.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Supplier of products and an employer of workers trained and approved by product manufacturers and of an Architectural Hardware Consultant who is available during the course of the Work to consult Contractor, Architect, and Owner about door hardware and keying.
 - 1. Scheduling Responsibility: Preparation of door hardware and keying schedule.
 - 2. Engineering Responsibility: Preparation of data for electrified door hardware, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.
- B. Architectural Hardware Consultant Qualifications: A person who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project and who is currently certified by DHI as an Architectural Hardware Consultant (AHC) and an Electrified Hardware Consultant (EHC).

1.7 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: Three years from date of Substantial Completion unless otherwise indicated below:
 - a. Electromagnetic and Delayed-Egress Locks: Five years from date of Substantial Completion.
 - b. Exit Devices: Two years from date of Substantial Completion.
 - c. Manual Closers: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Rated Door Assemblies: Where fire-rated doors are indicated, provide door hardware complying with NFPA 80 that is listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.
- B. Smoke- and Draft-Control Door Assemblies: Where smoke- and draft-control door assemblies are required, provide door hardware that complies with requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.
 - 1. Air Leakage Rate: Maximum air leakage of 0.3 cfm/sq. ft. at the tested pressure differential of 0.3inch wg of water.
- C. Electrified Door Hardware: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- D. Means of Egress Doors: Latches do not require more than 15 lbf to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.
- E. Accessibility Requirements: For door hardware on doors in an accessible route, comply with the DOJ's "2010 ADA Standards for Accessible Design" ICC A117.1 and Uniform Federal Accessibility Standards (UFAS).

2.2 SCHEDULED DOOR HARDWARE

- A. Provide products for each door that comply with requirements indicated in Part 2 and door hardware schedule.
 - 1. Door hardware is scheduled on Drawings.

2.3 HINGES

- A. Hinges: BHMA A156.1. Provide template-produced hinges for hinges installed on hollow-metal doors and hollow-metal frames.
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>Bommer Industries, Inc</u>.
 - b. <u>Hager Companies</u>.
 - c. <u>Stanley Commercial Hardware; a division of Stanley Security Solutions</u>.

2.4 SELF-CLOSING HINGES AND PIVOTS

A. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 <u>Bommer Industries, Inc</u>.

- 2. Hager Companies.
- 3. <u>Stanley Commercial Hardware; a division of Stanley Security Solutions</u>.

2.5 CONTINUOUS HINGES

- A. Continuous Hinges: BHMA A156.26; minimum 0.120-inch-thick, hinge leaves with minimum overall width of 4 inches; fabricated to full height of door and frame and to template screw locations; with components finished after milling and drilling are complete.
- B. Continuous, Gear-Type Hinges: Extruded-aluminum, pinless, geared hinge leaves joined by a continuous extruded-aluminum channel cap; with concealed, self-lubricating thrust bearings.
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>Bommer Industries, Inc</u>.
 - b. <u>Hager Companies</u>.
 - c. <u>Stanley Commercial Hardware; a division of Stanley Security Solutions</u>.

2.6 MECHANICAL LOCKS AND LATCHES

- A. Lock Functions: As indicated in door hardware schedule.
- B. Lock Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:
 - 1. Bored Locks: Minimum 1/2-inch latchbolt throw.
 - 2. Deadbolts: Minimum 1-inch bolt throw.
- C. Lock Backset: 2-3/4 inches unless otherwise indicated.
- D. Lock Trim:
 - 1. Description: As indicated on Drawings.
 - 2. Levers: Cast.
 - 3. Escutcheons (Roses): Cast.
 - 4. Dummy Trim: Match lever lock trim and escutcheons.
- E. Strikes: Provide manufacturer's standard strike for each lock bolt or latchbolt complying with requirements indicated for applicable lock or latch and with strike box and curved lip extended to protect frame; finished to match lock or latch.
 - 1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
 - 2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
 - 3. Aluminum-Frame Strike Box: Manufacturer's special strike box fabricated for aluminum framing.
 - 4. Rabbet Front and Strike: Provide on locksets for rabbeted meeting stiles.
- F. Bored Locks: BHMA A156.2; Grade 2; Series 4000.
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>Allegion plc</u>.
 - b. Arrow USA; an ASSA ABLOY Group company.
 - c. <u>Best Access Systems; Stanley Security Solutions, Inc.</u>
 - d. <u>DORMA USA, Inc</u>.

2.7 AUXILIARY LOCKS

A. Bored Auxiliary Locks: BHMA A156.36: Grade 2; with strike that suits frame.

- 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>Allegion plc</u>.
 - b. <u>Arrow USA; an ASSA ABLOY Group company</u>.
 - c. <u>Best Access Systems; Stanley Security Solutions, Inc</u>.
 - d. <u>Medeco Security Locks; an ASSA ABLOY Group company</u>.

2.8 ELECTRIC STRIKES

- A. Electric Strikes: BHMA A156.31; Grade 2; with faceplate to suit lock and frame.
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>Adams Rite Manufacturing Co; an ASSA ABLOY Group company</u>.
 - b. Dortronics Systems, Inc.
 - c. <u>Hager Companies</u>.
 - d. <u>Security Door Controls</u>.
 - e. <u>Stanley Commercial Hardware; a division of Stanley Security Solutions</u>.

2.9 ELECTROMAGNETIC LOCKS

- A. Electromagnetic Locks: BHMA A156.23; electrically powered; with electromagnet attached to frame and armature plate attached to door; full-exterior or full-interior type, as required by application indicated.
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>Allegion plc</u>.
 - b. <u>DORMA USA, Inc</u>.
 - c. <u>Dortronics Systems, Inc</u>.
 - d. <u>Securitron Magnalock Corporation; an ASSA ABLOY Group company</u>.

2.10 EXIT LOCKS AND EXIT ALARMS

- A. Exit Locks and Alarms: BHMA A156.29, Grade 1.
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>Arrow USA; an ASSA ABLOY Group company</u>.
 - b. <u>Detex Corporation</u>.
 - c. <u>Precision Hardware, Inc.; a Stanley company</u>.
 - d. <u>SARGENT Manufacturing Company; ASSA ABLOY</u>.

2.11 SURFACE BOLTS

- A. Surface Bolts: BHMA A156.16.
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>Allegion plc</u>.
 - b. <u>Don-Jo Mfg., Inc</u>.
 - c. <u>Door Controls International, Inc</u>.
 - d. <u>Trimco</u>.

2.12 MANUAL FLUSH BOLTS

- A. Manual Flush Bolts: BHMA A156.16; minimum 3/4-inch throw; designed for mortising into door edge.
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>Allegion plc</u>.

- b. Don-Jo Mfg., Inc.
- c. <u>Door Controls International, Inc</u>.
- d. <u>Trimco</u>.

2.13 AUTOMATIC AND SELF-LATCHING FLUSH BOLTS

- A. Automatic and Self-Latching Flush Bolts: BHMA A156.16; minimum 3/4-inch throw; designed for mortising into door edge. Include wear plates.
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>Allegion plc</u>.
 - b. <u>Don-Jo Mfg., Inc</u>.
 - c. <u>Door Controls International, Inc</u>.
 - d. <u>Trimco</u>.

2.14 EXIT DEVICES AND AUXILIARY ITEMS

A. Exit Devices and Auxiliary Items: BHMA A156.3.

- 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>Adams Rite Manufacturing Co; an ASSA ABLOY Group company</u>.
 - b. <u>Allegion plc</u>.
 - c. <u>Detex Corporation</u>.
 - d. <u>Door Controls International, Inc</u>.
 - e. <u>DORMA USA, Inc</u>.
 - f. <u>Precision Hardware, Inc.; a Stanley company</u>.

2.15 LOCK CYLINDERS

- A. Lock Cylinders: Tumbler type, constructed from brass or bronze, stainless steel, or nickel silver. Provide cylinder from same manufacturer of locking devices.
- B. Construction Cores: Provide construction cores that are replaceable by permanent cores. Provide 10 construction master keys.

2.16 KEYING

- A. Keying System: Factory registered, complying with guidelines in BHMA A156.28, appendix. Provide one extra key blank for each lock. Incorporate decisions made in keying conference.
 - 1. Existing System:
 - a. Master key or grand master key locks to Owner's existing system.

B. Keys: Brass.

- 1. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:
 - a. Notation: "DO NOT DUPLICATE."

2.17 OPERATING TRIM

- A. Operating Trim: BHMA A156.6; stainless steel unless otherwise indicated.
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>Allegion plc</u>.
 - b. <u>Don-Jo Mfg., Inc</u>.
 - c. <u>Rockwood Manufacturing Company; an ASSA ABLOY Group company</u>.

d. <u>Trimco</u>.

2.18 ACCESSORIES FOR PAIRS OF DOORS

- A. Coordinators: BHMA A156.3; consisting of active-leaf, hold-open lever and inactive-leaf release trigger; fabricated from steel with nylon-coated strike plates; with built-in, adjustable safety release; and with internal override.
- B. Carry-Open Bars: BHMA A156.3; prevent the inactive leaf from opening before the active leaf; provide polished brass or bronze carry-open bars with strike plate for inactive leaves of pairs of doors unless automatic or self-latching bolts are used.
- C. Astragals: BHMA A156.22.

2.19 SURFACE CLOSERS

- A. Surface Closers: BHMA A156.4; rack-and-pinion hydraulic type with adjustable sweep and latch speeds controlled by key-operated valves and forged-steel main arm. Comply with manufacturer's written instructions for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>Allegion plc</u>.
 - b. DORMA USA, Inc.
 - c. Norton Door Controls; an ASSA ABLOY Group company.
 - d. <u>Stanley Commercial Hardware; a division of Stanley Security Solutions</u>.

2.20 CLOSER HOLDER RELEASE DEVICES

- A. Closer Holder Release Devices: BHMA A156.15; Grade 1; closer connected with separate or integral releasing and fire- or smoke-detecting devices. Door shall become self-closing on interruption of signal to release device. Automatic release is activated by smoke detection system or loss of power.
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>Allegion plc</u>.
 - b. <u>DORMA USA, Inc</u>.
 - c. <u>Norton Door Controls; an ASSA ABLOY Group company</u>.

2.21 MECHANICAL STOPS AND HOLDERS

- A. Wall- and Floor-Mounted Stops: BHMA A156.16.
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>Allegion plc</u>.
 - b. <u>Don-Jo Mfg., Inc</u>.
 - c. <u>Door Controls International, Inc</u>.
 - d. <u>Rockwood Manufacturing Company; an ASSA ABLOY Group company</u>.
 - e. <u>Trimco</u>.

2.22 ELECTROMAGNETIC STOPS AND HOLDERS

A. Electromagnetic Door Holders: BHMA A156.15, Grade 1; wall-mounted electromagnetic single unit with strike plate attached to swinging door; coordinated with fire detectors and interface with fire-alarm system for labeled fire-rated door assemblies.

- 1. <u>Manufacturers:</u> Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. <u>Allegion plc</u>.
 - b. <u>Architectural Builders Hardware Mfg., Inc</u>.
 - c. <u>DORMA USA, Inc</u>.

2.23 OVERHEAD STOPS AND HOLDERS

- A. Overhead Stops and Holders: BHMA A156.8.
 - Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. <u>Allegion plc</u>.
 - b. Architectural Builders Hardware Mfg., Inc.
 - c. <u>DORMA USA, Inc</u>.

2.24 DOOR GASKETING

1.

- A. Door Gasketing: BHMA A156.22; with resilient or flexible seal strips that are easily replaceable and readily available from stocks maintained by manufacturer.
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>Hager Companies</u>.
 - b. <u>National Guard Products, Inc</u>.
 - c. <u>Pemko Manufacturing Co</u>.
 - d. <u>Reese Enterprises, Inc</u>.
- B. Maximum Air Leakage: When tested according to ASTM E 283 with tested pressure differential of 0.3-inch wg, as follows:
 - 1. Smoke-Rated Gasketing: 0.3 cfm/sq. ft. of door opening.
 - 2. Gasketing on Single Doors: 0.3 cfm/sq. ft. of door opening.
 - 3. Gasketing on Double Doors: 0.50 cfm per foot of door opening.

2.25 THRESHOLDS

- A. Thresholds: BHMA A156.21; fabricated to full width of opening indicated.
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>Hager Companies</u>.
 - b. <u>National Guard Products, Inc</u>.
 - c. <u>Pemko Manufacturing Co</u>.
 - d. <u>Reese Enterprises, Inc</u>.

2.26 SLIDING DOOR HARDWARE

- A. Sliding Door Hardware: BHMA A156.14; consisting of complete sets including rails, hangers, supports, bumpers, floor guides, and accessories indicated.
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>Hager Companies</u>.
 - b. Johnson, L. E., Products, Inc.
 - c. <u>Stanley Commercial Hardware; a division of Stanley Security Solutions</u>.

2.27 METAL PROTECTIVE TRIM UNITS

- A. Metal Protective Trim Units: BHMA A156.6; fabricated from 0.050-inch-thick stainless steel; with manufacturer's standard machine or self-tapping screw fasteners.
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>Allegion plc</u>.
 - b. Don-Jo Mfg., Inc.
 - c. <u>Hager Companies</u>.
 - d. <u>Rockwood Manufacturing Company; an ASSA ABLOY Group company</u>.
 - e. <u>Trimco</u>.

2.28 AUXILIARY DOOR HARDWARE

- A. Auxiliary Hardware: BHMA A156.16.
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>Allegion plc</u>.
 - b. Don-Jo Mfg., Inc.
 - c. <u>Rockwood Manufacturing Company; an ASSA ABLOY Group company</u>.
 - d. <u>Trimco</u>.

2.29 AUXILIARY ELECTRIFIED DOOR HARDWARE

- A. Auxiliary Electrified Door Hardware:
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>Allegion plc</u>.
 - b. <u>DORMA USA, Inc</u>.
 - c. <u>Securitron Magnalock Corporation; an ASSA ABLOY Group company</u>.

2.30 FINISHES

A. Provide finishes complying with BHMA A156.18 as indicated in door hardware schedule.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Mounting Heights: Mount door hardware units at heights to comply with the following unless otherwise indicated or required to comply with governing regulations.
 - 1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
 - 2. Custom Steel Doors and Frames: HMMA 831.
 - 3. Wood Doors: DHI's "Recommended Locations for Architectural Hardware for Wood Flush Doors."
- B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work. Do not install surface-mounted items until finishes have been completed on substrates involved.
- C. Hinges: Install types and in quantities indicated in door hardware schedule, but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.

- D. Intermediate Offset Pivots: Where offset pivots are indicated, provide intermediate offset pivots in quantities indicated in door hardware schedule, but not fewer than one intermediate offset pivot per door and one additional intermediate offset pivot for every 30 inches of door height greater than 90 inches.
- E. Lock Cylinders: Install construction cores to secure building and areas during construction period.
 - 1. Replace construction cores with permanent cores as directed by Owner.
 - 2. Furnish permanent cores to Owner for installation.
 - 3. Key Control Cabinet: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.Boxed Power Supplies: Locate power supplies as indicated or, if not indicated, above accessible ceilings or in equipment room. Verify location with Architect.
 - 1. Configuration: Provide one power supply for each door opening with electrified door hardware.
- G. Thresholds: Set thresholds for exterior doors and other doors indicated in full bed of sealant complying with requirements specified in Section 079200 "Joint Sealants."
- H. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they will impede traffic.
- I. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.
 1. Do not notch perimeter gasketing to install other surface-applied hardware.
- J. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.
- K. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

3.2 ADJUSTING

A. Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.3 DOOR HARDWARE SCHEDULE

A. See Drawings for Door Hardware Schedule.

END OF SECTION 087100

SECTION 088000 - GLAZING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes:
 - 1. Glass for doors, interior borrowed lites, and storefront framing.
 - 2. Glazing sealants and accessories.

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.

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 square.
- C. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.
- D. Delegated-Design Submittal: For glass 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. Preconstruction adhesion and compatibility test report.

1.5 WARRANTY

- A. 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 the 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 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. JE Berkowitz, LP.
 - 2. Oldcastle Building Envelope[™].
 - 3. Pilkington North America.
 - 4. Vetrotech Saint-Gobain.

2.2 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Glazing shall withstand the following design loads within limits and under conditions indicated determined according to the International Building Code and ASTM E 1300.
 - 1. Design Wind Pressures: As indicated on Drawings.
 - 2. Design Snow Loads: As indicated on Drawings.
 - 3. Thickness of Patterned Glass: Base design of patterned glass on thickness at thinnest part of the glass.
 - 4. Differential Shading: Design glass to resist thermal stresses induced by differential shading within individual glass lites.
- B. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II.
- C. 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, according to NFRC 100 and based on LBL's WINDOW 5.2 computer program, expressed as Btu/sq. ft. x h x deg F.
 - 2. Solar Heat-Gain Coefficient and Visible Transmittance: Center-of-glazing values, according to NFRC 200 and based on LBL's WINDOW 5.2 computer program.
 - 3. Visible Reflectance: Center-of-glazing values, according to NFRC 300.

2.3 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. GANA Publications: "Glazing Manual."
 - 2. AAMA Publications: AAMA GDSG-1, "Glass Design for Sloped Glazing," and AAMA TIR A7, "Sloped Glazing Guidelines."
 - 3. IGMA Publication for Sloped Glazing: IGMA TB-3001, "Guidelines for Sloped Glazing."
 - 4. 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. 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 IGCC.
- D. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass that complies with performance requirements and is not less than the 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 is indicated, provide heat-strengthened float glass is indicated, provide fully tempered float glass.

2.4 GLASS PRODUCTS

A. Fully Tempered Float Glass: ASTM C 1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.

B. Ceramic-Coated Spandrel Glass: ASTM C 1048, Type I, Condition B, Quality-Q3.

2.5 INSULATING GLASS

- A. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified according to ASTM E 2190.
 - 1. Sealing System: Dual seals.
 - 2. Perimeter Spacer: Aluminum with powdered metal paint finish in color selected by Architect.
 - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) Technoform Glass Insulation NA, Inc.
 - 2) Thermix; a brand of Ensinger USA.

2.6 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.
- B. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 100/50, 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. Pecora Corporation.
 - c. Sika Corporation.
 - d. The Dow Chemical Company.
 - e. Tremco Incorporated.
- C. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 50, Use NT.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Dow Corning Corporation.
 - b. GE Construction Sealants; Momentive Performance Materials Inc.
 - c. Pecora Corporation.
 - d. Sika Corporation.
 - e. Tremco Incorporated.
- D. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 25, Use NT.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Dow Corning Corporation.
 - b. GE Construction Sealants; Momentive Performance Materials Inc.
 - c. Pecora Corporation.
 - d. Sika Corporation.
 - e. Tremco Incorporated.
- E. Glazing Sealant: Acid-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 25, Use NT.

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

2.7 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 C 1281 and AAMA 800 for products indicated below:
 - 1. AAMA 804.3 tape, where indicated.

2.8 MISCELLANEOUS GLAZING MATERIALS

- A. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
- B. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.
- C. Spacers: Elastomeric blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
- D. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).
- E. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

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 .

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 according to 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. Apply heel bead of elastomeric sealant.
- F. 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.
- G. Apply cap bead of elastomeric sealant over exposed edge of tape.

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 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 by gasket manufacturer.
- E. Install gaskets so they protrude past face of glazing stops.

3.4 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 come into 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.

3.5 MONOLITHIC GLASS SCHEDULE

- A. Glass Type : Clear fully tempered float glass.
 - 1. Minimum Thickness: 6 mm.
 - 2. Safety glazing required.

3.6 INSULATING GLASS SCHEDULE

- A. Glass Type : Low-E-coated, clear insulating glass.
 - 1. Overall Unit Thickness: 1 inch.
 - 2. Minimum Thickness of Each Glass Lite: 6 mm.
 - 3. Outdoor Lite: Fully tempered float glass.
 - 4. Interspace Content: Argon.
 - 5. Indoor Lite: Fully tempered float glass.
 - 6. Low-E Coating: Pyrolytic or sputtered on second or third surface.
 - 7. Winter Nighttime U-Factor: 0.28 maximum.
 - 8. Summer Daytime U-Factor: 0.28 maximum.
 - 9. Solar Heat Gain Coefficient: 0.40 maximum.
 - 10. Safety glazing required.

END OF SECTION 088000

SECTION 089119 - FIXED LOUVERS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes fixed extruded-aluminum louvers.
- 1.2 ACTION SUBMITTALS
 - A. Product Data: For each type of product.
 - For louvers specified to bear AMCA seal, include printed catalog pages showing specified models with appropriate AMCA Certified Ratings Seals.
 - B. Shop Drawings: For louvers and accessories. Include plans, elevations, sections, details, and attachments to other work. Show frame profiles and blade profiles, angles, and spacing.
 - C. Samples: For each type of metal finish required.
 - D. Delegated-Design Submittal: For louvers indicated to comply with structural performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.3 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: Based on tests performed according to AMCA 500-L.
- B. Sample warranties.

1.4 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel according to the following:
 - 1. AWS D1.2/D1.2M.
 - 2. AWS D1.3/D1.3M.
 - 3. AWS D1.6/D1.6M.

1.5 WARRANTY

- A. Special Finish Warranty: Manufacturer agrees to repair or replace components on which finishes fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 FIXED EXTRUDED-ALUMINUM LOUVERS

- A. Horizontal Nondrainable-Blade Louver:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Airolite Company, LLC (The).
 - b. Greenheck Fan Corporation.
 - c. Nystron, Inc.
 - d. Reliable Products, Inc.
 - e. Ruskin Company.

- 2. Louver Depth: 4 inches.
- 3. Blade Profile: Plain blade without center baffle.
- 4. Frame and Blade Nominal Thickness: Not less than 0.060 inch for blades and 0.080 inch for frames.
- 5. Louver Performance Ratings:
 - a. Free Area: Not less than 8.0 sq. ft. for 48-inch-wide by 48-inch-high louver.
 - b. Point of Beginning Water Penetration: Not less than 800 fpm.
 - c. Air Performance: Not more than 0.10-inch wg static pressure drop at 700-fpm free-area intake velocity.

2.2 ACCESSORIES

A. Insulated Aluminum Blank-Off Panels: 0.040 aluminum sheet, 2 inch aluminum skin insulated core, factory installed with removable fasteners and neoprene gaskets.

2.3 LOUVER SCREENS

- A. General: Provide screen at each exterior louver.
 - 1. Screen Location for Fixed Louvers: Interior face.
 - 2. Screening Type: Bird screening and Insect screening.
- B. Louver Screen Frames: Same type and form of metal as indicated for louver to which screens are attached.
- C. Louver Screening for Aluminum Louvers:
 - 1. Bird Screening: Aluminum, 1/2-inch-square mesh, 0.063-inch wire.
 - 2. Insect Screening: Stainless steel, 18-by-18 mesh, 0.009-inch wire.

2.4 MATERIALS

- A. Aluminum Extrusions: ASTM B 221, Alloy 6063-T5, T-52, or T6.
- B. Aluminum Sheet: ASTM B 209, Alloy 3003 or 5005, with temper as required for forming, or as otherwise recommended by metal producer for required finish.
- C. Fasteners: Use types and sizes to suit unit installation conditions.
 - 1. Use hex-head or Phillips pan-head screws for exposed fasteners unless otherwise indicated.
 - 2. For fastening aluminum, use aluminum or 300 series stainless-steel fasteners.
 - 3. For color-finished louvers, use fasteners with heads that match color of louvers.
- D. Postinstalled Fasteners for Concrete and Masonry: Torque-controlled expansion anchors, fabricated from stainless-steel components, with allowable load or strength design capacities calculated according to ICC-ES AC193 and ACI 318 greater than or equal to the design load, as determined by testing according to ASTM E 488/E 488M conducted by a qualified testing agency.
- E. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M.

2.5 FABRICATION

- A. Fabricate frames, including integral sills, to fit in openings of sizes indicated, with allowances made for fabrication and installation tolerances, adjoining material tolerances, and perimeter sealant joints.
- B. Join frame members to each other and to fixed louver blades with fillet welds concealed from view, threaded fasteners, or both, as standard with louver manufacturer unless otherwise indicated or size of louver assembly makes bolted connections between frame members necessary.
2.6 ALUMINUM FINISHES

A. High-Performance Organic Finish: Two-coat fluoropolymer finish complying with AAMA 2604 and containing not less than 50 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 1. Color and Gloss: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Locate and place louvers level, plumb, and at indicated alignment with adjacent work.
- B. Use concealed anchorages where possible. Provide brass or lead washers fitted to screws where required to protect metal surfaces and to make a weathertight connection.
- C. Provide perimeter reveals and openings of uniform width for sealants and joint fillers, as indicated.
- D. Protect unpainted galvanized- and nonferrous-metal surfaces that are in contact with concrete, masonry, or dissimilar metals from corrosion and galvanic action by applying a heavy coating of bituminous paint or by separating surfaces with waterproof gaskets or nonmetallic flashing.

3.2 ADJUSTING

A. Restore louvers damaged during installation and construction, so no evidence remains of corrective work. If results of restoration are unsuccessful, as determined by Architect, remove damaged units and replace with new units.

SECTION 092900 - GYPSUM BOARD

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:1. Interior gypsum board.

1.2 ACTION SUBMITTALS

- A. Product data.
- B. Shop Drawings: Show locations and installation of control and expansion joints, including plans, elevations, sections, details of components, and attachments to other work.
- C. Samples: For each texture finish indicated on same backing indicated for Work.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E119 by an independent testing agency.
- B. 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. American Gypsum.
 - b. CertainTeed; SAINT-GOBAIN.
 - c. Continental Building Products Inc.
 - d. Georgia-Pacific Gypsum LLC.
 - e. Gold Bond Building Products, LLC provided by National Gypsum Company.
 - f. USG Corporation.
- 2. Thickness: 1/2 inch.
- 3. Long Edges: Tapered and featured (rounded or beveled) for prefilling.
- B. Gypsum Board, Type X: ASTM C1396/C1396M.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. American Gypsum.
 - b. CertainTeed; SAINT-GOBAIN.

- c. Continental Building Products Inc.
- d. Georgia-Pacific Gypsum LLC.
- e. Gold Bond Building Products, LLC provided by National Gypsum Company.
- f. USG Corporation.
- 2. Thickness: 5/8 inch.
- 3. Long Edges: Tapered and featured (rounded or beveled) for prefilling.
- C. Gypsum Ceiling Board: ASTM C1396/C1396M.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. American Gypsum.
 - b. CertainTeed; SAINT-GOBAIN.
 - c. Continental Building Products Inc.
 - d. Georgia-Pacific Gypsum LLC.
 - e. Gold Bond Building Products, LLC provided by National Gypsum Company.
 - 2. Thickness: 1/2 inch.
 - 3. Long Edges: Tapered.
- D. Abuse-Resistant Gypsum Board: ASTM C1396/C1396M gypsum board, tested according to ASTM C1629/C1629M.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. American Gypsum.
 - b. CertainTeed; SAINT-GOBAIN.
 - c. Continental Building Products Inc.
 - d. Georgia-Pacific Gypsum LLC.
 - e. Gold Bond Building Products, LLC provided by National Gypsum Company.
 - f. USG Corporation.
 - 2. Core: As indicated on Drawings.
 - 3. Surface Abrasion: ASTM C1629/C1629M, meets or exceeds Level 2 requirements.
 - 4. Indentation: ASTM C1629/C1629M, meets or exceeds Level 2 requirements.
 - 5. Soft-Body Impact: ASTM C1629/C1629M, meets or exceeds Level 2 requirements.
 - 6. Long Edges: Tapered.
 - 7. Mold Resistance: ASTM D3273, score of 10 as rated according to ASTM D3274.
- E. Impact-Resistant Gypsum Board: ASTM C1396/C1396M gypsum board, tested according to ASTM C1629/C1629M.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. American Gypsum.
 - b. CertainTeed; SAINT-GOBAIN.
 - c. Continental Building Products Inc.
 - d. Georgia-Pacific Gypsum LLC.
 - e. Gold Bond Building Products, LLC provided by National Gypsum Company.
 - f. USG Corporation.
 - 2. Core: As indicated on Drawings.
 - 3. Surface Abrasion: ASTM C1629/C1629M, meets or exceeds Level 2 requirements.
 - 4. Indentation: ASTM C1629/C1629M, meets or exceeds Level 2 requirements.
 - 5. Soft-Body Impact: ASTM C1629/C1629M, meets or exceeds Level 2 requirements.
 - 6. Hard-Body Impact: ASTM C1629/C1629M, meets or exceeds Level 2 requirements according to test in Annex A1.
 - 7. Long Edges: Tapered.
 - 8. Mold Resistance: ASTM D3273, score of 10 as rated according to ASTM D3274.
- F. Mold-Resistant Gypsum Board: ASTM C1396/C1396M. With moisture- and mold-resistant core and paper surfaces.

- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. American Gypsum.
 - b. CertainTeed; SAINT-GOBAIN.
 - c. Continental Building Products Inc.
 - d. Georgia-Pacific Gypsum LLC.
 - e. Gold Bond Building Products, LLC provided by National Gypsum Company.
 - f. USG Corporation.
- 2. Core: As indicated on Drawings.
- 3. Long Edges: Tapered.
- 4. Mold Resistance: ASTM D3273, score of 10 as rated according to ASTM D3274.

2.4 SPECIALTY GYPSUM BOARD

- A. Gypsum Board, Type C: ASTM C1396/C1396M. Manufactured to have increased fire-resistive capability.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. American Gypsum.
 - b. CertainTeed; SAINT-GOBAIN.
 - c. Continental Building Products Inc.
 - d. Georgia-Pacific Gypsum LLC.
 - e. Gold Bond Building Products, LLC provided by National Gypsum Company.
 - f. USG Corporation.
 - 2. Thickness: As required by fire-resistance-rated assembly indicated on Drawings.
 - 3. Long Edges: Tapered.

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.
- 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, rounded or beveled panel edges, and damaged surface areas, use settingtype taping compound.
 - 2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use drying-type, all-purpose 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.

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.
 - 1. Verify adhesives have a VOC content of 50 g/L or less.
 - 2. Verify adhesive complies with 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." Verify formaldehyde emissions do not exceed 9 mcg/cu. m or 7 ppb, whichever is less.
- C. Steel Drill Screws: ASTM C1002 unless otherwise indicated.
 - 1. Use screws complying with ASTM C954 for fastening panels to steel members from 0.033 to 0.112 inch thick.
 - 2. 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."
 - 1. Verify sealant has a VOC content of 250 g/L or less.
 - 2. Verify sealant complies with 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." Verify formaldehyde emissions do not exceed 9 mcg/cu. m or 7 ppb, whichever is less.
- F. Thermal Insulation: As specified in Section 072100 "Thermal Insulation."

PART 3 - EXECUTION

3.1 INSTALLATION 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-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.
- 3.2 FINISHING OF GYPSUM BOARD
 - A. Prefill open joints, rounded or beveled edges, and damaged surface areas.
 - B. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.

- C. 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.
 - Level 2: Panels that are substrate for tile.
 Level 4: At panel surfaces that will be explored.
 - 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."

3.3 **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.

SECTION 093013 - CERAMIC TILING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

- 1. Ceramic mosaic tile.
- 2. Porcelain tile.
- 3. Glazed wall tile.
- 4. Stone thresholds.
- 5. Tile backing panels.
- 6. Waterproof membrane for thinset applications.
- 7. Crack isolation membrane.
- 8. Metal edge strips.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples:

- 1. Each type and composition of tile and for each color and finish required. For ceramic mosaic tile in color blend patterns, provide samples of each color blend.
- 2. Assembled samples mounted on a rigid panel, with grouted joints, for each type and composition of tile and for each color and finish required.
- 3. Stone thresholds.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

1.4 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed for each type, composition, color, pattern, and size indicated.

1.5 QUALITY ASSURANCE

- A. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Build mockup of each type of floor tile installation.
 - 2. Build mockup of each type of wall tile installation.
 - 3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

PART 2 - PRODUCTS

2.1 PRODUCTS, GENERAL

A. ANSI Ceramic Tile Standard: Provide Standard-grade tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.

B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCNA installation methods specified in tile installation schedules, and other requirements specified.

2.2 TILE PRODUCTS

- A. Ceramic Tile Type: Porcelain tile.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - a. American Olean; a brand of Dal-Tile Corporation.
 - b. Crossville, Inc.
 - c. Daltile; a brand of Dal-Tile Corporation.
 - d. Marazzi USA; a brand of Dal-Tile Corporation.
 - e. Portobello America, Inc.
- B. Ceramic Tile Type: Porcelain tile, Factory-mounted mosaic tile.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings, Daltile, Haute Monde or product by one of the following:
 - a. American Marazzi Tile, Inc.
 - b. American Olean; a division of Dal-Tile Corporation.
 - c. Crossville, Inc.
 - d. Trinity Tile
 - e. Florida Tile, Inc.
 - f. Emser Tile
- C. Ceramic Tile Type: Glazed ceramic wall tile.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - a. American Olean; a brand of Dal-Tile Corporation.
 - b. Crossville, Inc.
 - c. Daltile; a brand of Dal-Tile Corporation.
 - d. Marazzi USA; a brand of Dal-Tile Corporation.
- D. Glass Tile Type: Factory-mounted mosaic glass tile.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings, or product by one of the following:
 - a. American Marazzi Tile, Inc.
 - b. American Olean; a division of Dal-Tile Corporation.
 - c. Crossville, Inc.
 - d. Trinity Tile
 - e. Florida Tile, Inc.
 - f. Emser Tile
- E.
- F. Ceramic Tile Type W-5: Factory-mounted mosaic tile.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings, or product by one of the following:
 - a. American Marazzi Tile, Inc.
 - b. American Olean; a division of Dal-Tile Corporation.
 - c. Crossville, Inc.
 - d. Trinity Tile
 - e. Florida Tile, Inc.
 - f. Emser Tile

2.3 THRESHOLDS

- A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.
 - 1. Bevel edges at 1:2 slope, with lower edge of bevel aligned with or up to 1/16 inch above adjacent floor surface. Finish bevel to match top surface of threshold. Limit height of threshold to 1/2 inch or less above adjacent floor surface.
- B. Marble Thresholds: ASTM C 503/C 503M, with a minimum abrasion resistance of 10 according to ASTM C 1353 or ASTM C 241/C 241M and with honed finish.
 - 1. Description: Match Architect's sample.

2.4 TILE BACKING PANELS

- A. Cementitious Backer Units: ANSI A118.9 or ASTM C 1325, Type A.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. C-Cure.
 - b. CertainTeed; SAINT-GOBAIN.
 - c. Custom Building Products.
 - d. James Hardie Building Products, Inc.
 - e. USG Corporation.
 - 2. Thickness: As indicated.

2.5 WATERPROOF MEMBRANE

- A. General: Manufacturer's standard product, selected from the following, that complies with ANSI A118.10 and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.
- B. Polyethylene Sheet: Polyethylene faced on both sides with fleece webbing; 0.008-inch nominal thickness.
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. Schluter Systems L.P; KERDI.
- C. Latex-Portland Cement Waterproof Mortar: Flexible, waterproof mortar consisting of cement-based mix and latex additive.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. ARDEX Americas; ARDEX 8+9TM Rapid Waterproofing and Crack Isolation Compound.
 - b. Boiardi Products Corporation; a QEP company; Elastiment 323 Cement Based Waterproofing, Anti-Fracture/Crack Suppression Membrane.
 - c. C-Cure; UltraCure 971.
 - d. H.B. Fuller Construction Products Inc. / TEC; Triple Flex Waterproofing, Crack Isolation Membrane and Motar.
 - e. MAPEI Corporation; Mapelastic[™] 315.
- D. Waterproofing and Tile-Setting Adhesive: One-part, fluid-applied product intended for use as both waterproofing and tile-setting adhesive in a two-step process.
 - Products: Subject to compliance with requirements, provide one of the following:
 - a. Boiardi Products Corporation; a QEP company; Elastiment 324 Waterproofing, Anti-Fracture/Crack Suppressant and Tile Setting Adhesive.
 - b. Bostik, Inc; Hydroment Ultra-Set Advanced.

1.

2.6 CRACK ISOLATION MEMBRANE

- A. General: Manufacturer's standard product, selected from the following, that complies with ANSI A118.12 for standard performance or high performance and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.
- B. Polyethylene Sheet: Polyethylene faced on both sides with fleece webbing; 0.008-inch nominal thickness.
 1. Products: Subject to compliance with requirements, provide the following:
 - a. Schluter Systems L.P; KERDI.
- C. Corrugated Polyethylene: Corrugated polyethylene with dovetail-shaped corrugations and with anchoring webbing on the underside; 3/16-inch nominal thickness.
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. Schluter Systems L.P; DITRA.

2.7 SETTING MATERIALS

1.

- A. Portland Cement Mortar (Thickset) Installation Materials: ANSI A108.02.
- B. Standard Dry-Set Mortar (Thinset): ANSI A118.1.
 - Products: Subject to compliance with requirements, provide one of the following:
 - a. Boiardi Products Corporation; a QEP company.
 - b. Bonsal American, an Oldcastle company.
 - c. Bostik, Inc.
 - d. C-Cure.
 - e. Custom Building Products.
 - f. H.B. Fuller Construction Products Inc. / TEC; TEC Full Set Plus TA 380/381.
 - g. LATICRETE SUPERCAP, LLC.
 - h. MAPEI Corporation.
 - 2. For wall applications, provide nonsagging mortar.
- C. Modified Dry-Set Mortar (Thinset): ANSI A118.4.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. ARDEX Americas.
 - b. Boiardi Products Corporation; a QEP company.
 - c. Bonsal American, an Oldcastle company; .
 - d. Bostik, Inc.
 - e. C-Cure.
 - f. Custom Building Products.
 - g. H.B. Fuller Construction Products Inc. / TEC;.
 - h. LATICRETE SUPERCAP, LLC.
 - i. MAPEI Corporation;.
 - 2. Provide prepackaged, dry-mortar mix to which only water must be added at Project site.
 - 3. For wall applications, provide nonsagging mortar.

2.8 GROUT MATERIALS

1

- A. Sand-Portland Cement Grout: ANSI A108.10, consisting of white or gray cement and white or colored aggregate as required to produce color indicated.
- B. Standard Cement Grout: ANSI A118.6.
 - Products: Subject to compliance with requirements, provide one of the following:
 - a. Boiardi Products Corporation; a QEP company.
 - b. Bonsal American, an Oldcastle company.
 - c. Bostik, Inc.

- d. C-Cure.
- e. Custom Building Products.
- f. H.B. Fuller Construction Products Inc. / TEC.
- g. LATICRETE SUPERCAP, LLC.
- h. MAPEI Corporation.
- C. High-Performance Tile Grout: ANSI A118.7.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. ARDEX Americas.
 - b. Boiardi Products Corporation; a QEP company.
 - c. Bonsal American, an Oldcastle company.
 - d. Bostik, Inc.
 - e. C-Cure.
 - f. Custom Building Products.
 - g. H.B. Fuller Construction Products Inc. / TEC.
 - h. LATICRETE SUPERCAP, LLC.
 - i. MAPEI Corporation.
 - 2. Polymer Type: Dry, redispersible form, prepackaged with other dry ingredients.

2.9 MISCELLANEOUS MATERIALS

- A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.
- B. Metal Edge Strips: Angle or L-shape, height to match tile and setting-bed thickness, metallic or combination of metal and PVC or neoprene base, designed specifically for flooring applications; half-hard brass white zinc alloy nickel silver stainless-steel, ASTM A 666, 300 Series exposed-edge material, as selected by Architect.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Schluter Systems L.P.; or a comparable product by one of the following:
 - a. Blanke Corporation.
 - b. Custom Building Products.
 - c. Dural USA, Inc.
 - d. Profilitec Corp.
 - e. Progress Profiles America Inc.
- C. Floor Sealer: Manufacturer's standard product for sealing grout joints and that does not change color or appearance of grout.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Bonsal American, an Oldcastle company.
 - b. Custom Building Products.
 - c. Summitville Tiles, Inc.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
 - 1. Verify that substrates for setting tile are firm; dry; clean; free of coatings that are incompatible with tile-setting materials, including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.

- 2. Verify that concrete substrates for tile floors installed with adhesives, bonded mortar bed, or thinset mortar comply with surface finish requirements in ANSI A108.01 for installations indicated.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with adhesives or thinset mortar with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.
- B. Where indicated, prepare substrates to receive waterproofing by applying a reinforced mortar bed that complies with ANSI A108.1A and is sloped 1/4 inch per foot toward drains.
- C. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.3 CERAMIC TILE INSTALLATION

- A. Comply with TCNA's "Handbook for Ceramic, Glass, and Stone Tile Installation" for TCNA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 series "Specifications for Installation of Ceramic Tile" that are referenced in TCNA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.
 - 1. For the following installations, follow procedures in the ANSI A108 series of tile installation standards for providing 95 percent mortar coverage:
 - a. Exterior tile floors.
 - b. Tile floors in wet areas.
 - c. Tile swimming pool decks.
 - d. Tile floors in laundries.
 - e. Tile floors consisting of tiles 8 by 8 inches or larger.
 - f. Tile floors consisting of rib-backed tiles.
- B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
- C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.
- D. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.
- E. Where accent tile differs in thickness from field tile, vary setting bed thickness so that tiles are flush.
- F. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.
- G. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:
 - 1. Ceramic Mosaic Tile: 1/16 inch.
 - 2. Glazed Wall Tile: 1/16 inch.

- 3. Porcelain Tile: 1/4 inch.
- H. Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.
- I. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles. 1.
 - Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.
- J. Stone Thresholds: Install stone thresholds in same type of setting bed as adjacent floor unless otherwise indicated.
- Κ. Metal Edge Strips: Install at locations indicated, where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with top of tile, and where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with or below top of tile and no threshold is indicated.
- L. Floor Sealer: Apply floor sealer to grout joints in tile floors according to floor-sealer manufacturer's written instructions. As soon as floor sealer has penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.
- M. Install tile backing panels and treat joints according to ANSI A108.11 and manufacturer's written instructions for type of application indicated.
- N. Install waterproofing to comply with ANSI A108.13 and manufacturer's written instructions to produce waterproof membrane of uniform thickness that is bonded securely to substrate.
- Install crack isolation membrane to comply with ANSI A108.17 and manufacturer's written instructions О. to produce membrane of uniform thickness that is bonded securely to substrate.

3.4 INTERIOR CERAMIC TILE INSTALLATION SCHEDULE

- Interior Floor Installations, Concrete Subfloor: A.
 - Ceramic Tile Installation: TCNA F113; thinset mortar. 1.
 - Ceramic Tile Installation: TCNA F122; thinset mortar on waterproof membrane. 2.
 - Ceramic Tile Installation: TCNA F125-Full, except where partial coverage is indicated; thinset 3. mortar on crack isolation membrane.
- Β. Interior Wall Installations, Wood or Metal Studs or Furring:
 - Ceramic Tile Installation: TCNA W243; thinset mortar on gypsum board. 1.
 - 2. Ceramic Tile Installation: TCNA W244C or TCNA W244F; thinset mortar on cementitious backer units or fiber-cement backer board.
 - 3. Ceramic Tile Installation: TCNA W245 or TCNA W248; thinset mortar on glass-mat, waterresistant gypsum backer board.

SECTION 095113 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes acoustical panels and exposed suspension systems for interior ceilings.
- 1.2 ACTION SUBMITTALS
 - A. Product Data: For each type of product.
 - B. Samples: For each exposed product and for each color and texture specified.

1.3 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Reflected ceiling plans, drawn to scale, and coordinated with each other, using input from installers of the items involved.
- B. Product test reports.
- C. Research reports.
- D. Field quality-control reports.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance data.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Flame-Spread Index: Class A according to ASTM E1264.
 - 2. Smoke-Developed Index: 50 or less.

2.2 ACOUSTICAL PANELS

- A. <u>Basis-of-Design Product</u>: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - 1. Armstrong Ceiling & Wall Solutions.
 - 2. CertainTeed; SAINT-GOBAIN.
 - 3. <u>USG Corporation</u>.
- B. Acoustical Panel Standard: Manufacturer's standard panels according to ASTM E1264.
- 2.3 METAL SUSPENSION SYSTEM
 - A. <u>Basis-of-Design Product:</u> Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - 1. Armstrong Ceiling & Wall Solutions.
 - 2. <u>CertainTeed; SAINT-GOBAIN</u>.

3. <u>USG Corporation</u>.

B. Metal Suspension-System Standard: Manufacturer's standard, direct-hung, metal suspension system and accessories according to ASTM C635/C635M.

2.4 ACCESSORIES

A. Attachment Devices: Size for five times the design load indicated in ASTM C635/C635M, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.

2.5 METAL EDGE MOLDINGS AND TRIM

- A. <u>Basis-of-Design Product:</u> Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - 1. Armstrong Ceiling & Wall Solutions.
 - 2. <u>CertainTeed; SAINT-GOBAIN</u>.
 - 3. <u>USG Corporation</u>.
- B. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension-system runners.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders unless otherwise indicated.
- B. Layout openings for penetrations centered on the penetrating items.
- 3.2 INSTALLATION
 - A. Install acoustical panel ceilings according to ASTM C636/C636M and manufacturer's written instructions.
 - B. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.
 - 1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.
 - 2. Do not use exposed fasteners, including pop rivets, on moldings and trim.
 - 3. Arrange directionally patterned acoustical panels as follows:
 - a. As indicated on reflected ceiling plans.

SECTION 096513 - RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Resilient base.
 - 2. Resilient molding accessories.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each exposed product and for each color and texture specified.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. FloorScore Compliance: Resilient base and stair accessories shall comply with requirements of FloorScore Certification.

2.2 VINYL BASE

- A. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - 1. <u>Armstrong World Industries, Inc</u>.
 - 2. <u>Flexco</u>.
 - 3. <u>Roppe Corporation, USA</u>.
- B. Product Standard: ASTM F 1861, Type TV (vinyl, thermoplastic).
 - 1. Group: I (solid, homogeneous) or II (layered).
 - 2. Style and Location:
 - a. Style A, Straight: Provide in areas with carpet.
 - b. Style B, Cove: Provide in areas with resilient floor coverings.
- C. Minimum Thickness: 0.125 inch.
- D. Height: As indicated on Drawings.
- E. Lengths: Cut lengths 48 inches long or coils in manufacturer's standard length.
- F. Outside Corners: Job formed or preformed.
- G. Inside Corners: Job formed or preformed.
- H. Colors and Patterns: As selected by Architect from full range of industry colors.

2.3 VINYL MOLDING ACCESSORY

- A. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - 1. <u>Armstrong World Industries, Inc</u>.
 - 2. Burke Mercer Flooring Products; a division of Burke Industries Inc.
 - 3. <u>Flexco</u>.

- 4. Musson Rubber Co.
- 5. <u>Roppe Corporation, USA</u>.
- B. Profile and Dimensions: As indicated.
- C. Locations: Provide vinyl molding accessories in areas indicated .
- D. Colors and Patterns: As selected by Architect from full range of industry colors.
- 2.4 INSTALLATION MATERIALS
 - A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by resilient-product manufacturer for applications indicated.
 - B. Adhesives: Water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.
 - 1. <u>Adhesives shall have a VOC</u> content of 50 g/L or less.
 - C. Stair-Tread Nose Filler: Two-part epoxy compound recommended by resilient stair-tread manufacturer to fill nosing substrates that do not conform to tread contours.
 - D. Floor Polish: Provide protective, liquid floor-polish products recommended by resilient stair-tread manufacturer.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.
- B. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
- C. Do not install resilient products until materials are the same temperature as space where they are to be installed.
- D. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient products.
- 3.2 RESILIENT BASE INSTALLATION
 - A. Comply with manufacturer's written instructions for installing resilient base.
 - B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.
 - C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.
 - D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
 - E. Do not stretch resilient base during installation.

- F. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.
- G. Preformed Corners: Install preformed corners before installing straight pieces.
- H. Job-Formed Corners:
 - 1. Outside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 3 inches in length.
 - a. Form without producing discoloration (whitening) at bends.
 - 2. Inside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 3 inches in length.
 - a. Miter or cope corners to minimize open joints.

3.3 RESILIENT ACCESSORY INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient accessories.
- B. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of floor covering that would otherwise be exposed.

3.4 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.
- B. Cover resilient products subject to wear and foot traffic until Substantial Completion.

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.
- 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.
- B. <u>Verify flooring products comply with</u> the 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." Verify formaldehyde emissions do not exceed 16.5 mcg/cu. m or 13.5 ppb, whichever is less.

2.2 SOLID VINYL FLOOR TILE

- A. <u>Basis-of-Design Product</u>: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - 1. <u>American Biltrite</u>.
 - 2. <u>Armstrong Flooring, Inc</u>.
 - 3. <u>Congoleum Flooring</u>.
 - 4. <u>Gerflor USA</u>.
 - 5. <u>Mannington Mills, Inc</u>.
 - 6. Polyflor Inc.
 - 7. <u>Roppe Corporation</u>.
 - 8. Shaw Industries Group, Inc.; Berkshire Hathaway Company.
 - 9. <u>VPI Corporation</u>.
- B. Tile Standard: ASTM F1700.

- 1. Class: As indicated by product designations.
- C. Thickness: As indicated.
- D. Size: As indicated.
- E. Colors and Patterns: As indicated by manufacturer's designations.

2.3 RUBBER FLOOR TILE

- A. <u>Basis-of-Design Product</u>: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - 1. American Biltrite.
 - 2. <u>Mannington Mills, Inc</u>.
 - 3. <u>Roppe Corporation</u>.
- B. Tile Standard: ASTM F1344,.
- C. Hardness: Manufacturer's standard hardness, measured using Shore, Type A durometer according to ASTM D2240.
- D. Wearing Surface: As indicated by manufacturer's designations.
 1. Molded-Pattern Figure: As indicated by manufacturer's designations.
- E. Thickness: As indicated.
- F. Size: As indicated.
- G. Colors and Patterns: As indicated by manufacturer's designations.

2.4 VINYL COMPOSITION FLOOR TILE

- A. <u>Basis-of-Design Product</u>: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - 1. <u>American Biltrite</u>.
 - 2. <u>Armstrong Flooring, Inc</u>.
 - 3. <u>Congoleum Flooring</u>.
 - 4. <u>Johnsonite; a Tarkett company</u>.
- B. Tile Standard: ASTM F1066.
- C. Wearing Surface: As indicated.
- D. Thickness: 0.125 inch.
- E. Size: 12 by 12 inches.
- F. Colors and Patterns: As indicated by manufacturer's designations.

2.5 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.
 - 1. <u>Verify adhesives have a VOC</u> content of 50 g/L or less.
 - 2. <u>Verify adhesive complies with the</u> 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." Verify formaldehyde emissions do not exceed 9 mcg/cu. m or 7 ppb, whichever is less.
- C. Floor Polish: Provide protective, liquid floor-polish products recommended by floor tile manufacturer.

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 9 pH.
 - 4. Moisture Testing: Perform tests so that each test area does not exceed 1000 sq. ft., and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.
 - a. 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. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
- D. 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.
- E. 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 in pattern indicated.
- 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.
 Lay tiles in pattern of colors and sizes indicated.
- 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 knee and 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. 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.
- H. Floor Polish: Remove soil, adhesive, and blemishes from floor tile surfaces before applying liquid floor polish.
 - 1. Apply two coat(s).

SECTION 099114 - EXTERIOR PAINTING (MPI STANDARDS)

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Surface preparation and application of paint systems on exterior substrates.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
- B. Samples: For each type of topcoat product.
- C. Product List: Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in the Exterior Painting Schedule to cross-reference paint systems specified in this Section. Include color designations.

1.3 QUALITY ASSURANCE

- A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
 - 1. Architect will select one surface to represent surfaces and conditions for application of each paint system.
 - a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft..
 - b. Other Items: Architect will designate items or areas required.
 - 2. Final approval of color selections will be based on mockups.
 - a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. <u>Basis-of-Design Product:</u> Subject to compliance with requirements, provide <u>Sherwin-Williams Company</u> (The); or a comparable products by one of the following:
 - 1. <u>Benjamin Moore & Co</u>.
 - 2. <u>McCormick Paints</u>.
 - 3. Pratt & Lambert.
 - 4. <u>Valspar Corporation (The)</u>.
- B. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to products listed in the Exterior Painting Schedule for the paint category indicated.

2.2 PAINT PRODUCTS

A. MPI Standards: Provide products complying with MPI standards indicated and listed in its "MPI Approved Products List."

- B. Material Compatibility:
 - 1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 - 2. For each coat in a paint system, provide products recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.
- C. Colors: As selected by Architect from manufacturer's full range or as indicated in a color schedule.

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 in "MPI Manual" applicable to substrates and paint systems indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
 - 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.

3.3 INSTALLATION

- A. Apply paints in accordance with manufacturer's written instructions and recommendations in "MPI Manual."
- 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.

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, 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 EXTERIOR PAINTING SCHEDULE

- A. Steel and Iron Substrates:
 - 1. Alkyd System MPI EXT 5.1D:
 - a. Shop Prime Coat: Shop primer specified in Section where substrate is specified.

- b. Intermediate Coat: Exterior, alkyd enamel, matching topcoat.
- c. Gloss Topcoat: Alkyd, exterior, gloss (MPI Gloss Level 6), MPI #9.
- B. Galvanized-Metal Substrates:
 - 1. Alkyd System MPI EXT 5.3B:
 - a. Prime Coat: Primer, galvanized, cementitious, MPI #26.
 - b. Intermediate Coat: Exterior, alkyd enamel, matching topcoat.
 - c. Gloss Topcoat: Alkyd, exterior, gloss (MPI Gloss Level 6), MPI #9.
- C. Plastic Trim Fabrication Substrates:
 - 1. Latex System MPI EXT 6.8A:
 - a. Water-Based Prime Coat: Primer, bonding, water based, MPI #17.
 - b. Intermediate Coat: Latex, exterior, matching topcoat.
 - c. Semigloss Topcoat: Latex, exterior, semigloss (MPI Gloss Level 5), MPI #11.

SECTION 099124 - INTERIOR PAINTING (MPI STANDARDS)

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes surface preparation and the application of paint systems on interior substrates.
- 1.2 ACTION SUBMITTALS
 - A. Product Data: For each type of product. Include preparation requirements and application instructions.
 - 1. Include printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
 - B. Samples: For each type of topcoat product.
 - C. Product List: Use same designations indicated on Drawings and in the Interior Painting Schedule to crossreference 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.
 - 1. Architect will select one surface to represent surfaces and conditions for application of each paint system.
 - a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft..
 - b. Other Items: Architect will designate items or areas required.
 - 2. Final approval of color selections will be based on mockups.
 - a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. <u>Basis-of-Design Product:</u> Subject to compliance with requirements, provide <u>Sherwin-Williams Company</u> (<u>The</u>); or a comparable products by one of the following:
 - 1. <u>Benjamin Moore & Co</u>.
 - 2. McCormick Paints.
 - 3. Pratt & Lambert.
 - 4. <u>Valspar Corporation (The)</u>.
- B. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to products listed in the Interior Painting Schedule for the paint category indicated.
- 2.2 PAINT, GENERAL
 - A. MPI Standards: Products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products List."
 - B. 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.
- C. <u>VOC Content</u>: For field applications inside the building, verify wall paints comply with VOC content limits of authorities having jurisdiction and the following VOC content limits:
 - 1. Interior Flat Latex Wall Paint: 50 g/L.
 - 2. Interior Nonflat Latex Wall Paint: 150 g/L.
- D. VOC Emissions: For field applications inside the building, verify wall paints contain no more than half of the chronic REL of VOCs when tested in accordance with 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." Verify building concentration of formaldehyde does not exceed half of the indoor recommended exposure limit, or 33 mcg/cu. m, and acetaldehyde concentration does not exceed 9 mcg/cu. m.
- E. Colors: As selected by Architect from manufacturer's full range or as indicated in a color schedule.
 1. Ten percent of surface area will be painted with deep tones.

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 in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
- 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 and to recommendations in "MPI Manual."
- 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. Metal conduit.

- b. Plastic conduit.
- c. Tanks that do not have factory-applied final finishes.
- 2. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces.

3.4 FIELD QUALITY CONTROL

- A. Dry-Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry-film thickness.
 - 1. Contractor shall touch up and restore painted surfaces damaged by testing.
 - 2. If test results show that dry-film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry-film thickness that complies with paint manufacturer's written recommendations.

3.5 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 INTERIOR PAINTING SCHEDULE

- A. Concrete Substrates, Traffic Surfaces:
 - 1. Alkyd Floor Enamel System, MPI INT 3.2B:
 - a. Prime Coat: Floor enamel, alkyd, matching topcoat.
 - b. Intermediate Coat: Floor enamel, alkyd, matching topcoat.
 - c. Topcoat: Floor enamel, alkyd, gloss (MPI Gloss Level 6), MPI #27.
 - 2. Water-Based Concrete Floor Sealer System, MPI INT 3.2G:
 - a. First Coat: Sealer, water based, for concrete floors, matching topcoat.
 - b. Topcoat: Sealer, water based, for concrete floors, MPI #99.
- B. Steel Substrates:

1.

- 1. Alkyd over Shop-Applied Quick-Drying Shop Primer System, MPI INT 5.1W:
 - a. Prime Coat: Primer, quick dry, for shop application, MPI #275.
 - b. Intermediate Coat: Alkyd, interior, matching topcoat.
 - c. Topcoat: Alkyd, interior, gloss (MPI Gloss Level 6), MPI #48.
- C. Wood Substrates: Wood trim and Doors.
 - Institutional Low-Odor/VOC Latex System, MPI INT 6.3V:
 - a. Prime Coat: Primer, latex, for interior wood, MPI #39.
 - b. Intermediate Coat: Latex, interior, institutional low odor/VOC, matching topcoat.
 - c. Topcoat: Latex, interior, institutional low odor/VOC, semigloss (MPI Gloss Level 5), MPI #147.
- D. Gypsum Board Substrates:

- 1. Institutional Low-Odor/VOC Latex System, MPI INT 9.2M:
 - a. Prime Coat: Primer sealer, interior, institutional low odor/VOC, MPI #149.
 - b. Intermediate Coat: Latex, interior, institutional low odor/VOC, matching topcoat.
 - c. Topcoat (Ceilings, except Dwelling Unit Kitchens & Baths): Latex, interior, institutional low odor/VOC, flat (MPI Gloss Level 1), MPI #143.
 - d. Topcoat (Typical wall surfaces, except as otherwise indicated): Latex, interior, institutional low odor/VOC (MPI Gloss Level 3), MPI #145.
 - e. Topcoat (Dwelling Unit Kitchens & Baths): Latex, interior, institutional low odor/VOC, semigloss (MPI Gloss Level 5), MPI #147.

SECTION 101419 - DIMENSIONAL LETTER SIGNAGE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:1. Cast dimensional characters.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For signs.
 - 1. Include fabrication and installation details and attachments to other work.
 - 2. Show sign mounting heights, locations of supplementary supports to be provided by other installers, and accessories.
 - 3. Show message list, typestyles, graphic elements, and layout for each sign.
- C. Samples: For each exposed product and for each color and texture specified.

1.3 INFORMATIONAL SUBMITTALS

- A. Sample warranty.
- 1.4 CLOSEOUT SUBMITTALS
 - A. Maintenance data.
- 1.5 WARRANTY
 - A. Special Warranty: Manufacturer agrees to repair or replace components of signs 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 DIMENSIONAL CHARACTERS

- A. Cast Characters: Characters with uniform faces, sharp corners, and precisely formed lines and profiles, and as follows:
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - a. <u>A.R.K. Ramos</u>.
 - b. <u>ACE Sign Systems, Inc</u>.
 - c. ASI Sign Systems, Inc.
 - d. <u>Cosco</u>.
 - e. <u>Gemini Incorporated</u>.
 - f. <u>Matthews International Corporation; Bronze Division</u>.
 - g. <u>Metal Arts</u>.
 - h. <u>Metallic Arts</u>.
 - i. <u>Southwell Company (The)</u>.
 - 2. Character Material: Cast aluminum.
 - 3. Character Height: As indicated on Drawings.

- 4. Finishes:
 - a. Integral Aluminum Finish: Anodized color as selected by Architect from full range of industry colors and color densities.
 - b. Baked-Enamel or Powder-Coat Finish: Manufacturer's standard, in color as selected by Architect from manufacturer's full range.
- 5. Mounting: Concealed studs.

2.2 ACCESSORIES

- A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signs, noncorrosive and compatible with each material joined, and complying with the following:
 - 1. Use concealed fasteners and anchors unless indicated to be exposed.
 - 2. For exterior exposure, furnish stainless-steel devices unless otherwise indicated.
 - 3. Exposed Metal-Fastener Components, General:
 - a. Fabricated from same basic metal and finish of fastened metal unless otherwise indicated.
 - 4. Sign Mounting Fasteners:
 - a. Concealed Studs: Concealed (blind), threaded studs welded or brazed to back of sign material, screwed into back of sign assembly, or screwed into tapped lugs cast integrally into back of cast sign material, unless otherwise indicated.
 - b. Projecting Studs: Threaded studs with sleeve spacer, welded or brazed to back of sign material, screwed into back of sign assembly, or screwed into tapped lugs cast integrally into back of cast sign material, unless otherwise indicated.
- B. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M.

2.3 FABRICATION

- A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.
 - 1. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.
 - 2. Provide welds and brazes behind finished surfaces without distorting or discoloring exposed side. Clean exposed welded and brazed connections of flux, and dress exposed and contact surfaces.
 - 3. Conceal connections if possible; otherwise, locate connections where they are inconspicuous.
 - 4. Internally brace dimensional characters for stability, to meet structural performance loading without oil-canning or other surface deformation, and for securing fasteners.
 - 5. Provide rabbets, lugs, and tabs necessary to assemble components and to attach to existing work. Drill and tap for required fasteners. Use concealed fasteners where possible; use exposed fasteners that match sign finish.
 - 6. Castings: Fabricate castings free of warp, cracks, blowholes, pits, scale, sand holes, and other defects that impair appearance or strength. Grind, wire brush, sandblast, and buff castings to remove seams, gate marks, casting flash, and other casting marks before finishing.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.
 - 1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
 - 2. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.
 - 3. Corrosion Protection: Coat concealed surfaces of exterior aluminum in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.

B. Mounting Methods:

- 1. Concealed Studs: Using a template, drill holes in substrate aligning with studs on back of sign. Remove loose debris from hole and substrate surface.
 - a. Masonry Substrates: Fill holes with adhesive. Leave recess space in hole for displaced adhesive. Place sign in position and push until flush to surface, embedding studs in holes. Temporarily support sign in position until adhesive fully sets.
 - b. Thin or Hollow Surfaces: Place sign in position and flush to surface, install washers and nuts on studs projecting through opposite side of surface, and tighten.
- 2. Projecting Studs: Using a template, drill holes in substrate aligning with studs on back of sign. Remove loose debris from hole and substrate surface.
 - a. Masonry Substrates: Fill holes with adhesive. Leave recess space in hole for displaced adhesive. Place spacers on studs, place sign in position, and push until spacers are pinched between sign and substrate, embedding the stud ends in holes. Temporarily support sign in position until adhesive fully sets.
 - b. Thin or Hollow Surfaces: Place spacers on studs, place sign in position with spacers pinched between sign and substrate and install washers and nuts on stud ends projecting through opposite side of surface and tighten.
- 3. Through Fasteners: Drill holes in substrate using predrilled holes in sign as template. Countersink holes in sign if required. Place sign in position and flush to surface. Install through fasteners and tighten.
- 4. Back Bar and Brackets: Remove loose debris from substrate surface and install backbar or bracket supports in position, so that signage is correctly located and aligned.
- 5. Adhesive: Clean bond-breaking materials from substrate surface and remove loose debris. Apply linear beads or spots of adhesive symmetrically to back of sign and of suitable quantity to support weight of sign after cure without slippage. Keep adhesive away from edges to prevent adhesive extrusion as sign is applied and to prevent visibility of cured adhesive at sign edges. Place sign in position and push to engage adhesive. Temporarily support sign in position until adhesive fully sets.
- C. Remove temporary protective coverings and strippable films as signs are installed.

SECTION 101423.16 - ROOM-IDENTIFICATION PANEL SIGNAGE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes room-identification signs that are directly attached to the building.
- 1.2 ACTION SUBMITTALS
 - A. Product Data: For each type of product.
 - B. Shop Drawings: For room-identification signs.
 - 1. Include fabrication and installation details and attachments to other work.
 - 2. Show sign mounting heights, locations of supplementary supports to be provided by other installers, and accessories.
 - 3. Show message list, typestyles, graphic elements, including raised characters and Braille, and layout for each sign at least half size.
 - C. Samples: For each exposed product and for each color and texture specified.

1.3 INFORMATIONAL SUBMITTALS

- A. Sample warranty.
- 1.4 CLOSEOUT SUBMITTALS
 - A. Maintenance data.

1.5 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of signs 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. Accessibility Standard: Comply with applicable provisions in the USDOJ's "2010 ADA Standards for Accessible Design" the ABA standards of the Federal agency having jurisdiction and ICC A117.1.

2.2 ROOM-IDENTIFICATION SIGNS

- A. Room-Identification Sign: Sign system with smooth, uniform surfaces; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles; and as follows:
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Best Sign Systems, Inc.; ImPression or a comparable product by one of the following:
 - a. ASI Sign Systems, Inc.
 - b. Inpro Corporation.
 - c. Mohawk Sign Systems.
 - d. Nelson-Harkins Industries.
 - e. Vista System.

- 2. Laminated-Sheet Sign: Sandblasted polymer face sheet with raised graphics laminated to acrylic backing sheet to produce composite sheet.
 - a. Composite-Sheet Thickness: 0.25 inch.
 - b. Color(s): As selected by Architect from manufacturer's full range.
- 3. Sign-Panel Perimeter: Finish edges smooth.
 - a. Edge Condition: Beveled.
 - b. Corner Condition in Elevation: As indicated on Drawings.
- 4. Mounting: Manufacturer's standard method for substrates indicated with.

2.3 SIGN MATERIALS

A. Acrylic Sheet: ASTM D4802, category as standard with manufacturer for each sign, Type UVF (UV filtering).

2.4 ACCESSORIES

- A. Adhesive: As recommended by sign manufacturer.
 - 1. Verify adhesives have a VOC content of 70 g/L or less.
 - 2. Verify adhesive complies with 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." Verify formaldehyde emissions does not exceed 9 mcg/cu. m or 7 ppb, whichever is less.
- B. Two-Face Tape: Manufacturer's standard high-bond, foam-core tape, 0.045 inch thick, with adhesive on both sides.

2.5 FABRICATION

- A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.
 - 1. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.
 - 2. Conceal connections if possible; otherwise, locate connections where they are inconspicuous.
 - 3. Provide rabbets, lugs, and tabs necessary to assemble components and to attach to existing work. Drill and tap for required fasteners. Use concealed fasteners where possible; use exposed fasteners that match sign finish.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.
 - 1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
 - 2. Install signs so they do not protrude or obstruct according to the accessibility standard.
 - 3. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.
- B. Mounting Methods:
 - 1. Two-Face Tape: Clean bond-breaking materials from substrate surface and remove loose debris. Apply tape strips symmetrically to back of sign and of suitable quantity to support weight of sign without slippage. Keep strips away from edges to prevent visibility at sign edges. Place sign in position, and push to engage tape adhesive.

END OF SECTION 101423.16

SECTION 102113.19 - PLASTIC TOILET COMPARTMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Solid-plastic toilet compartments.
- B. Related Requirements:
 - 1. Section 061000 "Rough Carpentry" for blocking.
 - 2. Section 102800 "Toilet, Bath, and Laundry Accessories" for accessories mounted on toilet compartments.

1.2 ACTION SUBMITTALS

- A. Product data.
- B. Shop Drawings: Plans, elevations, sections, details, and attachment details.
- C. Samples: Manufacturer's standard color sheets, showing full range of available colors for each type of toilet compartment.
- D. Delegated Design Submittals: For grab bars mounted on toilet compartment panels, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
 - 1. Include structural design calculations indicating compliance with specified structural-performance requirements.
- 1.3 CLOSEOUT SUBMITTALS
 - A. Operation and maintenance data.

PART 2 - PRODUCTS

- 2.1 PERFORMANCE REQUIREMENTS
 - A. Fire Performance: Tested in accordance with, and pass the acceptance criteria of, NFPA 286.
 - B. Structural Performance: Where grab bars are mounted on toilet compartments, design panels to comply with the following requirements:
 - 1. Panels are able to withstand a concentrated load on grab bar of at least 250 lbf applied at any direction and at any point, without deformation of panel.
 - C. Regulatory Requirements: Comply with applicable provisions in the USDOJ's "2010 ADA Standards for Accessible Design", Uniform Federal Accessibility Standard (UFAS), and ICC A117.1 Insert accessibility regulation for toilet compartments designated as accessible.

2.2 SOLID-PLASTIC TOILET COMPARTMENTS

- A. <u>Manufacturers:</u> Subject to compliance with requirements, provide products by one of the following:
 - 1. <u>AJW Architectural Products</u>.
 - 2. <u>ASI Accurate Partitions</u>.
 - 3. <u>ASI Global Partitions</u>.
 - 4. <u>All American Metal Corp</u>.

- 5. <u>American Sanitary Partition Corporation</u>.
- 6. <u>General Partitions Mfg. Corp</u>.
- 7. <u>Hadrian Inc.; Zurn Industries, LLC</u>.
- 8. <u>Knickerbocker Partition Corporation</u>.
- 9. <u>Metpar Corp</u>.
- 10. <u>Partition Systems International of South Carolina (PSISC); Columbia Systems International of South Carolina LLC</u>.
- 11. Scranton Products.
- 12. <u>Weis/Robart Partitions, Inc</u>.
- B. Toilet-Enclosure Style: Overhead braced.
- C. Urinal-Screen Style: Wall hung.
- D. Door, Panel, and Pilaster Construction: Solid, high-density polyethylene (HDPE) material, not less than 1 inch thick, seamless, with eased edges, and with homogenous color throughout thickness of material.
 - 1. Heat-Sink Strip: Manufacturer's continuous, extruded-aluminum or stainless steel strip fastened to exposed bottom edges of solid-plastic components to hinder malicious combustion.
 - 2. Color: One color in each room as selected by Architect from manufacturer's full range.
- E. Urinal-Screen Construction: Matching panel construction.
- F. Pilaster Shoes: Manufacturer's standard design; stainless steel.
- G. Pilaster Sleeves (Caps): Manufacturer's standard design; stainless steel.
- H. Brackets (Fittings):
 - 1. Full-Height (Continuous) Type: Manufacturer's standard design; extruded aluminum or stainless steel.

2.3 HARDWARE AND ACCESSORIES

- A. Door Hardware and Accessories: Manufacturer's operating hardware and accessories. Mount with through bolts.
 - 1. Hinges:
 - a. Manufacturer's continuous, cam type that swings to a closed or partially open position, allowing emergency access by lifting door.
 - 1) Material, Continuous Hinge: Manufacturer's standard.
 - 2. Latch and Keeper: Manufacturer's surface-mounted latch unit, designed for emergency access, and with combination rubber-faced door strike and keeper. Provide units that comply with regulatory requirements for accessibility at toilet enclosures designated as accessible.
 - a. Material: Manufacturer's standard.
 - 3. Coat Hook: Manufacturer's combination hook and rubber-tipped bumper, sized to prevent inswinging door from hitting compartment-mounted accessories.
 - a. Material: Manufacturer's standard.
 - 4. Door Bumper: Manufacturer's rubber-tipped bumper at outswinging doors.
 - a. Material: Manufacturer's standard.
 - Door Pull: Manufacturer's unit at outswinging doors that complies with regulatory requirements for accessibility. Provide units on both sides of doors at toilet enclosures designated as accessible.
 a. Material: Manufacturer's standard.
- B. Overhead Bracing: Manufacturer's standard continuous, extruded-aluminum head rail with antigrip profile and in manufacturer's standard finish.
C. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel, finished to match items they are securing, with theft-resistant-type heads. Provide sex-type bolts for through-bolt applications. For concealed anchors, use stainless steel, hot-dip galvanized steel, or other rust-resistant, protective-coated steel compatible with related materials.

2.4 MATERIALS

- A. Aluminum Castings: ASTM B26/B26M.
- B. Aluminum Extrusions: ASTM B221.
- C. Stainless Steel Sheet: ASTM A240/A240M or ASTM A666, Type 304, stretcher-leveled standard of flatness.
- D. Stainless Steel Castings: ASTM A743/A743M.
- E. Zamac: ASTM B86, commercial zinc-alloy die castings.

2.5 FABRICATION

- A. Fabricate toilet compartment components to sizes indicated. Coordinate requirements and provide cutouts for through-partition toilet accessories where required for attachment of toilet accessories.
- B. Overhead-Braced Units: Manufacturer's standard corrosion-resistant supports, leveling mechanism, and anchors at pilasters and walls to suit floor and wall conditions. Provide shoes at pilasters to conceal supports and leveling mechanism.
- C. Door Size and Swings: Unless otherwise indicated, provide 24-inch-wide, inswinging doors for standard toilet enclosures and 36-inch-wide, inswinging doors with a minimum 32-inch-wide, clear opening for toilet enclosures designated as accessible.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Comply with manufacturer's written installation instructions. Install units rigid, straight, level, and plumb. Secure units in position with manufacturer's recommended anchoring devices.
 - 1. Maximum Clearances:
 - a. Pilasters and Panels or Screens: 1/2 inch.
 - b. Panels or Screens and Walls: 1 inch.
 - 2. Full-Height (Continuous) Brackets: Secure panels or screens to walls and to pilasters with fullheight brackets.
 - a. Locate bracket fasteners, so holes for wall anchors occur in masonry or tile joints.
 - b. Align brackets at pilasters with brackets at walls.
- B. Overhead-Braced Units: Secure pilasters to floor and level, plumb, and tighten. Set pilasters with anchors penetrating not less than 1-3/4 inches into structural floor unless otherwise indicated in manufacturer's written instructions. Secure continuous head rail to each pilaster with no fewer than two fasteners. Hang doors to align tops of doors with tops of panels and adjust, so tops of doors are parallel with overhead brace when doors are in closed position.
- C. Urinal Screens: Attach with anchoring devices to suit supporting structure. Set units level and plumb, rigid, and secured to resist lateral impact.

3.2 ADJUSTING

A. Hardware Adjustment: Adjust and lubricate hardware in accordance with hardware manufacturer's written instructions for proper operation. Set hinges on inswinging doors to hold doors open approximately 30 degrees from closed position when unlatched. Set hinges on outswinging doors to return doors to fully closed position.

END OF SECTION 102113.19

SECTION 102239 - FOLDING PANEL PARTITIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:1. Operable acoustical panel partitions.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For operable panel partitions.
 - 1. Include plans, elevations, sections, attachment details.
 - 2. Indicate stacking and operating clearances. Indicate location and installation requirements for hardware and track, blocking, and direction of travel.
 - 3. Include diagrams for power, signal, and control wiring.
- C. Samples: For each exposed product and for each color and texture specified.
- D. Delegated Design Submittals: For operable panel partitions.
 1. Include design calculations for seismic restraints that brace tracks to structure above.

1.3 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Reflected ceiling plans, drawn to scale and coordinated with each other, using input from installers of the items involved.
- B. Setting Drawings: For embedded items and cutouts required in other work, including support-beam, mounting-hole template.
- C. Product Certificates: For each type of operable panel partition.
- D. Product test reports.
- E. Sample warranty.
- 1.4 CLOSEOUT SUBMITTALS
 - A. Operation and maintenance data.
- 1.5 QUALITY ASSURANCE
 - A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
- 1.6 WARRANTY
 - A. Special Warranty: Manufacturer agrees to repair or replace components of operable panel partitions 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. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design seismic bracing of tracks to structure above.
- B. Acoustical Performance: Provide operable panel partitions tested by a qualified testing agency for the following acoustical properties in accordance with test methods indicated:
 - 1. Sound-Transmission Requirements: Operable panel partition assembly tested for laboratory sound-transmission loss performance in accordance with ASTM E90, determined by ASTM E413, and rated for not less than the STC indicated.
 - 2. Noise-Reduction Requirements: Operable panel partition assembly, identical to partition tested for STC, tested for sound-absorption performance in accordance with ASTM C423, and rated for not less than the NRC indicated.
- C. Fire-Test-Response Characteristics: Provide panels with finishes complying with one of the following as determined by testing identical products by a testing and inspecting agency acceptable to authorities having jurisdiction:
 - 1. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency.
 - a. Flame-Spread Index: 25 or less.
 - b. Smoke-Developed Index: 450 or less.
 - 2. Fire Growth Contribution: Complying with acceptance criteria of local code and authorities having jurisdiction when tested in accordance with NFPA 265 Method B Protocol or NFPA 286.
- D. Fire Resistance: Provide fire-rated operable panel partition assemblies complying with NFPA 80, based on testing in accordance with UL 10B for fire-rated door assemblies.
 - 1. Pass doors in fire-rated operable panel partition assemblies are to meet positive-pressure requirements.
- E. 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.

2.2 OPERABLE ACOUSTICAL PANELS

- A. Operable Acoustical Panel Partitions: Partition system, including panels, seals, finish facing, suspension system, operators, and accessories.
 - 1. <u>Basis-of-Design Product:</u> Subject to compliance with requirements, provide <u>Modernfold, Inc</u>; Acousti-Seal® Premier® Paired Panel or a comparable product by one of the following:
 - a. Advanced Equipment Corporation.
 - b. <u>KWIK-WALL Company</u>.
 - c. Moderco Inc.
- B. Panel Operation: Manually operated, paired panels.
- C. Panel Construction: As required to support panel from suspension components and with reinforcement for hardware attachment. Fabricate panels with tight hairline joints and concealed fasteners. Fabricate panels so finished in-place partition is rigid; level; plumb; aligned, with tight joints and uniform appearance; and free of bow, warp, twist, deformation, and surface and finish irregularities.
- D. Dimensions: Fabricate operable acoustical panel partitions to form an assembled system of dimensions indicated and verified by field measurements.
- E. STC: Not less than 47.

- F. Panel Materials:
 - 1. Steel Frame: Steel sheet, manufacturer's standard thickness.
 - 2. Steel Face/Liner Sheets: Tension-leveled steel sheet, manufacturer's standard thickness.
 - 3. Medium-Density Fiberboard: ANSI A208.2.
- G. Panel Closure: Manufacturer's standard.
- H. Hardware: Manufacturer's standard as required to operate operable panel partition and accessories; with decorative, protective finish.
- I. Finish Facing: Fabric wall covering.

2.3 SEALS

- A. Description: Seals that produce operable panel partitions complying with performance requirements and the following:
 - 1. Seals made from materials and in profiles that minimize sound leakage.
 - 2. Seals fitting tight at contact surfaces and sealing continuously between adjacent panels and between operable panel partition perimeter and adjacent surfaces, when operable panel partition is extended and closed.
- B. Horizontal Bottom Seals:
 - 1. Manufacturer's standard continuous-contact seal exerting uniform constant pressure on floor.
 - 2. Automatically Operated for Acoustical Panels: Extension and retraction of bottom seal automatically operated by movement of partition, with operating range not less than 2 inches between retracted seal and floor finish.

2.4 PANEL FINISH FACINGS

- A. Description: Finish facings for panels that comply with indicated fire-test-response characteristics and that are factory applied to operable panel partitions with appropriate backing, using mildew-resistant nonstaining adhesive as recommended by facing manufacturer's written instructions.
- B. Fabric Wall Covering: Manufacturer's standard fabric, from same dye lot, treated to resist stains.
 1. Color/Pattern: As selected by Architect from manufacturer's full range.
- C. Cap-Trimmed Edges: Protective perimeter-edge trim with tight hairline joints concealing edges of panel and finish facing.
- D. Trimless Edges: Fabricate exposed panel edges so finish facing wraps uninterrupted around panel, covering edge and resulting in an installed partition with facing visible on vertical panel edges, without trim, for minimal sightlines at panel-to-panel joints.

2.5 SUSPENSION SYSTEMS

- A. Tracks: Steel or aluminum mounted directly to overhead structural support, with adjustable steel hanger rods for overhead support, designed for operation, size, and weight of operable panel partition indicated. Size track to support partition operation and storage without damage to suspension system, operable panel partitions, or adjacent construction. Limit track deflection to no more than 0.10 inch between bracket supports. Provide a continuous system of track sections and accessories to accommodate configuration and layout indicated for partition operation and storage.
- B. Carriers: Trolley system as required for configuration type, size, and weight of partition and for easy operation; with ball-bearing wheels.

2.6 ACCESSORIES

- A. Storage Pocket Door: Full height at end of partition runs to conceal stacked partition; of same materials, finish, construction, thickness, and acoustical qualities as panels; complete with operating hardware and acoustical seals at soffit, floor, and jambs. Hinges in finish to match other exposed hardware.
 - 1. Manufacturer's standard method to secure storage pocket door in closed position.
- B. Work Surfaces: Quantities, placement, and size indicated.
 - 1. Surface: Porcelain steel marker/projection surface.
 - 2. Surface Color: As selected by Architect from manufacturer's full range.
- C. Chalk Tray and Eraser Pocket: Manufacturer's standard.

PART 3 - EXECUTION

- 3.1 INSTALLATION OF OPERABLE PARTITIONS
 - A. Install operable panel partitions and accessories after other finishing operations, including painting, have been completed in area of partition installation.
 - B. Broken, cracked, chipped, deformed, or unmatched panels are not acceptable.
 - C. Broken, cracked, deformed, or unmatched gasketing or gasketing with gaps at butted ends is not acceptable.
 - D. Light-Leakage Test: Illuminate one side of partition installation and observe vertical joints and top and bottom seals for voids. Adjust partitions for alignment and full closure of vertical joints and full closure along top and bottom seals.

3.2 ADJUSTING

- A. Adjust storage pocket doors to operate smoothly and easily, without binding or warping.
- B. Verify that safety devices are properly functioning.

3.3 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain operable panel partitions.

SECTION 102800 - TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Public-use washroom accessories.
 - 2. Underlavatory guards.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- 1.3 INFORMATIONAL SUBMITTALS
 - A. Sample warranty.
- 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: 15 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PUBLIC-USE WASHROOM ACCESSORIES

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or product by one of the following:
 - 1. American Specialties, Inc.
 - 2. Bobrick Washroom Equipment, Inc.
 - 3. Bradley Corporation.
 - 4. GAMCO Specialty Accessories; a division of Bobrick.
 - 5. Tubular Specialties Manufacturing, Inc.

2.2 CUSTODIAL ACCESSORIES

- A. Utility Shelf:
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or product by one of the following:
 - a. American Specialties, Inc.
 - b. Bradley Corporation.
 - c. Brey-Krause Manufacturing Co.
 - d. GAMCO Specialty Accessories; a division of Bobrick.
 - e. Tubular Specialties Manufacturing, Inc.
 - 2. Description: With exposed edges turned down not less than 1/2 inch and supported by two triangular brackets welded to shelf underside.
 - 3. Size: As indicated, 16 inches long by 6 inches deep.
 - 4. Material and Finish: Not less than nominal 0.05-inch-thick stainless steel, No. 4 finish (satin).

- B. Mop and Broom Holder:
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or product by one of the following:
 - a. American Specialties, Inc.
 - b. Bradley Corporation.
 - c. Brey-Krause Manufacturing Co.
 - d. GAMCO Specialty Accessories; a division of Bobrick.
 - e. Tubular Specialties Manufacturing, Inc.
 - 2. Description: Unit with shelf, hooks, holders, and rod suspended beneath shelf.
 - 3. Length: 36 inches.
 - 4. Hooks: Four.
 - 5. Mop/Broom Holders: Three, spring-loaded, rubber hat, cam type.
 - 6. Material and Finish: Stainless steel, No. 4 finish (satin).
 - a. Shelf: Not less than nominal 0.05-inch-thick stainless steel.
 - b. Rod: Approximately 1/4-inch-diameter stainless steel.

2.3 FABRICATION

A. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to Owner's representative.

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.
- B. Accessibility: Within Accessible Dwelling Units and Public Spaces, provide accessible accessories within the acceptable reach range of 46" A.F.F. to the highest element or control.
- C. Grab Bars: Install to withstand a downward load of at least 250 lbf, when tested according to ASTM F 446.

SECTION 104400 - FIRE PROTECTION SPECIALTIES

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submittals: Product Data.

PART 2 - PRODUCTS

2.1 FIRE-PROTECTION CABINETS

- A. Fire-Protection Cabinets: Enameled-steel, semi-recessed cabinets for fire extinguisher.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. JL Industries, Inc.; a division of the Activar Construction Products Group.
 - b. Larsens Manufacturing Company.
 - c. Nystrom.
- B. Cabinet Construction: Nonrated.
- C. Cabinet Material: Steel sheet.
 - 1. Trim Style: Square trim.
 - 2. Trim Material: Steel.
- D. Door Material: Steel.
 - 1. Door Style: Vertical duo.
 - 2. Door Glazing: Tempered float glass.
- E. Accessories: Identification lettering.
- F. Finishes:
 - 1. Manufacturer's standard baked-enamel paint for the following:
 - a. Exterior of cabinet, door, and trim except for those surfaces indicated to receive another finish.
 - b. Interior of cabinet and door.
 - 2. Steel: Baked enamel or powder coat.

2.2 FIRE EXTINGUISHERS AND BRACKETS

- A. Portable Fire Extinguishers: NFPA 10, listed and labeled for the type, rating, and classification of extinguisher.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Ansul by Johnson Controls Company.
 - b. JL Industries, Inc.; a division of the Activar Construction Products Group.
 - c. Kidde Residential and Commercial Division.
 - d. Larsens Manufacturing Company.
 - 2. Multipurpose Dry-Chemical Type: UL-rated 4-A:60-B:C, 10-lb nominal capacity, in enameledsteel container.
- B. Mounting Brackets: Manufacturer's standard steel, designed to secure fire extinguisher to wall or structure, of sizes required for fire extinguishers indicated, with plated or baked-enamel finish.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install cabinets at heights acceptable to authorities having jurisdiction.
- B. Identification: Apply vinyl lettering to cabinets at locations indicated.
- C. Install mounting brackets in locations indicated at heights acceptable to authorities having jurisdiction.
- D. Install fire extinguishers in mounting brackets and cabinets where indicated.

SECTION 113013 - RESIDENTIAL APPLIANCES

PART 1 - GENERAL

1.1 **SUMMARY**

- A. Section Includes:
 - Cooking appliances. 1.
 - 2. Kitchen exhaust ventilation.
 - Refrigeration appliances. 3.

1.2 ACTION SUBMITTALS

Product Data: For each type of product. A.

1.3 INFORMATIONAL SUBMITTALS

- A. Product certificates.
- В. Field quality-control reports.
- C. Sample warranties.
- 1.4 CLOSEOUT SUBMITTALS
 - Α. Operation and maintenance data.

1.5 WARRANTY

- Special Warranties: Manufacturer agrees to repair or replace residential appliances or components that Α. fail in materials or workmanship within specified warranty period.
 - Warranty Period: Two years from date of Substantial Completion. 1.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- Electrical Appliances: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and A. marked for intended location and application.
- 2.2 RANGES
 - Electric Range: Drop-in range with one oven(s) and complying with AHAM ER-1. A.
 - Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on 1 Drawings or comparable product by one of the following:
 - Electrolux Home Products (Frigidaire). a.
 - LG Electronics. b.
 - Maytag; a division of Whirlpool Corporation. Sears Brands LLC (Kenmore). c.
 - d.
 - Whirlpool Corporation. e.
 - Electric Burner Elements: Four coil-type burners. 2.
 - Anti-Tip Device: Manufacturer's standard. 3.
 - Provide appliances labeled as compliant with Americans with Disabilities Act (ADA). 4.

2.3 MICROWAVE OVENS

- A. Microwave Oven:
 - Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on 1. Drawings or comparable product by one of the following:
 - Electrolux Home Products (Frigidaire). a.
 - LG Electronics. b.
 - Maytag; a division of Whirlpool Corporation. c.
 - Sears Brands LLC (Kenmore). d.
 - Whirlpool Corporation. e.
 - Mounting: countertop. 2.
 - Capacity: 1.0 cu. ft.. 3.
 - Microwave Power Rating: Manufacturer's standard. 4.
 - Material: Manufacturer's standard. 5.

KITCHEN EXHAUST VENTILATION 2.4

- Overhead Exhaust Hood: A.
 - Basis-of-Design Product: Provide Denlar, Model 1030-D-WF-NFPA. 1
 - Type: Wall-mounted, exhaust-hood system. 2.
 - Exhaust Fan: Two-speed fan built into hood and with manufacturer's standard capacity. 3.
 - Venting: Vented to outside, as indicated on Drawings. a.
 - Finish: Stainless Steel. 4.
 - Provide remote switching in an accessible location to control dual-level lighting (if applicable) and 5. two-speed fan. Remote switching shall provide full control of all hood functions.

2.5 **REFRIGERATOR/FREEZERS**

- A. Refrigerator/Freezer:
 - Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on 1. Drawings or comparable product by one of the following:
 - Electrolux Home Products (Frigidaire). a.
 - LG Electronics. b.
 - Maytag; a division of Whirlpool Corporation. Sears Brands LLC (Kenmore). c.
 - d.
 - e. Whirlpool Corporation.
 - ENERGY STAR: Provide appliances that qualify for the EPA/DOE ENERGY STAR product-2. labeling program.

PART 3 - EXECUTION

3.1 **INSTALLATION**

- Α. Built-in Equipment: Securely anchor units to supporting cabinets or countertops with concealed fasteners. Verify that clearances are adequate for proper functioning and that rough openings are completely concealed.
- В. Freestanding Equipment: Place units in final locations after finishes have been completed in each area. Verify that clearances are adequate to properly operate equipment.
- C. Range Anti-Tip Device: Install at each range according to manufacturer's written instructions.

3.2 FIELD QUALITY CONTROL

Perform the following tests and inspections: A.

- 1. Perform visual, mechanical, and electrical inspection and testing for each appliance according to manufacturers' written recommendations. Certify compliance with each manufacturer's appliance-performance parameters.
- 2. Leak Test: After installation, test for leaks. Repair leaks and retest until no leaks exist.
- 3. Operational Test: After installation, start units to confirm proper operation.
- 4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and components.
- B. An appliance will be considered defective if it does not pass tests and inspections.
- C. Prepare test and inspection reports.

SECTION 122116 - VERTICAL LOUVER BLINDS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Vertical louver blinds with PVC vanes.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For vertical louver blinds, include fabrication and installation details.
- C. Samples: For each exposed product and for each color and texture specified, 12 inches long.

1.3 INFORMATIONAL SUBMITTALS

A. Product test reports.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance data.

PART 2 - PRODUCTS

2.1 VERTICAL LOUVER BLINDS, PVC VANES

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or product by one of the following:
 - 1. Hunter Douglas Contract.
 - 2. Levolor Contract; a Newell Rubbermaid company.
 - 3. Springs Window Fashions; SWFcontract.
- B. Accessibility: Within Accessible Dwelling Units and Public Spaces, provide accessible controls within the acceptable reach range of 48" A.F.F. to the highest control.
- C. Vanes: Lead-free, UV-stabilized, integrally colored, opaque, permanently flexible, extruded PVC that will not crack or yellow; with not less than 3/8-inch overlap when vanes are rotated fully closed.
 - 1. Width: 3-1/2 inches.
 - 2. Profile: Crowned.
 - 3. Flame-Resistance Rating: Comply with NFPA 701; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 4. Features:
 - a. Bottom chain.

- b. Manual with cordless wand.
- D. Headrail: Channel, formed steel or extruded aluminum with long edges returned or rolled and ends capped. Headrail encloses operating mechanisms including carrier-spacing mechanism that provides uniform vane spacing when blinds are traversed fully across headrail (closed).
 - 1. Manual Traverse Control: Wand.
 - 2. Manual Rotation Control: Wand.
 - 3. Draw and Stack: One way, stack to inactive side of window or door.
- E. Carriers: Allow vane removal and replacement.
- F. Valance: Manufacturer's standard with vane insert.
- G. Mounting Brackets: With spacers and shims required for blind placement and alignment indicated.
- H. Colors, Textures, and Patterns:
 - 1. Vanes: As selected by Architect from manufacturer's full range.
 - 2. Components: As selected by Architect from manufacturer's full range.

2.2 VERTICAL LOUVER BLIND FABRICATION

- A. Product Safety Standard: Fabricate vertical louver blinds to comply with WCMA A 100.1 including requirements for corded, flexible, looped devices; lead content of components; and warning labels.
- B. Unit Sizes: Fabricate units in sizes to cover window and other openings as follows, measured at 74 deg F:
 - 1. Between (Inside) Jamb Installation: Width equal to jamb-to-jamb dimension of opening in which blind is installed less 1/4 inch per side or 1/2 inch total, plus or minus 1/8 inch. Length equal to head-to-sill or -floor dimension of opening in which blind is installed less 1/4 inch, plus or minus 1/8 inch.
 - 2. Outside of Jamb Installation: Width and length as indicated, with terminations between blinds of end-to-end installations at centerlines of mullion or other defined vertical separations between openings.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install vertical louver blinds level and plumb, aligned and centered on openings, and aligned with adjacent units according to manufacturer's written instructions.
 - 1. Locate so exterior vane edges are not closer than 2 inches from interior faces of glass and not closer than 1-1/2 inches from interior faces of glazing frames through full operating ranges of blinds.
 - 2. Install mounting and intermediate brackets to prevent deflection of headrails.
 - 3. Install with clearances that prevent interference with adjacent blinds, adjacent construction, and operating hardware of glazed openings, other window treatments, and similar building components and furnishings.
- B. Adjust vertical louver blinds to operate free of binding or malfunction through full operating ranges.

C. Clean vertical louver blind surfaces after installation according to manufacturer's written instructions.

SECTION 123530 - RESIDENTIAL CASEWORK

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes kitchen and vanity cabinets.

1.2 ACTION SUBMITTALS

- A. Product Data: For the following:
 - 1. Cabinets.
 - 2. Cabinet hardware.
- B. Shop Drawings: Include plans, elevations, details, and attachments to other work. Show materials, finishes, filler panels, and hardware.
- C. Samples: For cabinet finishes.

1.3 INFORMATIONAL SUBMITTALS

A. Product Certificates: For casework.

PART 2 - PRODUCTS

2.1 CABINETS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on the drawings or one of the following:
 - 1. Armstrong Cabinet.
 - 2. Kitchen Kompact, Incorporated.
 - 3. Smart Cabinetry LLC
 - 4. Wellborn Cabinet, Inc.
- B. Quality Standard: Provide cabinets that comply with KCMA A161.1.
 - 1. KCMA Certification: Provide cabinets with KCMA's "Certified Cabinet" seal affixed in a semiexposed location of each unit and showing compliance with the above standard.
- C. Face Style: Reveal overlay.
- D. Cabinet Style: Face frame.
- E. Door and Drawer Fronts: Solid-wood stiles and rails, 3/4 inch thick, with 1/4-inch-thick, veneer-faced plywood center panels.
- F. Face Frames: 3/4-by-1-5/8-inch solid wood.
- G. Exposed Cabinet End Finish: Wood veneer.

2.2 CABINET MATERIALS

- A. Hardwood Lumber: Kiln dried to 7 percent moisture content.
- B. Softwood Lumber: Kiln dried to 10 percent moisture content.

- C. Composite Wood Products:
 - 1. Hardwood Plywood: HPVA HP-1.
- D. Exposed Materials:
 - 1. Exposed Wood Species: Maple.
 - a. Select materials for compatible color and grain. Do not use two adjacent exposed surfaces that are noticeably dissimilar in color, grain, figure, or natural character markings.
 - b. Staining and Finish: As indicted, or as selected by Architect from manufacturer's full range.
 - 2. Solid Wood: Clear hardwood lumber of species indicated, free of defects.
 - 3. Plywood: Hardwood plywood with face veneer of species indicated, with Grade A faces and Grade C backs of same species as faces.
- E. Semiexposed Materials: Unless otherwise indicated, provide the following:
 - 1. Solid Wood: Sound hardwood lumber, selected to eliminate appearance defects. Same species as exposed surfaces or stained to be compatible with exposed surfaces.
 - 2. Plywood: Hardwood plywood with Grade C faces and not less than Grade 3 backs of same species as faces. Face veneers of same species as exposed surfaces or stained to be compatible with exposed surfaces.
- F. Concealed Materials: Solid wood or plywood, of any hardwood or softwood species, with no defects affecting strength or utility.

2.3 CABINET HARDWARE

- A. General: Manufacturer's standard units complying with BHMA A156.9, of type, size, style, material, and finish as selected by Architect from manufacturer's full range.
- B. Pulls: Back-mounted decorative pulls.
 1. Liberty Hardware, 3" Ethan Pull P13101C-SN-C.
- C. Hinges: Concealed European-style, self-closing hinges.
- D. Drawer Guides: Epoxy-coated-metal, self-closing drawer guides; designed to prevent rebound when drawers are closed; with nylon-tired, ball-bearing rollers; and complying with BHMA A156.9, Type B05011 or Type B05091.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install cabinets with no variations in flushness of adjoining surfaces; use concealed shims. Where cabinets abut other finished work, scribe and cut for accurate fit. Provide filler strips, scribe strips, and moldings in finish to match cabinet face.
- B. Install cabinets without distortion so doors and drawers fit the openings, are aligned, and are uniformly spaced. Complete installation of hardware and accessories as indicated.
- C. Install cabinets level and plumb to a tolerance of 1/8 inch in 8 feet.
 - 1. There is NO ACCEPTABLE TOLORANCE beyond the indicated minimum and maximum dimensions.
- D. Fasten cabinets to adjacent units and to backing.
 - 1. Fasten wall cabinets through back, near top and bottom, and at ends not more than o.c. with:

- a. For wood blocking: No. 10 wafer-head screws sized for not less than penetration into wood framing, blocking, or hanging strips.
- b. For sheet metal (16 ga.) blocking: No. 10 wafer-head sheet metal screws through the metal backing or metal framing behind the wall finish or toggle bolts through the metal backing or metal framing behind the wall finish.

3.2 ADJUSTING AND CLEANING

A. Adjust cabinets and hardware so doors and drawers are centered in openings and operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

SECTION 123661.16 - SOLID SURFACING COUNTERTOPS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

- 1. Solid surface material countertops.
- 2. Solid surface material backsplashes.
- 3. Solid surface material end splashes.
- 4. Solid surface material 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 SOLID SURFACE COUNTERTOP MATERIALS

- A. Solid Surface Material: Homogeneous-filled plastic resin complying with ICPA SS-1.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or product by one of the following:
 - a. Avonite Surfaces.
 - b. E. I. du Pont de Nemours and Company.
 - c. Formica Corporation.
 - d. LG Chemical, Ltd.
 - e. Samsung Chemical USA, Inc.
 - f. Wilsonart LLC.
 - 2. Type: Provide Standard type unless Special Purpose type is indicated.
 - 3. Colors and Patterns: As indicated by manufacturer's designations, or as selected by Architect from manufacturer's full range.

2.2 COUNTERTOP FABRICATION

A. Fabricate countertops according to solid surface material manufacturer's written instructions and to the AWI/AWMAC/WI's "Architectural Woodwork Standards."

B. Configuration:

- 1. Front: 1-inch bullnose.
- 2. Backsplash: Straight, slightly eased at corner.
- 3. End Splash: Matching backsplash.
- C. Countertops: 1/2-inch-thick, solid surface material with front edge built up with same material.
- D. Backsplashes: 1/2-inch-thick, solid surface material.
- E. Joints: Fabricate countertops in sections for joining in field.

- F. 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. 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. 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.
- E. Apply sealant to gaps at walls; comply with Section 079200 "Joint Sealants."

END OF SECTION 123661.16

SECTION 124813 - ENTRANCE FLOOR MATS AND FRAMES

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submittals: Product Data and Samples.

PART 2 - PRODUCTS

2.1 FLOOR MATS AND FRAMES

- A. Basis-of-Design Product: Subject to compliance with requirements, provide American Floor Products Company, Inc; Stratoflex III with bristle carpet strips inserts or product by one of the following:
 - 1. JL Industries, Inc.; a division of the Activar Construction Products Group.
 - 2. Nystrom, Inc.
 - 3. Reese Enterprises, Inc.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Recessed Mats: Coordinate elevation of tops of mat surfaces with bottom of doors that swing across mats to provide adequate clearance.
 - 1. Install necessary shims, spacers, and anchorages for proper location and secure attachment of frames.
 - 2. Install grout and fill around frames and, if required to set mat tops at proper elevations, in recesses under mats.
- B. Install surface-type units as indicated. Anchor frame members to floor.

Carver Community Center Expansion 207 LEE ALLEY, FREDERICK, MARYLAND 21701 BID SET - DECEMBER 5, 2022





VICINITY MAP NOT TO SCALE

SHEET		
NUMBER	SHEET NAME	ISSUED
GLINEINAL	CoverSheet	10/5/0000
G0.0.1	Code Analysia	12/5/2022
G0.1.1	Abbraviations Destition Types, and Details	12/5/2022
G0.2.1	Abbreviations, Partition Types, and Details	12/5/2022
GU.Z.Z	OL Designs	12/5/2022
G0.3.1	General Notes	12/5/2022
	Orientation Shoot	10/5/0000
C-1		12/5/2022
C-2		12/5/2022
C-3		12/5/2022
0-4		12/5/2022
ARCHITECTUR	201	
	Floor Plan - Overall Plan - New Construction	12/5/2022
Δ2.0.1	Reflected Ceiling Plan	12/5/2022
Δ2.1.1	Enlarged Floor Plans	12/5/2022
Δ2.2.1	Enlarged Floor Plans	12/5/2022
Δ2 4 1	Roof Plan	12/5/2022
A300	Exterior Elevations	12/5/2022
Δ311	Exterior Elevations & Building Sections	12/5/2022
AJ.1.1 A4.0.1	Wall Sections	12/5/2022
AG 1 1	Interior Elevations	12/5/2022
Δ7 0 1	Schedules	12/5/2022
A7.0.1	Finish Schedule	12/5/2022
A7.0.2 A8.0.1	Air Sealing Details	12/5/2022
A8.0.2	Air Sealing Details	12/5/2022
A0.0.2	All Sealing Details	12/3/2022
STRUCTURAL		
S-0	Structural Notes	12/5/2022
S-1	Foundation Plan	12/5/2022
S-2	Roof Framing Plan	12/5/2022
S-3	Bracing Plan	12/5/2022
S-4	Foundation Details	12/5/2022
S-5	Framing Details	12/5/2022
00		12,0,2022
MECHANICAL		
M000	Symbols List, General Notes, and Details	12/5/2022
M100	Floor Plan	12/5/2022
M200	Ventilation Calculations	12/5/2022
M201	Schedules	12/5/2022
M202	Details	12/5/2022
PLUMBING		
P000	Symbols, General Notes, and Schedules	12/5/2022
P100	Partial Floor Plan	12/5/2022
P101	Partial Floor Plan	12/5/2022
ELECTRICAL		
E000	Symbols List, General Notes, and Schedules	12/5/2022
E100	Floor Plan - Electrical Power Riser Diagram and Detail	12/5/2022
E101	Floor Plan - Lighting	12/5/2022

HOUSING AUTHORITY OF THE CITY OF FREDERICK 209 Madison Street, Frederick, Maryland 21701 | 301.662.8173

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LINGG PROPERTY CONSULTING 256 West Patrick Street, Suite 2A, Frederick, Maryland 21701 | 302.644.2121

E200

DRAWING LIST

Panel Schedules and Fire Alarm Riser Diagram

ED REVISED)22

)22)22 022

)22)22)22 12/5/2022

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Architect's Project Number: 2238 BID SET 12.5.2022

CARVER COMMUNITY CENTER **EXPANSION**

207 Lee Alley Frederick, Maryland 21701

OWNER:



BUILDING OWNER

ARCHITECT

DESIGN ARCHITECT

STRUCTURAL ENGINEER

MEP ENGINEER

CIVIL ENGINEER

Cover Sheet

G0.0.1

CODE ANALYSIS

APPLICABLE CODES:	
INTERNATIONAL BUILDING CODE (IBC)	2015
MARYLAND BUILDING REHABILITATION CODE (COMAR 05.16)	
INTERNATIONAL EXISTING BUILDING CODE (IEBC) By Reference	2015
FIRE CODE (NFPA 1)	2015
LIFE SAFETY CODE (NFPA 101)	2015
INTERNATIONAL ENERGY CONSERVATION CODE (IECC) By Reference	2015
INTERNATIONAL MECHANICAL CODE	2015
NATIONAL STANDARD PLUMBING CODE	2015
NATIONAL FUEL & GAS CODE (NFPA 54)	2015
NATIONAL ELECTRIC CODE (NEC / NFPA 70)	2017
HUD 4910.1 MINIMUM PROPERTY STANDARDS	1994
UNIFORM FEDERAL ACCESSIBILITY STANDARDS (UFAS)	
ANSI A117.1	2009
AMERICANS WITH DISABILITIES ACT (ADA) STANDARDS FOR ACCESSIBLE DESIGN	2010

SCOPE OF WORK:

707.3.2 - EXIT ENCLOSURES

SECTION 708 - FIRE PARTITIONS

708.1 - CORRIDOR WALLS

SECTION 709 - SMOKE BARRIERS

CHAPTER 8 - INTERIOR FINISHES

SECTION 803 - WALL AND CEILING FINISHES

USE GROUP A-3, B, E, S SECTION 804 - INTERIOR FLOOR FINISH

CHAPTER 9 - FIRE PROTECTION SYSTEMS

SECTION 907 - FIRE ALARM & DETECTION

SECTION 909 - SMOKE CONTROL SYSTEMS

SECTION 911 - FIRE COMMAND CENTER

CHAPTER 10 - MEANS OF EGRESS

ASSEMBLY (A-3)

STORAGE AND UTILITY (S-1)

SECTION 1004.3 - POSTING OF OCCUPANT LOAD

BUSINESS (B)

CIRCULATION

COMMUNITY ROOM

EDUCATION

SECTION 905 - STANDPIPE SYSTEM

SECTION 903 - AUTOMATIC SPRINKLER SYSTEM

SECTION 906 - PORTABLE FIRE EXTINGUISHERS

SECTION 1004 - MAXIMUM AREA ALLOWANCES PER OCCUPANT

TOTAL AREA AND OCCUPANT LOAD

TABLE 803.11 - FINISH REQUIREMENTS

SECTION 806 - DECORATIVE MATERIALS AND TRIM

CURTAINS, DRAPERIES, HANGINGS

—

707.3.3 - EXIT PASSAGEWAYS

SUBSTANTIAL REHABILITATION OF EXISTING ONE STORY COMMUNITY CENTER. SCOPE INCLUDES COMPLETE INTERIOR GUT RENOVATION OF THE EXISTING BUILDING AND TWO SEPARATE ONE STORY ADDITIONS.

CHAPTER 3 - USE AND OCCUPANCY CLASSIFICATION				
USE GROUP & OCCUPANCY (SECTION 310, 311) FIRST FLOOR - NON-SEPERATED MIXED OCCUPANCY COMMUNITY HALL OFFICE CLASSROOM & DAYCARE ACCESSORY STOR. AREAS / MECH. EQUIP ROOMS		ASSEMBL BUSINE EDUCATI STORAG	LY (A-3) SS (B) ION (E) E (S-1)	
FIRE SUPPRESSION (AUTOMATIC SPRINKLERS) FIRE ALARM (NFPA 72)	EXIS NO NO	TING NE NE	PROF NC Y	POSED DNE ES
CHAPTER 4 - SPECIAL USE AND OCCUPANCY				
SECTION 403 - HIGH RISE BUILDING		NOT APPL	ICABLE	
CHAPTER 5 - BUILDING HEIGHT AND AREAS				
SECTION 503 - BUILDING HEIGHT & AREA		MIXED OCCUPANCY (A-3, B, E, & S-1) CONSTRUCTION TYPE VA		B, E, & S-1) PE VA
HEIGHT # OF STORIES ABOVE GRADE PLANE AREA PER STORY FIRST FLOOR		MAX. ALLOW 50 FEET 1 11,500 SF	EXIST. 14± FEET 1 1,380 SF	PROPOSED 18± FEET 1 6,630 SF
SECTION 508.3 - NON-SEPARATED MIXED OCCUPANCY OCCUPANCY GROUPS A-3, B, E, & S-1				
CHAPTER 6 - TYPES OF CONSTRUCTION				
TYPE OF CONSTRUCTION (TABLE 601)	TYPE VA			
FIRE RESISTANCE RATINGS (TABLE 601) PRIMARY STRUCTURAL FRAME BEARING WALLS EXTERIOR INTERIOR NON-BEARING WALLS EXTERIOR (TABLE 602) INTERIOR		REQ'D. 1 HR. 1 HR. 1 HR. 0 HR. 0 HR.	EXIST. 0 HR. 0 HR. 0 HR. 0 HR. 0 HR.	PROV. 1 HR. 1 HR. 1 HR. 1 HR. 0 HR.
FLOOR CONSTRUCTION ROOF CONSTRUCTION		N/A 1 HR.	N/A 0 HR.	N/A 1 HR.
CHAPTER 7 - FIRE RESISTANCE-RATED CONSTRUCTION SECTION 706 - FIRE WALLS SECTION 707 - FIRE BARRIERS 707 3 1 - SHAFT ENCLOSURES	SECTION	REQ'D. N/A	PROV. N/A	

713.4 / 1023.1

1024.3 / 1026.1

1020.1

1 HR.

1 HR.

1/2 HR.

N/A

EXITS

REQ'D.

NO

NO

YES

YES

NO

NO

BASIS

1,204 SF

2,370 SF

1,568 SF

6,630 SF

81 OCC.

998 SF

N/A

N/A

1/2 HR.

N/A

CLASS A CLASS A CLASS C

CLASS II - ALL USES AND AREAS

NFPA-701

EXIST.

NO

NO

YES

YES

NO

NO

RATIO

15 SF/OCC

100 SF/OCC

35 SF/OCC

N/A

490 SF 300 SF/OCC

CORRIDORS ROOMS

PROV.

NO

NO

NFPA 10

NFPA 72

NO

NO

OCCUPANCY

81

CODE ANALYSIS (CONT.)

SECTION 1005 - EGRESS WIDTH STAIRWELLS (0.2"/OCCUPANT) ENCLOSED BUILDING STAIRS (<50 OCC.) OTHER MEANS OF EGRESS (0.15" PER OCCUPANT) EGRESS DOORS

SECTION 1007 - ACCESSIBLE MEANS OF EGRESS 1007.1 - ACCESSIBLE MEANS OF EGRESS REQUIRED

SECTION 1008 - DOORS, GATES, AND TURNSTILES: SEE DOOR SC SECTION 1009 - STAIRWAYS: SEE PLANS & DETAIL SHEETS FOR (SECTION 1010 - RAMPS: N/A SECTION 1011 - EXIT SIGNS: SEE ELECTRICAL DRAWINGS FOR COMPLIANCE SECTION 1012 - HANDRAILS: SEE PLANS & DETAIL SHEETS FOR COMPLIANCE SECTION 1013 - GUARDS: SEE PLANS & DETAIL SHEETS FOR COMPLIANCE

SECTION 1014 - EXIT ACCESS 1014.3 - COMMON PATH OF TRAVEL USE GROUPS A-3, B, E, S

SECTION 1015 - EXIT & EXIT ACCESS DOORWAYS 1015.1 - EXIT & EXIT ACCESS DOORWAYS REQUIRED

1015.2 - EXIT & EXIT ACCESS ARRANGEMENT: MINIMUM SEPARATION ONE-THIRD OF DIAGONAL DIMENSION : EXISTING NON-COMPLIANT, NO CHANGE

SECTION 1017 - EXIT ACCESS TRAVEL DISTANCE (SEE PLANS FOR 1017.2 - EXIT ACCESS TRAVEL DISTANCE USE GROUPS A-3, B, E, S

SECTION 1020 - CORRIDORS MIN. CORRIDOR WIDTH (>50 OCCUPANTS): MIN. CORRIDOR WIDTH (<50 OCCUPANTS): DEAD END CORRIDORS W/ SPRINKLERS (1020.4):

BUILDING ENVELOPE (IECC - SECTION 402)

FENESTRATION (U-FACTOR)

WINDOWS DOORS (≥ 1/2 LITE) SKYLIGHTS SOLAR HEAT GAIN COEFFICIENT (SHGC) (SEW / N)

OPAQUE THERMAL ENVELOPE INSULATION (TABLE C402.1.3 / R-VA ROOF (ATTIC)

WALLS (WOOD FRAMED WALLS ABOVE GRADE) FLOORS (OVER UNCONDITIONED SPACE) SLAB INSULATION (DEPTH \geq 2')

QUANTITY N/A	REQ'D. 36"	EXIST. N/A	PROV. N/A
	2	3	3
EXCEPTION 1		REQ'D. NOT RE	PROV. QUIRED
CHEDULES FOR (COMPLIANCE	COMPLIANCE		

SECTION	ALLOWABLE	EXISTING	PROV.
1014.3	75 FT	40 FT	65 FT

COMPLIANCE	MAXIMUM DISTANCE			
	ALLOWABLE	EXISTING	MAX PROV.	
	250 FT	40 FT	65 FT	
	REQ'D.	EXISTING	PROV.	
	44"	N/A	N/A	
	36"	N/A	N/A	
	20 FT	N/A	N/A	

SECTION	REQUIRED	PROVIDED*
	≤ 0.45	≤ 0.30
	≤ 0.30	≤ 0.30
	≤ 0.60	N/A
	0.40 / 0.53	≤ 0.40
ALUE)	REQUIRED	PROVIDED
	≥ 38ci	≥ 38ci & 49ci
	≥ 13 + 3.8ci	>21 + 6.6ci
	≥ 19	N/A
	≥ 10	≥ 10



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AT	ER	IAL

BATT INSULATION

Γ



WASHED GRAVEL

CRUSHED STONE



NOT TO SCALE

CONCRETE



ABB	REVIATIONS
FD	FLOOR DRAIN
FE	FIRE EXTINGUISHER
	CONNECTION
100	

@	AT (THE RATE OF)
Ø	Diameter, Round, Phase
#	POUND OR NUMBER
AB	ANCHOR BOLT
ACC	ACCESS
ACT	ACOUSTIC CEILING TILE
AD	AREA DRAIN
AFCI	ARC FAULT CIRCUIT
AFF	ABOVE FINISHED FLOOR
ALUM	ALUMINUM
ANOD	ANODIZED
ARCH	ARCHITECT, ARCHITECTURAL
BB	BULLETIN BOARD
BDRM	BEDROOM
BF	BARRIER FREE (ACCESSIBLE)
BLKG	BLOCKING
BM	BEAM, BENCH MARK
BOT	BOTTOM
BSMT	BASEMENT
BYND	BEYOND
C/C	CENTER TO CENTER
CAB	CABINET
CAT	CATEGORY, CATALOG
CATV	CABLE TELEVISION
CCTV	CLOSED CIRCUIT TELEVISION
CHNL	CHANNEL
CI	CAST IRON
CIP	CAST IN PLACE
CJ	CONTROL JOINT
CLG,	CEILING
COMPR	
CONC	CONCRETE
CONT	CONTINUOUS
CPT	CARPET
СТ	CERAMIC TILE
CTYD	COURTYARD
DBL	DOUBLE
DEG	DEGREE
DEMO	DEMOLISH
DIA	DIAMETER
DIMS	DIMENSIONS
DL	DEAD LOAD
DN	DOWN
DR	DOOR
DWG	DRAWING
EA	EACH
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
ELEV	ELEVATOR/ELEVATION
	I ETHYLENE PROPYLENE DIENE
EPDM	MONOMER
EPDM	MONOMER EQUAL
EPDM EQ EQUIP	MONOMER EQUAL EQUIPMENT
EPDM EQ EQUIP EW	MONOMER EQUAL EQUIPMENT EACH WAY
EPDM EQ EQUIP EW EWH	MONOMER EQUAL EQUIPMENT EACH WAY ELECTRIC WALL HEATER
EPDM EQ EQUIP EW EWH EX, EXIST	MONOMER EQUAL EQUIPMENT EACH WAY ELECTRIC WALL HEATER EXISTING
EPDM EQUIP EW EWH EX, EXIST EXH	MONOMER EQUAL EQUIPMENT EACH WAY ELECTRIC WALL HEATER EXISTING EXHAUST
EPDM EQUIP EW EWH EX, EXIST EXH EXP	MONOMER EQUAL EQUIPMENT EACH WAY ELECTRIC WALL HEATER EXISTING EXHAUST EXPANSION
EPDM EQUIP EW EWH EX, EXIST EXH EXP EXT	MONOMER EQUAL EQUIPMENT EACH WAY ELECTRIC WALL HEATER EXISTING EXHAUST EXPANSION EXTERIOR
EPDM EQ EQUIP EW EWH EX, EXIST EXH EXH EXP EXT FDC	MONOMER EQUAL EQUIPMENT EACH WAY ELECTRIC WALL HEATER EXISTING EXHAUST EXPANSION EXTERIOR FIRE DEPARTMENT
EPDM EQUIP EW EWH EX, EXIST EXH EXP EXT FDC	MONOMER EQUAL EQUIPMENT EACH WAY ELECTRIC WALL HEATER EXISTING EXHAUST EXPANSION EXTERIOR FIRE DEPARTMENT CONNECTION EIRE EXTINGUISHER
EPDM EQUIP EW EWH EX, EXIST EXH EXT FDC FE FD	MONOMER EQUAL EQUIPMENT EACH WAY ELECTRIC WALL HEATER EXISTING EXHAUST EXPANSION EXTERIOR FIRE DEPARTMENT CONNECTION FIRE EXTINGUISHER ELOOR DRAIN

OH

OVERHEAD

DIMENSIONAL LUMBER

DIMENSIONAL LUMBER

(NON-CONT. / BLOCKING)

(CONTINUOUS)

FEC	FIRE EXTINGUISHER CABINET	OPNG	OPENI
FIN	FINISH, FINISHED	OPP	OPPOS
FIXT	FIXTURE	ORN	ORNAM
FLR	FLOOR	OZ	OUNCE
FLUOR	FLUORESCENT	P.LAM	PLASTI
FM	FILLED METAL	PCF	POUND
FND	FOUNDATION	PE	PROFE
FO	FACE OF	PED	PEDES
FOC	FACE OF CONCRETE	PH	PHASE
FOF	FACE OF FINISH	PKNG	PARKIN
FOS	FACE OF STUD	PLF	
FRT	FIRE RETARDANT TREATED	PLUMB	
FTG	FOOTING		
GA	GALIGE	PNI	
		DDE	
GFI, GFCI	INTERRUPT	PTN	
GND	GROUND	PSI	
GRND		PT	PRESS
GYP. BD.	GYPSUM BOARD	' '	PRESE
HC	HOLLOW CORE	PTD	PAINTE
HI	HIGH		DISPEN
HM	HOLLOW METAL	PVC	POLYV
HP	HIGH POINT	PWR	POWEF
HR	HOUR	QT	QUARR
	HEATING VENTILATING AND	QTY.	QUANT
HVAC	AIR CONDITIONING	QUANT	
11.0		QUAL	QUALIT
		R	RISER.
	INTERIOR	RA	RETUR
			ARCHIT
JB, J-BOX		RBR	RUBBE
10	CLOSET	RCP	REFLE
IT	IOINT	RD	ROOF [
KIT	KITCHEN	REF,	REFRIG
		REFR	
		REM	REMOV
		REQ'D	REQUI
		RES,	RESILIE
LIN.		RESIL	
		RETG	RETAIN
LO	LOW	RM	ROOM
LP	LOW POINT	RO	ROUGH
LW	LIGHT WEIGHT	ROW	RIGHT
MAS	MASONRY	RT	RUBBE
MAT,	MATERIAL	SALV	SALVA
MATL		SAN	SANITA
MAX	MAXIMUM	SCH.	SCHED
MC	MEDICINE CABINET	SCHED	
MECH	MECHANICAL	SCW,	SOLID
MEMBR	MEMBRANE	SCWD	
MEZZ	MEZZANINE	SEAL	SEALA
MFR	MANUFACTURE,	SECT	SECTIO
	MANUFACTURER	SEL	SELEC
МН	MAN HOLE	SERV	SERVIC
MIN	MINIMUM	SF	SQUAR
MISC	MISCELLANEOUS	SHR,	SHOWE
MLD,	MOULDING	SHWR	
MLDG		SHT	SHEET
МО	MASONRY OPENING	SIM	SIMILIA
MR	MOISTURE-RESISTANT	SPEC	SPECIF
MT	MARBLE THRESHOLD	SPK	SPRINK
MTL	METAL	SSTL	STAINL
NIC	NOT IN CONTRACT	STC	SOUND
NO	NUMBER		COEFF
NOM	NOMINAL	STL	STEEL
NRC		STO	STORA
	NOISE REDUCTION	1310.	1 01010
	COEFFICIENT	STOR	
NTS	NOISE REDUCTION COEFFICIENT NOT TO SCALE	STOR STRUCT	STRUC
NTS OC	NOISE REDUCTION COEFFICIENT NOT TO SCALE ON CENTER	STOR STRUCT SUSP	STRUC SUSPE
NTS OC OFF	NOISE REDUCTION COEFFICIENT NOT TO SCALE ON CENTER OFFICE	STOR STRUCT SUSP SY	STRUC SUSPE SQUAR

5	OPPOSITE
N	ORNAMENTAL
	OUNCE
ΔM	
-	
-	
	PROFESSIONAL ENGINEER
)	PEDESTAL, PEDESTRIAN
	PHASE, PHONE
١G	PARKING
	POUNDS PER LINEAL FOOT
IMB	PLUMBING
VVD	
-	PANEL
=	PRE-FINISHED
ΓN, J	PARTITION
•	POUNDS PER SQUARE INCH
	PRESSORE TREATED,
)	
,	DISPENSER
, D	
ri,	
	QUARRY TILE
(,	QUANTITY
ANT	
AL	QUALITY
	RISER, RADIUS
	RETURN AIR, REGISTERED
	ARCHITECT
२	RUBBER
C	REFLECTED CEILING PLAN
	ROOF DRAIN
:	
, P	REFRIGERATOR
<u>n</u>	
חיר	
עג	REQUIRED
5,	RESILIENT
	DETAINING
G	RETAINING
	ROOM
	ROUGH OPENING
N	RIGHT OF WAY
	RUBBER TILE
V	SALVAGE
- • .l	
N	
1, 	SCHEDULE
ND	
	SEALANI
T	SECTION
	SELECT
RV	SERVICE
	SQUARE FOOT (FEET)
۲.	SHOWER
ŴR	
Γ	SHEET
	SIMILIAR
- -	
(SPRINKLER
L	STAINLESS STEEL
;	SOUND TRANSMISSION
	COEFFICIENT
	STEEL
),	STORAGE
) R	
RUCT	STRUCTURAL
SP	SUSPENDED
~	
	SQUARE FARD(S)

TOP AND BOTTOM

TELEPHONE/DATA

TOP OF CONCRETE

TOILET PARTITION

TOILET PAPER DISPENSER

UNLESS OTHERWISE NOTED

VISUAL & HEARING IMPAIRED

VINYL COMPOSITION TILE

TOP OF STEEL

TELEPHONE

THRESHOLD

TACKBOARD

TOILET

TOP OF

TYPICAL

UNDERSIDE

VERTICAL

WITH

WITHOUT

WOOD

VESTIBULE

VERIFY IN FIELD

VAPOR RETARDER

VINYL WALL BASE

VINYL WALL COVERING

WIDE FLANGE (STEEL)

WEATHERSTRIPPING

WELDED WIRE FABRIC

WELDED WIRE MESH

WATER HEATER

WATERPROOF

WATERSTOP,

WEIGHT

YARD

TONGUE AND GROOVE

T&B T&G

T/D

TELE

THR

TKBD

TLT

TOC

TOS

TPTN

TYP

U/S

UON

VCT

VERT

VEST

VHI

VIF

VR

W/

VWB

VWC

W/O

WD

WF

WH

WP

WS

WWF

WWM

YD

TP

TO

AND

CONTROL JOINTS IN GYP BD WALLS 6" = 1'-0"

Both Assemblies: Control joints can be utilized to create a separation between adjacent surfaces on one side of the wall and may not be required at the same location on the other side of the wall (Figure 1), if the requirements in section 20.2 (GA-4.7.1.1) to section 20.4 (GA-4.7.4) exist. At a location where an expansion joint is designed, the expansion joint and the correct trim accessory shall be located in the same location on each side of the wall assembly.

Non-Rated Assembly: Where control joints are installed in non-rated assemblies and are parallel to the framing members, a framing member is required on each side of the opening (Figure 1). This requirement is for the attachment of gypsum board. Additional framing is not required for control joints that are installed perpendicular to the framing members with framing spacing up to 24" on center.



Rated Assembly: Where control joints are installed in rated assemblies and are parallel to the framing members, a framing required on each side of the opening and shall be installed per Figure 2. In rated assemblies, the control j placed so that the "gypsum board strips" are continuous (per Figure 2), if the "gypsum board strips" cannot an approved alternative shall be agreed upon before installing the control joint in the designed location.



PARTITION TYPES NOT TO SCALE

Gypsum Board Control Joint designs are based off of ASTM

GA-216-2013: Section GA-4.7 Control Joints

C840-08: Sections 20. System XIII: Control (Expansion) Joints and

Design and Installation:



W41

۱.	WHERE FIRE TESTS ARE IND
	TESTING AGENCY CRITERIA
	AGENCY CRITERIA MAY INCI
	OR REFERENCED DETAILS.

I LAYER OF 1/2" GYP. BD. ONE SIDE OF 2x4 WD.

FRAMING @ 16" O.C.

- SHOWERS, STEAM ROOMS, ETC. U.O.N.

- CONSTRUCTION, UNLESS OTHERWISE NOTED.
- PRIORITY OVER A DIMENSIONED LOCATION.
- MULLION U.O.N.

- FOLLOWS
- T INSTALL FACED BATT INSULATION BETWEEN STUDS/FRAMING
- THE UL DESIGN LISTED ON THE SCHEDULE

NOT TO SCALE

- CONSTRUCTION, MATERIALS AND TOLERANCES.
- REQUIREMENTS.
- THE SECURE ATTACHMENT OF ADJOINING WORK.

MINER FEINSTEIN ARCHITECTS

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Architect's Project Number:	2238
BID SET	12.5.2022

CARVER COMMUNITY CENTER **EXPANSION**

207 Lee Alley Frederick, Maryland 21701

<u>OWNER:</u>



Frederick MD 21701 301.662.8173

Max. Single Area

Abbreviations, Partition Types, and Details



DICATED IN PARTITION DESCRIPTION, CONFIGURE AND INSTALL PARTITION PER OR OTHER TESTS APPROVED BY AUTHORITIES HAVING JURISDICTION. TESTING LUDE ADDITIONAL COMPONENTS NOT SPECIFICALLY INDICATED ON THIS SCHEDULE

EXTERIOR WALLS AND EXPOSED STRUCTURAL CONCRETE WALLS ARE NOT TAGGED USING THE PARTITION TYPE SYMBOL. SEE EXTERIOR WALL DETAILS AND STRUCTURAL DRAWINGS FOR REQUIREMENTS.

3. PROVIDE TYPE "C" OR TYPE "X" FIRE RATED GYP BD AS REQUIRED AT TESTED FIRE ASSEMBLIES.

GYPSUM BOARD PARTITION CONTROL JOINTS ARE REQUIRED AT APPROXIMATELY 30'-0" O.C. FOR STRAIGHT AND CONTINUOUS WALLS, AT OPENING LOCATIONS, OR AS NOTED OTHERWISE ON DRAWINGS. WHERE NOT SPECIFICALLY INDICATED ON THE DRAWINGS SUBMIT CONTRACTOR'S PROPOSED CONTROL JOINT LOCATIONS TO ARCHITECT FOR APPROVAL.

DO NOT PLACE MECHANICAL AND/OR ELECTRICAL DEVICES BACK TO BACK IN RATED PARTITIONS. ALL DEVICES TO BE PLACED IN SEPARATE STUD SPACES WITH 8" O.C. MIN. SEPARATION.

OUTER LAYER OF ALL INTERIOR GYPSUM BOARD PARTITIONS ADJACENT OR EXPOSED TO WET OR HUMID CONDITIONS TO BE CONSTRUCTED WITH WATER/MOISTURE RESISTANT GYPSUM BOARD OR EQUAL AND AS THE SUBSTRATE PREPARED TO RECEIVE SCHEDULED CERAMIC OR STONE TILE, WATER RESISTANT WALL PANELS OR HIGH PERFORMANCE PAINT FINISHES. WET OR HUMID SPACES INCLUDE, BUT ARE NOT LIMITED TO, TOILET/BATH ROOM WALLS, KITCHEN WALLS AND WALLS ADJACENT TO WATER FEATURES. PROVIDE CEMENTITIOUS TILE BACKER BOARD IN LIEU OF GYPSUM BOARD AT ALL WALLS IN DIRECT CONTACT WITH WATER, FOR EXAMPLE,

FINISH ALL EXPOSED GYPSUM BOARD CONSTRUCTION. FINISH SHALL BE IN ACCORDANCE WITH THE ROOM FINISH SCHEDULE AND/OR FINISH LEVELS NOTED IN THE GYPSUM BOARD ASSEMBLIES SPECIFICATION SECTION.

PARTITIONS ARE DIMENSIONED TO FACE OF STUD, FACE OF MASONRY AND TO FACE OF EXISTING

9. NOTES TO "ALIGN" MEAN TO ALIGN FINISHED FACE OF PARTITION UNLESS OTHERWISE NOTED AND SHALL HAVE

10. CENTERLINES OF PARTITIONS WHICH MEET WINDOW WALLS SHALL ALIGN WITH THE CENTERLINE OF THE

11. PERIMETER DIMENSIONS ARE TO FACE OF WALL/STUD BELOW SILL U.O.N.

12. PROVIDE SOLID WOOD BLOCKING AS SHOWN OR AS REQUIRED FOR ATTACHMENT OF WALL MOUNTED HARDWARE, TOILET ACCESSORIES, CASEWORK, MILLWORK, FINISH CARPENTRY ETC. AS MAY BE REQUIRED FOR

13. PROVIDE AND INSTALL FIRESTOP ASSEMBLIES AT ALL PENETRATIONS THROUGH FIRE RATED PARTITIONS AND AT ALL FIRE RATED PARTITION HEADS. REFER TO FIRESTOPPING SPECIFICATION SECTION FOR ADDITIONAL

14. REFER TO GYPSUM BOARD ASSEMBLIES SPECIFICATION SECTION FOR ADDITIONAL REQUIREMENTS FOR GYPSUM BOARD ASSEMBLIES INCLUDING, BUT NOT LIMITED TO FIRE RATED CONSTRUCTION, SOUND RATED

15. WHERE NOTED UL DESIGNS REFERENCE PROPRIETARY MATERIALS, EQUIVALENT MATERIALS FROM OTHER MANUFACTURERS WILL ONLY BE APPROVED UPON SUBMISSION BY THE CONTRACTOR OF EVIDENCE OF A SUCCESSFUL FIRE TEST BY AN INDEPENDENT TESTING LABORATORY OF THE PROPOSED MANUFACTURER'S ASSEMBLY INDICATING COMPLIANCE WITH THE LISTED FIRE-RESISTANCE RATING.

16. WHERE THE PARTITION TYPE INCLUDES A SUFFIX LETTER (S, T OR F), THE PARTITION SHALL BE MODIFIED AS

S INSTALL SOUND ATTENUATING BATT INSULATION BETWEEN STUDS/FRAMING

F INDICATES A FIRE RATED PARTITION - CONSTRUCTION SHALL COMPLY WITH THE REQUIREMENTS OF

WHERE EXISTING FRAMING IS IN GOOD CONDITION AND COMPLIES WITH THE REQUIREMENTS OF THE INDICATED OR SCHEDULED PARTITION TYPE, EXISTING FRAMING MAY BE RETAINED AT THE CONTRACTOR'S DISCRETION.

Maximum Spacing-Control Joints

Construction & Location

Max. Single

PARTITION NOTES



) member is
joint should be
not be continuous

Partition-interior Ceiling-interior with perimeter relief without perimeter relief Ceiling-exterior gypsum —CEILING PER FINISH -1/2" METAL OR VINYL CONTROL JOINT -HOLLOW METAL FRAME CONTROL JOINTS @ DOOR FRAMES Figure 3

Preferable Location of Control Joints in Corridors: Control joints should be employed in long expanses of partitions at 30-foot intervals, from floor to ceiling. Control joints are recommended at door jambs, extending from door head to ceiling. Where doorjambs extend from floor to ceiling and are spaced less than 30 feet apart, no control joints are required (Figure 3)

November 30, 2022

Unrestrained Assembly Rating - 1 Hr

Finish Rating - 23 Min This design was evaluated using a load design method other than the Limit States Design Method (e.g., Working Stress Design Method). For jurisdictions employing the Limit States Design Method, such as Canada, a load restriction factor shall be used — See Guide BXUV or BXUV7

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.



1. Roofing System* — Any UL Class A, B or C Roofing System (TGFU) or Prepared Roof Covering (TFWZ) acceptable for use over nom 15/32 in. thick wood structural panels secured to trusses with No. 6d ringed shank nails spaced 12 in. OC along each truss. Staples having equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails. Construction adhesive may be used with either the nails or staples.

2. Trusses — Pitched chord wood trusses, spaced a max of 24 in. OC, fabricated from nom 2 by 4 lumber, with lumber oriented vertically or horizontally. Truss members secured together with 0.0356 in. thick galv steel plates. Plates have 5/16 in. long teeth projecting perpendicular to the plane of the plate. The teeth are in pairs facing each other (made by the same punch), forming a split tooth type plate. Each tooth has a chisel point on its outside edge. These points are diagonally opposite each other for each pair. The top half of each tooth has a twist for stiffness. The pairs are repeated on approximately 7/8 in. centers with four rows of teeth per inch of plate width. Where the truss intersects with the interior face of the exterior walls, the min truss depth shall be 5-1/4 in. with a min roof slope of 3/12 and a min average truss depth of 18 in.. Where the truss intersects with the interior face of the exterior walls, the min truss depth may be reduced to 3 in. if the batts and blankets (Item 3) are used as shown in the above illustration (Alternate Insulation Placement) and are firmly packed against the intersection of the bottom chords and the plywood sheathing.

3. Batts and Blankets* — Optional — Glass fiber insulation fitted in the concealed space, draped over the resilient channels and gypsum wallboard ceiling membrane or fastened to underside of roofing system. Any glass fiber insulation bearing the UL Classification Marking as to Surface Burning Characteristics and/or Fire Resistance, having a min density of 0.5 pcf.

3A. Loose Fill Material* — As an alternate to Item 3, any loose fill material bearing the UL Classification Marking for Surface Burning Characteristics, having a min density of 0.5 pcf.

3B. Fiber, Sprayed* — As an alternate to Item 3 — Any thickness of spray-applied cellulose insulation material, having a min density of 0.5 lb/ft³, applied with water, over the resilient channel/gypsum board ceiling membrane when resilient channels and gypsum board attachment is modified as specified in Items 6 and 7. Fiber, Sprayed is applied with moisture in accordance with the application instructions supplied with the product. The finish rating when Fiber Sprayed is used has not been determined. Alternate application method: The fiber is applied without water or adhesive in accordance with the application instructions supplied with a minimum density of 0.5 lb/ft³ over the resilient channel/gypsum board ceiling membrane when resilient channels and gypsum board attachment is modified as specified in Items 6 and 7. Alternate application method: The fiber is applied without water or adhesive to a nominal density of 3.5 lb/ft³ behind netting (Item 9) stapled to the rafters. The netting is stapled at both lower edges of the rafters creating a cavity to accept the cellulose fiber.

APPLEGATE GREENFIBER ACQUISITION LLC -- INS735, INS745, INS750LD, and SANCTUARY for use with wet or dry application. INS510LD, INS515LD, INS541LD, INS735, INS765LD, Insulmax, and INS773LD are to be used for dry application only.

3C. Cavity Insulation - Batts and Blankets*, Loose Fill* or Fiber, Sprayed* — (As described above) in Items 3, 3A and 3B — (For Use with Item 7A, Not Shown) — Min. 3-1/2 in thick with no limit on maximum thickness fitted in the concealed space, draped over the resilient channel (Item 6D)/gypsum board (Item 7A) ceiling membrane.

3D. Foamed Plastic* - (As an alternate to Item 3 or 3A, Not Shown) - Spray foam insulation applied directly to the underside of the underside of the roofing system (Item 1). Spray foam insulation installed to a maximum thickness of 10 in. at a nominal 0.5 lb/ft3 density, while maintaining a minimum 8-1/2 in. clearance between the spray foam insulation and the gypsum board (Item 7). When spray foam insulation is used, resilient channels (Item 6) shall be installed maximum 12 in. OC, with channels adjacent to butt joints of gypsum board (Item 7) installed at 6 in. OC to allow for maximum 3 in. spacing off ends of the gypsum board joints. Gypsum board (Item 7) to be installed using 1-1/4 in. long Type S screws, spaced maximum 8 in. OC, and butted end joints shall be staggered min. 2 ft within the assembly, and occur midway between the continuous furring channels. If used with a ceiling damper (Items 5 through 5AB) in the concealed space, minimum 1 in. clearance to be maintained between damper housing and spray foam insulation. Not evaluated for use with Items 6A through 6F. SES FOAM INC — Sucraseal

3E. Foamed Plastic* - (As alternate to Item 3, 3A, or 3B, Not Shown) - Spray foam insulation applied directly to the underside of the roofing system (Item 1). Spray foam insulation installed to a maximum thickness of 10 in. at a nominal 0.5 lb/ft³ or 2.0 lb/ft³ density, depending on the product installed. When spray foam insulation is installed, resilient channels (Item 6) shall be installed maximum 12 in. OC, with channels adjacent to butt joints of gypsum board (Item 7) spaced maximum 3 in. away from gypsum butt joints. Gypsum board (Item 7) to be installed using minimum 1-1/4 in. long Type S screws, spaced maximum 8 in. OC, and butted end joints shall be staggered min. 2 ft within the assembly, and occur midway between the continuous furring channels. If used with a ceiling damper (Items 5 through 5AB) in the concealed space, minimum 1 in. clearance to be maintained between damper housing and spray foam insulation. Not evaluated for use with Items 6A through 6F.

BASF CORP — Enertite® NM, Enertite® G, FE178®, Spraytite® 178, Spraytite® 81206, Walltite® 200, Walltite® US, Walltite® US-N, and Walltite® HP+

3F. Foamed Plastic* - (As an alternate to Item 3, 3A, 3B, 3C, or 3D, Not Shown) - Spray foam insulation applied directly to the underside of the underside of the roofing system (Item 1). Spray foam insulation installed to a maximum thickness of 17 in. at a nominal 0.5 lb/ft³ density, while maintaining a minimum 1-1/2 in. clearance between the spray foam insulation and the gypsum board (Item 7). When spray foam insulation is used, resilient channels (Item 6) shall be installed maximum 12 in. OC, with channels adjacent to butt joints of gypsum board (Item 7) installed at 6 in. OC to allow for maximum 3 in. spacing off ends of the gypsum board joints. Gypsum board (Item 7) to be installed using 1-1/4 in. long Type S screws, spaced maximum 8 in. OC, and butted end joints shall be staggered min. 2 ft within the assembly, and occur midway between the continuous furring channels. If used with a ceiling damper (Items 5 through 5AB) in the concealed space, no clearance is necessary between damper housing and spray foam insulation. Not evaluated for use with Items 6A through 6F. SES FOAM INC — EasySeal.5

4. Air Duct* - For use with ceiling dampers. - Any UL Class 0 or Class 1 flexible air duct installed in accordance with the instructions provided by the damper manufacturer.

5. Ceiling Damper* - Maximum nominal area, 324 sq in. Maximum square size, 18 in. by 18 in. Rectangular sizes not to exceed 324 sq in. with a maximum width of 18 in. Maximum damper height is 14 in. Installed in accordance with the manufacturers installation instructions provided with the damper. Maximum damper openings not to exceed 162 sq in. per 100 sq ft of ceiling area.

C&S AIR PRODUCTS - Model RD-521 POTTORFF — Model CFD-521

ternate Ceiling Damper*
C&S AIR PRODUCTS - Model RD-521-IP. RD-521-N
POTTORFF Models CED-521-IP, CED-521-NP
C&S AIR PRODUCTS - Model RD-521-90 RD-521-N
POTTOPEE Models CED 521.00 CED 521.00NP
AIDE TECHNOLOCIES INC Modeles CDD model EC
AIRE LECHNOLOGIES INC - Models: CRD model 50
CRD model 55 EA W/Boot
LLOYD INDUSTRIES INC — Model CRD 50-BT, CRD
5D. Alternate Ceiling Damper* — Maximum plenum b
fabricated from galvanized steel. Installed in accordance
the damper. Maximum damper openings not to exceed
LLOYD INDUSTRIES INC - Model CRD 50-BT-6, CR
BT-6
AIRE TECHNOLOGIES INC - Models: CRD model 50
CRD model 55 EA w/Boot
LI OYD INDUSTRIES INC - Model CRD 50-95BT CE
CROWN RRODUCTS CO INC Models CRD50-5501, CI
LLOVE INDUSTRIES INC Models CRD50-FOF
CONU
LLOYD INDUSTRIES INC - Models 45-CRD-LT-BT a
LLOYD INDUSTRIES INC — Model 45-LTD-95-BT-4
LLOYD INDUSTRIES INC — Model CRD50-w X-BT
MIAMI TECH INC — Model RxCRD
DELTA ELECTRONICS INC — Models CRD2, GBR-C
UNITED ENERTECH CORP — Type C-S/R-WT or C-S
WTPS (Max nom area 162 sq. in.)
RUSKIN COMPANY - Model CFD7T, CFD7T-END-B
CFD7T-IB6, or CFDR7-T
DELTA ELECTRONICS INC - Model SIG-CRD
DELTA ELECTRONICS INC - Model SMT-CRD
PANASONIC CORPORATION PANASONIC CORPO
BROAN-NUTONE LLC - Model RDELIWT
BROAN-NUTONE LLC - Models RD I1 and RDH
BROAN-NUTONE LLC - Model RDMWT
BROAN-NUTONE L L C - Model RDMW12
GREENHECK FAN CORP — Model CRD-1WT
GREENHECK FAN CORP — Model CRD-2WT
AIRE TECHNOLOGIES INC — Model 57IB.
AIRE TECHNOLOGIES INC — Series 58.
AIRE TECHNOLOGIES INC — Model 51 w/Boot.
GREENHECK FAN CORP - Model CRD-310WT
GREENHECK FAN CORP - Model CRD-320WT
RUSKIN COMPANY - Model CFD7T-SR
SOUTHWARK METAL MFG CO - Model 800 w/Box
SOUTHWARK METAL MEG CO CRD w/DB Box
SOUTHWARK METAL MEG CO Model 500 w/Boot

GREENHECK FAN CORP - Model CRD-300WT

 Furring Channels — Resilient channels formed of 25 MSG thick galv steel. Installed perpendicular to the trusses (Item 2), spaced a max of 16 in. OC when no insulation is fitted in the concealed spaced, or a max of 12 in. OC when insulation is fitted in the concealed space, draped over the resilient channel/gypsum board ceiling membrane, or when insulation applied to the underside of the roofing system (Item 1). Channels overlapped 4 in. at splices. Channels oriented opposite at wallboard butt joints (spaced 6 in. OC) as shown in the above illustration. Channels secured to each truss with 1-1/4 in. long Type S screws.

7. Gypsum Board* — Nom 5/8 in. thick, 48 in. wide, installed with long dimension perpendicular to resilient channels with 1-1/8 in. long Type S screws spaced 12 in. OC and located a min of 1/2 in. from side joints and 3 in. from the end joints. At end joints, two resilient channels are used, extending a min of 6 in. beyond both ends of the joint. When insulation, Item 3 or 3A, is draped over the resilient channel/gypsum wallboard ceiling membrane, screws shall be installed at 8 in. OC. NATIONAL GYPSUM CO — Types eXP-C, FSW-G, FSW-C, FSK-G, FSK-C NATIONAL GYPSUM CO — Type FSLX

8. Finishing System — (Not Shown) — Vinyl, dry or premixed joint compound, applied in two coats to joints and screw-heads; paper tape, 2 in. wide, embedded in first layer of compound over all joints. As an alternate, nom 3/32 in. thick veneer plaster may be applied to the entire surface of gypsum wallboard.

9. Discrete Products Installed in Air-handling Spaces* — Automatic Balancing Valve/Damper — (Not Shown — Optional) — For use with item 5M, Ruskin Company's Model CFD7T damper (CABS). Ceiling damper to be provided with plenum box per damper manufacturer's instructions with side outlet only. Entire assembly to be installed into any UL Class 0 or Class 1 flexible air duct in accordance with the instructions provided by the automatic balancing valve/damper manufacturer. METAL INDUSTRIES INC — Model ABV-4, ABV-5, ABV-6

NP90

0 w/Boot, CRD model 50EA w/Boot, CRD model 55 w/Boot,

- D 50-EA-BT, CRD 55-BT, CRD 55 EA-BT
- box size nom. 13 in. long by 13 in. wide and 11-7/8 in. high ce with the manufacturers installation instructions provided with 1 50 sq. in. per 100 sq ft of ceiling area.
- RD 50-EA-BT-6, CRD 55-BT-6, CRD 55 EA-BT-6, CRD50-w X-50 w/Boot, CRD model 50EA w/Boot, CRD model 55 w/Boot,
- RD 50-EA-95BT, CRD 55-95BT, CRD 55 EA-95BT

PB-4.2-CP, -6.0-CP; CRD50-FGPB-4.2-EA-CP, -6.0-EA-CP -4.2, - 4.2 NI, -6.0, -6.0 NI; CRD50-EA-FGPB-4.2, -4.2 NI, -6.0, and 45-CRD-LTD-BT

CRD, ITG-CRD

S/R-WTP (Max nom area 324 sq. in.) or C-S/R-WTS C-S/R-BT, CFD7T-90-BT, CFD7T-ST-BT, CFD7T-SB, CFD7T-R6-DB,

DRATION OF NORTH AMERICA — Model PC-RD05C5

510 w/Boot, 500 w/Box or 510 w/Box AILOR INDUSTRIES INC — Types 0755, 0755A, 0756, 0756D, 0757, 0757D, 0757FP, 0757DFP, 0763 SAFE AIR DOWCO - 0455, 0455A, 0456, 0456D, 0457, 0457D, 0457-DB, 0457-CB, 0463-FB, 0457-EB, 0463-GB,

Design No. U314

June 1, 2022

Bearing Wall Rating — 1 HR. Finish Rating - 26 Min.

This design was evaluated using a load design method other than the Limit States Design Method (e.g., Working Stress Design Method). For jurisdictions employing the Limit States Design Method, such as Canada, a load restriction factor shall be used --See Guide BXUV or BXUV7

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.



1. Wood Studs - Nom 2 by 4 in., spaced 24 in. OC, effectively fire stopped.

2. Gypsum Board* — 5/8 in. thick, 24 to 54 in. wide. Gypsum boards nailed to studs and bearing plates 7 in. OC with 6d cement coated nails 1-7/8 in. long, 0.0915 in. shank diam and 1/4 in. diam head. When used in widths other than 48 in., gypsum panels to be installed horizontally

- CGC INC Types AR, IP-AR, IP-X1, SCX, SHX, ULIX, ULX, WRX.
- NATIONAL GYPSUM CO Riyadh, Saudi Arabia Type FR, or WR. UNITED STATES GYPSUM CO - Type AR, FRX-G, IP-AR, IP-X1, SCX, SHX, ULIX, ULX or WRX.
- USG BORAL DRYWALL SFZ LLC Type SCX
- USG MEXICO S A DE C V Type AR, IP-AR, IP-X1, SCX, SHX, ULX, WRX.

2A. Gypsum Board* — (As an alternate to Item 2) — Nom 3/4 in. thick, 4 ft wide, installed as described in Item 2. CGC INC - Types AR, IP-AR. UNITED STATES GYPSUM CO — Types AR, IP-AR.

USG MEXICO S A DE C V — Types AR, IP-AR.

2B. Gypsum Board* — (As an alternate to Items 2, 2A) — Nominal 5/8 in. thick, 4 ft wide panels, applied vertically only and secured as described in Item 2.

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM - Type QuietRock ES.

2C. Wall and Partition Facings and Accessories* - (As an alternate to Items 2, 2A, 2B) - Nominal 5/8 in. thick, 4 ft wide panels, applied vertically only and secured as described in Item 2. PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type QuietRock 527

3. Joints and Nailheads — Exposed joints covered with joint compound and paper tape. Nailheads covered with joint compound. Joint compound and paper tape may be omitted when square edge boards are used. As an alternate, nom 3/32 in. thick gypsum veneer plaster may be applied to the entire surface of Classified veneer baseboard with the joints reinforced with paper tape.

4. Steel Corner Fasteners — (Optional) — For use at wall corners. Channel shaped, 2 in. long by 1 in. high on the back side with two 1/8 in. wide cleats protruding into the 5/8 in. wide channel, fabricated from 24 gauge galv steel. Fasteners applied only to the end or cut edge (not along tapered edges) of the wallboard, no greater than 2 in. from corner of wallboard, max spacing 16 in. OC. Nailed to adjacent stud through tab using one No. 6d cement coated nail per fastener. Corners of wallboard shall be nailed to top and bottom plate using No. 6d cement coated nails.

5. Batts and Blankets* — (Optional, Not Shown) — Mineral wool insulation placed in stud cavities. THERMAFIBER INC — Type SAFB, SAFB FF. ROCKWOOL — Type SAFEnSOUND, min. 1.69 pcf.

6. Non-Bearing Wall Partition Intersection - (Optional) Two nominal 2 by 4 in. stud or nominal 2 by 6 in. stud nailed together with two 3in. long 10d nails spaced a max. 16 in. OC. vertically and fastened to one side of the minimum 2 by 4 in. stud with 3 in. long 10d nails spaced a max 16 in. OC. vertically. Intersection between partition wood studs to be flush with the 2 by 4 in. studs. The wall partition wood studs are to be framed by with a second 2 by 4 in. wood stud fastened with 3 in. long 10d nails spaced a max. 16 in. OC. vertically. Maximum one non-bearing wall partition intersection per stud cavity. Non-bearing wall partition stud depth shall be at a minimum equal to the depth of the bearing wall.

7. Wall and Partition Facings and Accessories* - (CLBV) (Optional, Not Shown) - For use with Item 1, Item 2, Item 3, and Item 5. For maximum fire rating of 1 hour. On one side of the wall, over the first layer of Gypsum Board (Item 2), install RefleXor membrane with the gold side facing outwards. Membrane installed with T50 staples spaced 12 inches on center in both directions as per manufacturer's instructions, seams in membrane to be overlapped by 2 inches. When RefleXor membrane is used an additional layer of Gypsum Board identical to the one used in the first layer and as specified in Item 2 shall be installed over the membrane. The additional layer of Gypsum Board to be installed through the membrane to the stud as specified in Item 2 except the fastener length shall be increased by a minimum of 5/8 inch. Install Batts and blankets in the stud cavity as per Item

On the other side of the wall, prior to the installation of the Gypsum Board, install Resilient Channels, 25 MSG galv steel, spaced vertically 24 in. OC, flange portion screw attached to one side of studs with 1-1/4 in. long diamond shaped point, double lead Phillips head steel screws. Over the Resilient Channels install 3/4 inch thick SONOpan panel secured to the Resilient Channels with min. 1-1/4 in. long drywall screws and washers spaced at 16 in. OC on the perimeter of the panel and 8 in. OC in the field of the panel. Over the SONOpan panel install the same Gypsum Board as specified in Item 2 with the fastener length increased by minimum 3/4 inch. Not evaluated or intended as a substitute for the required layer(s) of UL Classified Gypsum Board. Alternately, on the other side of the wall prior to the installation of the Gypsum Board (Item 2), install 3/4 in. thick SONOpan panels, secured to one side of studs either horizontally or vertically. Panels secured to each stud with min. 1-1/4 in. long drywall screws spaced 12 in. OC. Over the SONOpan, install 25 MSG galv. steel, Resilient Channels, spaced vertically 24 in. OC. Resilient Channels fastened through panels to each stud with min. 2 in. long drywall screws or self-tapping screws. Over the Resilient Channels install Gypsum Board as specified in Item 2 with drywall screws. Panels not evaluated or intended as a substitute for the required layer(s) of UL Classified Gypsum Board.

MSL — RefleXor membrane, SONOpan panel.

This design was evaluated using a load design method other than the Limit States Design Method (e.g., Working Stress Design Method). For jurisdictions employing the Limit States Design Method, such as Canada, a load restriction factor shall be used -See Guide BXUV or BXUV7

as Canada), respectively.



1. Wood Studs — Min. nom 2 by 4 in., spaced 16 in. OC.

2. Gypsum Board* — Any 5/8 in. thick UL Classified Gypsum Board that is eligible for use in Design Nos. L501, G512 or U305. Nom5/8 in. thick (min) 4 ft wide bearing the UL Classification Marking for Fire Resistance applied vertically. Attached to studs with 6d cement coated nails or 1-7/8 in. long No. 6 buglehead dry wall screws spaced 7 in. OC at the edges and in the fields. Vertical joints located over studs. Joints covered with paper tape and joint compound. Fastener heads covered with joint compound.

AMERICAN GYPSUM CO (View Classification) — CKNX.R14196 BEIJING NEW BUILDING MATERIALS PUBLIC LTD CO (View Classification) - CKNX.R19374 CABOT MANUFACTURING ULC (View Classification) — CKNX.R25370 CERTAINTEED GYPSUM INC (View Classification) — CKNX.R3660 CGC INC (View Classification) — CKNX.R19751 CERTAINTEED GYPSUM INC (View Classification) — CKNX.R18482 GEORGIA-PACIFIC GYPSUM L L C (View Classification) - CKNX.R2717 LOADMASTER SYSTEMS INC (View Classification) — CKNX.R11809 NATIONAL GYPSUM CO (View Classification) - CKNX.R3501 PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM (View Classification) - CKNX.R7094 PANEL REY S A (View Classification) — CKNX.R21796 SIAM GYPSUM INDUSTRY (SARABURI) CO LTD (View Classification) - CKNX.R19262 THAI GYPSUM PRODUCTS PCL (View Classification) - CKNX.R27517 UNITED STATES GYPSUM CO (View Classification) — CKNX.R1319 USG BORAL DRYWALL SFZ LLC (View Classification) — CKNX.R38438 USG MEXICO S A DE C V (View Classification) — CKNX.R16089

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM - Type QuietRock ES.

panels, secured as described in Item 2.

2C. Gypsum Board* — (As an alternate to Item 2) — 5/8 in. thick gypsum panels, with beveled, square, or tapered edges, applied vertically. Gypsum panels fastened to framing with 1-1/4 in. long Type W coarse thread gypsum panel steel screws spaced a max 8 in. OC, with last screw 1 in. from edge of board. AMERICAN GYPSUM CO — Types AGX-1, M-Glass, Type AG-C, LightRoc.

See Batts and Blankets* (BZJZ) Category for names of Classified companies.

4. Foamed Plastic* — Max. 2 in. thick rigid polystyrene insulation attached to studs with 2-1/2 in. long galvanized roofing nails. OWENS CORNING SCIENCE AND TECHNOLOGY, LLC **DUPONT DE NEMOURS, INC.** — Type Styrofoam

4A. Foamed Plastic* — As an alternate to Item 4, maximum 2 in. thick Polyisocyanurate foamed plastic insulation boards sified in accordance with BRYX and / or CCVW, attached to studs with 3 in. long galvanized rooting nai ATLAS ROOFING CORP - EnergyShield Pro Wall Insulation, EnergyShield Pro 2 Wall Insulation, EnergyShield CGF Pro and EnergyShield Ply Pro

Glass Exterior Wall Insulation" "Durasheath", "Thermasheath-3", "Durasheath-3".

4B. Building Units* - As an alternate to Items 4 or 4A, max. 2-in thick polyisocyanurate composite foamed plastic insulation boards, nom. 48 by 48 or 96 in., with a facer on one side and with oriented strand board or plywood on the other, attached to studs with 3- in. long galvanized roofing nails. HUNTER PANELS, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC - Type "Xci NB" and "Xci Ply" LAMINATORS INC — Type "Omega ci"

4C. Building Units* — As an alternate to Items 4, 4A or 4B, max, 2-in thick polyisocyanurate composite foamed plastic insulation boards, nom. 48 by 48 or 96 in., with a facer on one or both sides and bonded to fiberboard, oriented strand board or plywood on one side, attached to studs with min. 8d nails or min. 2-1/2 in. long Type W screws. RMAX, A BUSINESS UNIT OF SIKA CORPORATION — Types Thermasheath-SI, ECOBASE ci, ThermaBase-CI, ECOMAXci FR Plv. "ECOMAXci Plv"

4D. Building Units* — As an alternate to Items 4, 4A - 4C, consisting of 7/16-in. thick PS-2 rated oriented strand board (OSB) as cover board bonded to rigid 1/2 in. to 2 in. thick polyisocyanurate insulation, installed vertically with vertical joints located over studs. Fastened to studs with min. 10d galvanized nails, spaced 6 in. OC at edges and 12 in. OC in the field. Length of nails to be such that they engage with studs minimum 1-3/8 in. HUBER ENGINEERED WOODS L L C - ZIP System ® R Sheathing

5. Exterior Facings — Installed in accordance with the manufacturer's installation instructions. One of the following exterior facings is to be applied over the Foamed Plastic* or Building Units*:

See Molded Plastic (BTAT) category in the Building Materials Directory for names of manufacturers.

D. Cementitious Stucco - Portland cement or synthetic stucco systems with self-furring metal lath or adhesive base coat. Thickness from 3/8 to 3/4 in., depending on system.

Design No. U364

June 6, 2022

Bearing Wall Rating - 1 Hr.

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such

2A. Gypsum Board* — (As an alternate to Item 2) — Nominal 5/8 in. thick, 4 ft wide panels, secured as described in Item 2

2B. Wall and Partition Facings and Accessories* - (As an alternate to Item 2 and 2A) - Nominal 5/8 in. thick, 4 ft wide

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM - Type QuietRock 527.

3. Batts and Blankets* — Min. 3-1/2 in. glass fiber or mineral wool batts placed to fill cavity of wall.

FIRESTONE BUILDING PRODUCTS CO L L C — "Enverge™ CI Foil Exterior Wall Insulation" and "Enverge™ CI

HUNTER PANELS, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC - Type "Xci-Class A", "Xci 286", "Xci Foil (Class A)", "Xci CG" and "Xci Foil", "Xci CG NH", "Xci Foil NH" RMAX, A BUSINESS UNIT OF SIKA CORPORATION - Types "TSX-8500", "ECOMAXci FR", "TSX-8510",

"ECOMAX xi FR White", "ECOMAXci", "ECOMAXci FR Air Barrier", "Thermasheath-XP", "Thermasheath", JOHNS MANVILLE — Type "AP Foil-Faced Foam Sheathing"

A. Vinyl Siding Molded Plastic* — Contoured rigid vinyl siding having a flame spread value of 20 or less.

B. Particle Board Siding — Hardboard exterior sidings including patterned panel or lap siding.

C. Wood Structural Panel or Lap Siding — APA Rated Siding, Exterior, plywood, OSB or composite panels with veneer faces and structural wood core, per PS 1 or APA Standard PRP-108, including textured, rough sawn, medium density overlay, brushed, grooved and lap siding.

E. Brick — Brick veneer, meeting the requirements of local code agencies. Brick veneer attached to the studs with corrugated metal wall ties attached to each stud with 8d cement coated nails, every sixth course of bricks. When brick veneer is used the wallboard on the exterior side may be eliminated.

MINER FEINSTEIN ARCHITECTS

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MEP ENGINEER: RK Consulting, LLC 9204 Gaither Road Gaithersburg, Maryland 20877 301.948.2808

CIVIL ENGINEER: Lingg Property Consulting 256 West Patrick Street, Suite 2A Frederick, Maryland 21701 302.644.2121

Architect's Project Number: 2238 BID SET 12.5.2022

CARVER COMMUNITY CENTER EXPANSION

207 Lee Alley Frederick, Maryland 21701

OWNER:



UL Designs

GENERAL NOTES

- GENERAL REQUIREMENTS
- 1.1 THE GENERAL CONTRACTOR MUST NOTIFY ARCHITECT IMMEDIATELY IF CONDITIONS VARY FROM THOSE SHOWN ON THE DRAWINGS.
- 1.2 ALL DIMENSIONS SHOWN TO NEW WORK ARE TO FACE OF STUD. DIMENSIONS SHOWN TO EXISTING CONDITIONS ARE TO EXISTING FINISH FACE. CONTRACTOR SHALL NOTIFY ARCHITECT IMMEDIATELY IF CONDITIONS VARY FROM THOSE SHOWN ON THE DRAWINGS.
- 1.3 WHERE DIMENSIONS ARE INDICATED AS MAXIMUM (MAX.) OR MINIMUM (MIN.) THERE IS NO CONSTRUCTION TOLERANCE BEYOND THE STATE MAXIMUM OR MINIMUM DIMENSION.
- 1.4 THE GENERAL CONTRACTOR IS TO FIELD VERIFY ALL CONDITIONS AND DIMENSIONS DEPENDENT ON EXISTING ELEMENTS OR MATERIALS PRIOR TO PURCHASE OR INSTALLATION OF NEW MATERIALS, ELEMENTS, EQUIPMENT, OR WORK. NOTIFY ARCHITECT IMMEDIATELY IF CONDITIONS VARY FROM THOSE SHOWN IN DESIGN DOCUMENTS.
- 1.5 THE GENERAL CONTRACTOR IS TO STOP ALL WORK AND NOTIFY OWNER AND ARCHITECT IMMEDIATELY IF POTENTIAL HAZARDOUS MATERIALS ARE ENCOUNTERED.
- 1.6 ALL PARTS OF THE WORK MUST COMPLY WITH THE MINIMUM REQUIREMENTS OF THE GOVERNING REGULATIONS OF ALL FEDERAL STATE AND LOCAL AUTHORITIES HAVING JURISDICTION OVER THE PROJECT. NO PART OF THE CONTRACT DOCUMENTS MAY BE CONSTRUED AS TO REQUIRE OR PERMIT WORK CONTRARY TO ANY GOVERNING REGULATION.
- THE CONTRACTOR SHALL HAVE SOLE RESPONSIBILITY FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES, AND SAFETY PRECAUTIONS AND PROGRAMS NECESSARY FOR THE PERFORMANCE OF THE WORK.
- 1.8 ALL WORK TO BE DONE IN ACCORDANCE WITH THE PROVIDED DETAILS AND THE REQUIREMENTS OF THE PRODUCT MANUFACTURERS. CONTRACTOR SHALL COMPLY WITH THE MANUFACTURER'S REQUIREMENTS. IN THE EVENT OF CONFLICTING INSTRUCTIONS.
- 1.9 THESE DOCUMENTS DO NOT ADDRESS ENVIRONMENTAL/HAZARDOUS MATERIAL CONCERNS. FOLLOW GUIDELINES AND RECOMMENDATIONS AS INDICATED BY OWNER SUPPLIED DOCUMENTATION.
- 1.10 THESE DRAWINGS ARE DIAGRAMMATIC, DO NOT SCALE DRAWINGS
- 1.11 EXISTING CONDITIONS DISTURBED BY NEW WORK SHALL BE RESTORED TO ITS PREVIOUS CONDITION AND TO MATCH ADJACENT FINISHES. RESTORATION SHALL BE COMPLETED BY PERSONNEL SKILLED IN THE APPLICABLE TRADE.
- 1.12 MANUFACTURER'S AND ARCHITECTURAL DETAILS SHOWN IN DRAWING SET MAY REQUIRE FIELD MODIFICATIONS PER EXISTING CONDITIONS.
- 1.13 THE ARCHITECTURAL DRAWINGS ARE PART OF A LARGER SET OF DRAWINGS WHICH, WHEN COMPLETE, CONSISTS OF ALL DRAWINGS LISTED BY THE INDEX OF DRAWINGS. THE WORK DESCRIBED IN THE DRAWINGS OF ANY ONE DISCIPLINE MAY BE AFFECTED BY THE WORK OF ANOTHER DISCIPLINE AND MAY REQUIRE REFERENCE TO THE DRAWINGS OF ANOTHER DISCIPLINE. PARTIAL SETS OF DRAWINGS ARE INCOMPLETE AND SHOULD NOT BE DISTRIBUTED OR UTILIZED BY THE CONTRACTOR.
- 1.14 PROVIDE PROPER DUST CONTROL AND CLEAN PROJECT AREAS BEFORE THE END OF EACH DAY
- 1.15 SEE SPECIFICATIONS FOR ALTERNATES AND ALLOWANCES

EXISTING CONDITIONS / DEMOLITION

- 2.1 REMOVE ALL EXISTING BUILDING SIGNAGE AND NUMBERS COMPLETE. PATCH ALL MASONRY PENETRATIONS.
- 2.2 GC TO REPAIR ANY ADJACENT SURFACES DAMAGED BY THE REMOVAL OF PARTITION WALLS SCHEDULED TO BE REMOVED. GC TO PREPARE THE FLOOR AND WALL SURFACES LEFT BY THE REMOVED WALLS TO RECEIVE NEW FINISH. IF NO FINISH IS SPECIFIED, FINISH OF AREAS LEFT BY REMOVED OR DEMOLISHED WALLS SHALL BE RESTORED TO MATCH THE FINISH OF THE SURFACE DIRECTLY ADJACENT.
- 2.3 DISCONNECT, CUT OFF, REMOVE TO BEHIND PERMANENT CONSTRUCTION AND CAP ALL ABANDONED UTILITIES COMPLETELY. REMOVE ALL ABANDONED UTILITIES EXPOSED BY REMOVAL OF EXISTING DRYWALL, FINISHES, FRAMING, OR OTHER DEMOLITION. HIGH PRESSURE AIR PURGE ALL EXISTING ABANDONED GAS LINES THAT WILL REMAIN BEHIND PERMANENT CONSTRUCTION, CAP AFTER PURGING.
- 2.4 WHERE EXISTING SYSTEMS OR FINISHES ARE TO BE REMOVED, CLEAN & PREPARE THE SUBSTRATE FOR RECEIPT OF NEW FINISHES.
- 2.5 VARIOUS WALL AND FLOOR PENETRATIONS FOR PROPOSED SYSTEMS / UTILITIES (ELEC., REFRIGERANT CONDENSATE, ETC.) MAY BE SHOWN FOR CONVENIENCE/COORDINATION PURPOSES ONLY. ADDITIONAL FLOOR AND WALL PENETRATIONS WILL BE REQUIRED TO FACILITATE THE INSTALLATION OF THE PROPOSED SYSTEMS. CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFICATION OF EXISTING CONSTRUCTION, PRIOR TO BIDDING, AT ALL REQUIRED PENETRATIONS. THE CONTRACTOR SHALL PROVIDE ALL FLOOR AND WALL PENETRATIONS REQUIRED TO COMPLETE WORK AS PART OF THE BASE CONTRACT WITHOUT ADDITIONAL COMPENSATION.
- 2.6 VARIOUS PENETRATIONS IN EXISTING FLOOR SLABS WILL BE REQUIRED FOR INSTALLATION OF NEW SYSTEMS AND SERVICES. UTILIZE GROUND PENETRATING RADAR (GPR) TO LOCATE EXISTING REINFORCING. LAYOUT ALL PROPOSED PENETRATIONS FOR REVIEW WITH THE STRUCTURAL ENGINEER PRIOR TO CUTTING OR DRILLING THE STRUCTURAL SLAB. ALLOW 72 HOURS NOTICE FOR ENGINEER'S ATTENDANCE.
- 2.7 REMOVE EXISTING ROOF BALLAST COMPLETE SEE DIVISION 7 FOR ROOFING SCOPE.
- 2.8 REMOVE ALL SURFACE MOUNTED CONDUITS, ANCHORS, BRACKETS, ETC., WITH THE EXCEPTION OF THE CELLULAR PROVIDER'S EQUIPMENT ON THE EXTERIOR OF THE BUILDING

3 CONCRETE

- 3.1 SAW-CUT, REMOVE AND REPLACE PORTIONS OFR INTERIOR CONCRETE SLABS AS REQUIRED TO FACILITATE NEW WORK OR AS INDICATED ON DRAWINGS AS PART OF THE BASE CONTRACT.
- 3.2 PRIOR TO INSTALLATION OF NEW FLOOR FINISH. SLAB MUST BE FREE OF GREASE, OIL, STAINS AND DUST. TEST NEW CONCRETE FOR DRYNESS PRIOR TO INSTALLATION OF NEW FINISHES.
- 3.3 WHERE REQUIRED, NEW POURED CONCRETE SLABS SHOULD BE SMOOTH WITH A TROWEL FINISH, NON-TELEGRAPHING, CLEAN AND LEVEL WITH ADJACENT FLOORS AND READY TO RECEIVE NEW FINISH.

MASONRY

- 4.1 DETERGENT & PRESSURE CLEAN EXISTING EXTERIOR MASONRY
- 4.2 TUCKPOINT AND REPAIR EXISTING MASONRY AS REQUIRED. ABOVE SECOND FLOOR ELEVATION TO BE PRECISE IN DETAIL AND MATCH EXISTING MORTAR; BELOW SECOND FLOOR ELEVATION TO BE PREPPED FOR PAINTING WITH REPAIRS TO MODERATE-TO-SEVERE INSTANCES ONLY. REFER TO ALTERNATES.
- 4.3 AT CMU INFILL AT CRAWLSPACE ELEVATIONS, REMOVE BRICK SILLS AND FACE CMU WITH BRICK FACADE; TO BE PREPPED FOR PAINTING.
- 4.4 PATCH AND REPAIR ALL ABANDONED PENETRATIONS AT REMOVED ITEM LOCATIONS.
- 4.5 SAW-CUT AND REMOVE EXISTING MASONRY AS REQUIRED TO FACILITATE NEW WORK OR AS INDICATED ON DRAWINGS.
- METALS 5
- 5.1 PROVIDE LOOSE STEEL LINTELS AT NEWLY CREATED OPENINGS IN MASONRY CONSTRUCTION SHOP PRIME & FIELD PAINT.
- 5.2 PROVIDE PTD. STEEL PIPE RAILINGS WHERE INDICATED.
- WOOD, PLASTICS AND COMPOSITES
- 6.1 REFER STRUCTURAL DRAWINGS FOR ADDITIONAL INFORMATION AND DETAILS

GENERAL NOTES (CONT.)

- 6.2 THE CONTRACTOR SHALL VISUALLY ASSESS ALL WOOD FRAMING EXPOSED BY THE WORK. PROVIDE PROPOSAL FOR, AND PRIOR TO, REPAIRING THE DAMAGED FRAMING. 6.3 PROVIDE PTD. WD. TRIM WHERE INDICATED IN THE FINISH SCHEDULE
- THERMAL AND MOISTURE PROTECTION
- 7.1 PROVIDE NEW R-49 BLOWN-IN CELLULOSE INSULATION IN ALL ATTIC SPACES PROVIDE EAVE VENTILATION TROUGHS TO MAINTAIN LOW TO HIGH AIRFLOW THROUGH ATTIC.
- 7.2 PROVIDE LOW VOC SEALANT AROUND ALL PLUMBING FIXTURES, COUNTERTOPS, DISSIMILAR MATERIALS, ETC.
- 7.3 PROVIDE EXTERIOR SEALANT AT EXTERIOR DOORS CONTROL JOINTS, AND OTHER DISSIMILAR MATERIALS PROVIDE BACKER ROD AS APPLICABLE.
- 7.4 SEAL ALL PENETRATIONS (NEW & EXISTING) THROUGH WALLS, CEILINGS, ROOFS, ETC.
- 7.5 FIRESTOP ALL PENETRATIONS, CREATED AS PART OF THE DEMOLITION OR NEW WORK, THROUGH RATED ASSEMBLIES. MATCH FIRESTOPPING RATING TO RATING OF PENETRATED ASSEMBLY.
- OPENINGS
- 8.1 REMOVE ALL EXISTING DOORS, FRAMES, AND HARDWARE. PROVIDE DOORS, FRAMES, AND HARDWARE AS INDICATED IN THE DOOR SCHEDULE.
- 8.2 REMOVE ALL EXISTING WINDOWS. PROVIDE REPLACEMENT AND NEW WINDOWS AS INDICATED ON ELEVATIONS AND SCHEDULES. PROVIDE MASONRY INFILL WHERE WINDOW ARE NOT REPLACED.
- 8.3 PROVIDE ACCESS DOORS AT ALL CONCEALED CONTROL LOCATIONS EXCEPT WHERE CONCEALED CONTROL IS LOCATED ABOVE AN ACOUSTICAL PANEL CEILING - ACCESS DOOR RATING SHALL MATCH THAT OF THE ASSEMBLY IN WHICH IT IS INSTALLED.
- 8.4 IN EACH SPACE PROVIDE AT LEAST ONE WINDOW HAVING CONTROLS AND MECHANISMS THAT CAN BE OPERABLE WITH ONE HAND AND SHALL NOT REQUIRE TIGHT GRASPING, PINCHING, OR TWISTING OF THE WRIST. THE FORCE REQUIRED TO ACTIVATE CONTROLS OR OPEN AND CLOSE WINDOW SHALL BE NO GREATER THAN 5 LBF (22.2 N). IF SUBMITTED PRODUCT CANNOT MEET THESE REQUIREMENTS, CONTRACTOR SHOULD PROVIDE ADDITIONAL MECHANICAL ASSIST MECHANISM AS PART OF BASE BID.
- FINISHES
- 9.1 PROVIDE WALL, FLOOR, AND CEILING FINISHES AS INDICATED IN THE FINISH SCHEDULE
- 9.2 PROVIDE CERAMIC TILE WAINSCOTING AT ALL PUBLIC BATHROOMS TO MINIMUM 48" ABOVE FINISHED FLOOR, OR TO HEIGHT INDICATED IN THE FINISH SCHEDULE OR INTERIOR ELEVATIONS.
- 9.3 AT AREAS INDICATED TO RECEIVE NEW VCT AND / OR LVT, REMOVE ALL EXISTING FLOOR FINISH AND PROVIDE FLOOR LEVELING / UNDERLAYMENT COMPOUND OVER ENTIRE AREA TO PROVIDE A NON-TELEGRAPHING SUBSTRATE.

10 SPECIALTIES

- 10.1 REMOVE EXISTING INTERIOR BUILDING SIGNAGE PROVIDE ACCESSIBLE (UFAS/ADA COMPLIANT) ROOM IDENTIFICATION SIGNAGE THROUGHOUT THE BUILDING - MOUNT SIGNAGE IN ACCORDANCE WITH THE APPLICABLE ACCESSIBILITY REQUIREMENTS.
- 10.2 PROVIDE BATHROOM ACCESSORIES PER ELEVATIONS AND SCHEDULE.
- 10.3 PROVIDE HEAT PROTECTION AND SKIRTING AT ALL UFAS/ADA SINKS.
- 10.4 PROVIDE TEXTURED VINYL CORNER GUARDS AT ALL OUTSIDE CORNERS. REFER TO ACCESSORY SCHEDULE.

11 EQUIPMENT

- 11.1 REMOVE EXISTING APPLIANCES PROVIDE APPLIANCES PER PLANS, SCHEDULE, AND INTERIOR ELEVATIONS.
- 11.2 PROVIDE STAINLESS STEEL GREASE SHIELDS ON WALLS DIRECTLY ADJACENT AND/OR BEHIND RANGE.

12 FURNISHINGS

- 12.1 REMOVE ALL EXISTING KITCHEN CABINETS, COUNTERTOPS, SINKS PROVIDE CABINETS, COUNTERTOPS, SINKS, ETC. IN NEW CONFIGURATIONS, AS INDICATED IN FLOOR PLANS AND INTERIOR ELEVATIONS. PROVIDE BLOCKING AT ALL LOCATIONS AS NECESSARY TO INSTALL NEW WORK.
- 12.2 REMOVE EXISTING WINDOW TREATMENTS AND PROVIDE NEW VERTICAL BLINDS AT ALL WINDOWS. PROVIDE WAND AND CONTROL EXTENSIONS TO COMPLY WITH ACCESSIBILITY REQUIREMENTS.
- 12.3 PROVIDE SCRIBE MOLDING AT ALL EDGES WHERE CABINETRY MEETS WALLS OR CEILING.

13 – 21 NOT USED

- 22 REFER TO PLUMBING DRAWINGS FOR ADDITIONAL DETAILS AND REQUIREMENTS FOR THE WORK
- 23 REFER TO MECHANICAL DRAWINGS FOR ADDITIONAL DETAILS AND REQUIREMENTS FOR THE WORK.

24 – 25 NOT USED

26 REFER TO ELECTRICAL DRAWINGS FOR ADDITIONAL DETAILS AND REQUIREMENTS FOR THE WORK

27 COMMUNICATIONS

- 27.1 PROVIDE TELEPHONE (CAT 6 / RJ-11), DATA (CAT 6 / RJ-45), AND TELEVISION (RG-6 / F CONNECTOR) OUTLETS. REFER TO ELECTRICAL DRAWINGS FOR LOCATIONS AND TEST AFTER CONSTRUCTION. HOMERUN ALL CABLES BACK TO MECH. A105.
- 27.2 PROVIDE FOUR (4) WIRELESS TRI-BAND ACCESS POINTS WITH POWER OVER ETHERNET (POE) AND ASSOCIATED WIRING. LOCATE IN PLAYROOM A108, PLAYROOM B102, FLEX CLASSROOM C105, AND COMMUNITY ROOM C112.

28 ELECTRONIC SAFETY AND SECURITY

- 28.1 PROVIDE NFPA-72 COMPLIANT FIRE ALARM SYSTEM w/ SMOKE DETECTION THROUGHOUT. PROVIDE
- ANNUNCIATORS AT THREE (3) LOCATIONS. REFER ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION. 28.2 PROVIDE A COMPLETE DESIGN-BUILD ACCESS CONTROL SYSTEM – COORDINATE WITH DOOR HARDWARE
- AND OWNER FOR SEQUENCE OF OPERATION. 28.3 PROVIDE A COMPLETE DESIGN-BUILD CAMERA SYSTEM. DIGITAL VIDEO RECORDER (DVR) BASED SYSTEM
- WITH REMOTE MONITORING CAPABILITIES SYSTEM SHALL BE DESIGNED AND INSTALLED BY AN EXPERIENCED SECURITY CONTRACTOR - PROVIDE ALL NECESSARY EQUIPMENT, CAMERAS, ENCLOSURES, WIRING, POWER CONNECTIONS, ETC. REQUIRED TO DELIVER A FULLY FUNCTIONING SYSTEM READY FOR OWNER'S USE. INCLUDE TEN (10) INTERIOR CELING MTD. CAMERA, SIX (6) EXTERIOR CAMERAS, AND MIN. THRITY (30) DAY RECORDING CAPACITY.

GENERAL NOTES (CONT.)

29 – 30 NOT USED

31 EARTHWORK

SAFETY, DEWATERING, ETC.

32 EXTERIOR IMPROVEMENTS

- 32.1 GC TO VERIFY LOCATIONS OF PERTINENT SITE IMPROVEMENTS. IF ANY PART OF THE EXTERIOR IMPROVEMENTS INDICATED ON THE SITE PLANS CANNOT BE COMPLETED DUE TO SITE CONDITIONS, SUCH AS ITEMS ENCOUNTERED BELOW GRADE, IMMEDIATELY ALERT ARCHITECT.
- 32.2 CONTACT LOCAL UNDERGROUND UTILITY SERVICES FOR UTILITY LOCATION AND IDENTIFICATION, PRIOR TO COMMENCING DEMOLITION AND NEW CONSTRUCTION. PERFORM EXCAVATION IN THE VICINITY OF UNDERGROUND UTILITIES WITH CARE AND BY HAND, IF NECESSARY. GC BEARS FULL RESPONSIBILITY FOR THIS WORK AND DISRUPTION OR DAMAGE TO UTILITIES SHALL BE REPAIRED IMMEDIATELY AND AT NO EXPENSE TO THE OWNER.
- 32.3 ITEMS SHALL REMAIN UNLESS DESIGNATED FOR REMOVAL AND/OR RELOCATION. REMOVE DEMOLISHED MATERIALS FROM SITE. BURYING OF WOOD CHIPS AND OTHER MATERIALS IS PROHIBITED.
- 32.4 REMOVE TREES AND LARGE SHRUBS AS INDICATED ON SITE PLANS. GRIND STUMP TO MINIMUM 18" BELOW GRADE AND REMOVE ALL WOODCHIPS. FILL DEPRESSIONS WITH SCREENED TOPSOIL AND PREPARE FOR GRASS SEED/SOD OR NEW PLANTINGS PER NEW CONSTRUCTION SITE PLAN.
- 32.5 REMOVE SHRUBS AS INDICATED ON SITE PLANS. PULL ROOT BALL COMPLETE. FILL DEPRESSIONS WITH SCREENED TOPSOIL AND PREPARE FOR GRASS SEED/SOD OR NEW PLANTINGS PER NEW CONSTRUCTION SITE PLAN.
- 32.6 REMOVE SITE CONCRETE WHERE INDICATED. PRESSURE-WASH REMAINING SITE CONCRETE TO REMOVE DIRT, GREASE, MILDEW, MOSS, ETC.
- 32.7 PROVIDE NEW SITE CONCRETE WALKWAYS AND PADS AS INDICATED ON SITE PLANS. COORDINATE WITH STRUCTURAL AS NEEDED.
- 32.8 RE-STRIPE PARKING SPACES WITHIN WORK AREA AND PROVIDE NEW HANDICAPPED PARKING SPACES AND ACCESSIBILITY MARKINGS AS SHOWN ON NEW CONSTRUCTION SITE PLANS. PROVIDE CONCRETE WHEEL STOPS PER NEW PARKING SPACES LAYOUT AS INDICATED.
- 32.9 ADJACENT TO ALL PARKING LOT HANDICAPPED ACCESSIBILITY MARKINGS, REMOVE CONCRETE SIDE WALK AND PROVIDE NEW SLOPED CONCRETE WALK W/ 1:12 SLOPE OR DEPRESSED CURBS TO ALLOW FOR ACCESSIBILITY. REFER TO SITE PLANS.
- 32.10 PROVIDE NEW DISABLED ACCESSIBLE PARKING SIGNAGE AND STRIPING WHERE INDICATED AND PER JURISDICTIONAL REQUIREMENTS
- 32.11 REFER TO CIVIL & LANDSCAPE DRAWINGS FOR ADDITIONAL DETAILS AND REQUIREMENTS FOR THE WORK 32.12 ALL DISTURBED AREAS TO BE AMENDED WITH SEED AND STRAW. INCLUDING ARCHITECTURAL. MEP. AND CIVIL WORK OVER THE ENTIRE WORK AREA. REFER TO SITE PLANS FOR WORK AREA.

33 UTILITIES

- 33.1 ALL CATCH BASINS AND AREA DRAINS SHALL BE PROTECTED DURING EXCAVATION AND CONSTRUCTION. 33.2 DISCONNECT, CUT OFF, REMOVE TO BEHIND PERMANENT CONSTRUCTION AND CAP ALL ABANDONED UTILITIES COMPLETELY. REMOVE ALL ABANDONED UTILITIES EXPOSED BY REMOVAL OF EXISTING DRYWALL, FINISHES, FRAMING, OR OTHER DEMOLITION. HIGH PRESSURE AIR PURGE ALL EXISTING ABANDONED GAS LINES THAT WILL REMAIN BEHIND PERMANENT CONSTRUCTION. CAP AFTER PURGING

28.4 PROVIDE A COMPLETE DESIGN-BUILD SECURITY SYSTEM WITH PERIMETER CONTACTS, MOTION DETECTION, AND GLASS-BREAK DETECTION. PROVIDE TWO ZONES, ONE BEING THE ORIGINAL BUIDING AND WESTERN ADDITION AND THE OTHER BEING THE EASTERN ADDITION.

31.1 GC TO VERIFY LOCATIONS OF PERTINENT SITE IMPROVEMENTS COMPLETED UNDER OTHER CONTRACTS EARTHWORK SHALL BE COMPLETED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AUTHORITIES HAVING JURISDICTION, INCLUDING BUT NOT LIMITED TO SEDIMENT AND EROSION CONTROL, EXCAVATION

MINER FEINSTEIN ARCHITECTS

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CIVIL ENGINEER: Lingg Property Consulting 256 West Patrick Street, Suite 2A Frederick, Maryland 21701 302.644.2121

Architect's Project Number:	
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2238

CARVER COMMUNITY CENTER EXPANSION

207 Lee Alley Frederick, Maryland 21701

OWNER:







PLAN REVISIONS :			SEAL :		
NO.	REVISIONS	BY	DATE		
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					DAFT McCUNE
					920 NORTH EAST STREET FREDERIC
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DEVELOPMENT PROGRAM & GENERAL NOTES

The overall property contains approximately 5.36 acres±. The "Project Site" is the area immediately surrounding the existing community building (shown on Sheet 1) and totals approximately 1.25 acres±. The site is zoned Downtown Residential (DR) and is located along west side of Lee Alley within the limits of the City of Frederick, MD.

LMC, Section 405-01: Dimensional Requirements for Downtown Residential (DR) Standards:

Minimum Lot Size -	5,000 s.f
Maximum Density -	40 d.u./a
Minimum Lot Frontage -	30'
Maximum Building Height -	65'
Minimum Front Setback -	0'
Minimum Interior Setback -	5'
Minimum Rear Setback -	20'
Impervious Surface Ratio -	N/A

- 2. Proposed for the project site is a renovation & expansion of the existing Carver Community Center. The Carver Community Center, located in the heart of a low-income public housing community, and directly adjacent to the main office of Housing Authority of the City of Frederick, is proposed to be expanded from 1,300 s.f.± to 6,590 s.f.±. The proposed renovation/expansion includes a space for a child-care program, which will serve children from 0-3 years of age. It will also include a community room with kitchen, a computer/technology lab, two small flex space rooms, one large flex room (with an option to split the space with a partition), a front office space, a community room with two bathrooms, and storage closets. There will be outdoor community gardens as well as a tot lot as shown on the plan.
- 3. "PROJECT SITE" AREA SUMMARY:

Total area of Site:	54,450 s.f.± (100%)
Total area of Building Footprint:	6,590 s.f.± (12.1%)
Total area of Paving:	7,100 s.f.± (13%)
Total area of Sidewalk:	4,760 s.f.± (8.7%)
Total area of Green Space:	36,000 s.f.± (66.2%)

Parking:

As the renovated/expanded Carver Community Center will be a private facility for the use of the Carver Community residents and certain other Housing Authority residents, the large majority of persons using this facility will walk to the facility, since it is approximately 400' from the furthest Carver residence.

There are currently 88 parking spaces existing on the overall Carver Apartment Community site. With this plan, several of the existing parking spaces are proposed to be reconfigured, as shown on the plan. 2 existing parking spaces are proposed to be eliminated in order to provide larger islands near the building entrance. 4 existing spaces are proposed to be converted to 3-12' wide striped drop-off spaces, and 1 space is proposed to be eliminated for a Trash Tote enclosure.. This equates to 4 total existing spaces permanently eliminated from the site, while this plan also proposes the addition of 13 new parking spaces, as shown on the plan, for a net addition of 9 parking spaces, bringing the new total proposed parking on the overall Carver Apartment Community site to 97 spaces (including the 3 drop-off spaces).

- 5. All relevant requirements as set forth in the City of Frederick Land Management Code, and all required approvals, including Storm Water Management measures, Adequate Public Facilities Ordinance & Forest Conservation Ordinance approvals, Landscaping, etc. must be met through the normal City of Frederick approval process.
- 6. Trash pick-up is currently handled by the City of Frederick, and is proposed to continue in that manner.
- 7. The site is currently served by City of Frederick Water & Sewer and is classified as W-1, S-1, respectively.
- 8. This property is within the Carroll Creek Drainage Area, and 100-year control of the Stormwater will be required for new impervious areas. Stormwater managment is proposed for this site in an underground facility to handle the 100 year storm.

OWNER

The Housing Authority of The City of Frederick 209 Madison Street Frederick, Maryland 21701





PLAN REVISIONS :				SEAL :	
NO.	REVISIONS	BY	DATE		
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					P: 301 696 9040 F: 301 696 9041 V



PLAN REVISIONS :			SEAL :		
NO.	REVISIONS	BY	DATE		
					so i L
					DAFT McCUN
					920 NORTH EAST STREET FREDERIC
					P: 301 696 9040 F: 301 696 9041 V









-(D10)

Г

D1	ABOVE EXISTING WALL COMPLETE - COORDINATE REMOVAL OF LOAD-BEARING WALLS WITH STRUCTURE ABOVE
D2	REMOVE PORTION OF EXISTING WALL AS REQUIRED BY NEW CONSTRUCTION. COORDINATE EXTENT OF DEMOLITION WITH NEW CONSTRUCTION PLANS.
D3	REMOVE EXISTING GYP. BD. FROM EXTERIOR WALLS - REMOVE EXISTING INSULATION - VISUALLY INSPECT AND REPORT ANY DETERIORATED WD. FRAMING.
D4	REMOVE EXISTING DOOR, FRAME AND HARDWARE
D5	REMOVE EXISTING CASEWORK & COUNTERTOP COMPLETE
D6	REMOVE EXISTING ACOUSTICAL CEILING COMPLETE
D7	REMOVE EXISTING FINISH FLOOR AND PREP SUBFLOOR FOR NEW FINISH MATERIAL. COORDINATE WITH NEW CONSTRUCTION.
D8	REMOVE EXISTING PLUMBING FIXTURE (TOILET, LAVATORY, MOP SINK, OR DRINKING FOUNTAIN)
D9	SAW-CUT & REMOVE EXISTING CONCRETE SLAB AS REQUIRED FOR INSTALLATION OF PROPOSED UNDER-SLAB
	UTILITY. REFER ENGINEERING DRAWINGS FOR ROUTING & DEPTH OF PROPOSED UTILITY
D10	REMOVE EX. WINDOW COMPLETE - PREPARE OPENING FOR INFILL
D11	REMOVE EX. WINDOW COMPLETE - PREPARE OPENING FOR INSTALLATION OF REPLACEMENT WINDOW

KEYED NOTES - NEW CONSTRUCTION Keynote Text

PROVIDE POURED RUBBER PLAY SURFACE - MANUFACTURERS STANDARD ASSEMBLY FOR 48" FALL PROTECTION - SLOPE @ 1.5% TO YARD DRAIN

10 PROVIDE 4" CONC. SLAB ON GRAD WITH TURNED DOWN EDGE w/ W.W.F. OVER MIN. 4" CRUSHED STONE 11 PROVIDE 6' CEDAR BOARD-ON-BOARD FENCING w/ P.T. POSTS AND HORIZ. FRAMING - PROVIDE ONE (1) 4' W. GATE - PROVIDE SEMI-TRANSPARENT STAIN FINISH 12 PROVIDE 12"Wx24"D CONC. CURB UNDER FENCE



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Architect's Project Number:	2238
BID SET	12.5.2022

CARVER COMMUNITY CENTER EXPANSION

207 Lee Alley Frederick, Maryland 21701

OWNER:



Floor Plan - Overall Plan - New Construction



022 ົດ







Lighting Fixture Schedule					
TYPE	οτν	ТУРГ			COMMENTS
MARK	QTY.	ITPE	MANUFACTURER	BRAND	COMMENTS
A	52	STACK 2X4: Refer To Type Catalog	Acuity Brands Lighting	Lithonia Lighting	LAY-IN TROFFER
В	24	WF6: Refer To Type Catalog	Acuity Brands Lighting	Lithonia Lighting	WAFER LED 6" DIA.
С	5	FML4W: Refer To Type Catalog	Acuity Brands Lighting	Lithonia Lighting	4 FT. WRAP-AROUND
D	1	FMML: FMML 7 840	Acuity Brands Lighting	Lithonia Lighting	CUST. CL. LIGHT
E	11	ELM4L: ELM2L	Acuity Brands Lighting	Lithonia Lighting	EMERGENCY LIGHTS
F	8	ECRG RD: EXRG M6	Acuity Brands Lighting	Lithonia Lighting	EXIT SIGNS
G	5	WDGE2 LED: Refer To Type Catalog	Acuity Brands Lighting	Lithonia Lighting	EXT. WALL PACK (CUT-OFF)
Н	4	Westgate_CRE-MP-06-30K-SIL:	WESTGATE MANUFACTURING		DECORATIVE EXT. WALL SCONCE
		Westgate_CRE-MP-06-30K-SIL			
J	7	FMVCSLS: Refer To Type Catalog	Acuity Brands Lighting	Lithonia Lighting	VANITY LIGHT

1



		G		G		
	A 9' - 0" A A.F.F. A	F ↔ ØB	A B'-0" JE A.F.F.	C 10' -4' A.F.F. 6' - 1 5/8" 6' - 1 5/8" 6' - 1 3/4" 6' - 1 3/4" 6' - 1 3/4" 6' - 1 3/4" 10' - 4" A.F.F. 10' - 4" A.F.F.		6" F Ø.B
A	A 9'-0" A A.F.F.		E 8'-0"			
1E	A 9'-0" A.F.F. A	A A A A.F.F.		A F B'-0" A A.F.F.	A 9'-0" A.F.F. 2 A	
°B			F			5 TYP.

KEYED NOTES - REFLECTED CEILING PLAN KEYNOTE TEXT

2 PROVIDE FRAMED GYP. BD. BULKHEAD - CONSTRUCT AT HEIGHT SHOWN, OR IF NOT SHOWN, 2" LOWER THAN ADJACENT ACOUSTIC PANEL CEILING

4 PROVIDE PVC WRAPPED BEAM - BOTH SIDES AND BOTTOM

6 PROVIDE PAINTED GYP. BD. CEILING ON METAL CHANNEL SECURED TO ROOF TRUSSED ABOVE



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CARVER COMMUNITY CENTER EXPANSION

207 Lee Alley Frederick, Maryland 21701

OWNER:





A2.1.1

5.2022 N D SE



	KEYED N
Key	
1	PROVIDE SEMI-RECES
	EXTINGUISHER - PRO\
2	GROUND MTD. CONDE
4	PROVIDE 4'x8'x3/4" FIR
7	PROVIDE HIGH-LOW D
8	PROVIDE WALL HUNG
13	PROVIDE FLOOR MTD.

1



NOTES - NEW CONSTRUCTION Keynote Text

ESSED FIRE EXTINGUISHER CABINET (MAX. PROTRUSION - 4") w/ 10 LB ABC FIRE OVIDE SIGNAGE AS REQUIRED BY AUTHORITY HAVING JURISDICTION ENSING UNIT - PROVIDE CONC. PAD

RE RETARDANT TREATED PLYWOOD BACKING PANEL DRINKING FOUNTAIN WITH BOTTLE FILLER FEATURE G MOP SINK

D. OVERHEAD BRACED TOILET PARTITION - REFER SPECIFICATIONS



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CARVER COMMUNITY CENTER EXPANSION

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OWNER:



Enlarged Floor

A2.2.1

Plans



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Architect's Project Number:	2238
BID SET	12.5.2022

CARVER COMMUNITY CENTER EXPANSION

207 Lee Alley Frederick, Maryland 21701

OWNER:



Frederick MD 21701 301.662.8173

KEYED NOTES - NEW CONSTRUCTION

Keynote Text PROVIDE SEMI-RECESSED FIRE EXTINGUISHER CABINET (MAX. PROTRUSION - 4") w/ 10 LB ABC FIRE EXTINGUISHER - PROVIDE SIGNAGE AS REQUIRED BY AUTHORITY HAVING JURISDICTION GROUND MTD. CONDENSING UNIT - PROVIDE CONC. PAD

3 PROVIDE MIN. FOUR (4) CONCEALED SUPPORT BRACKETS AT COUNTER OVERHANG 4 PROVIDE 4'x8'x3/4" FIRE RETARDANT TREATED PLYWOOD BACKING PANEL

5 PROVIDE MOVEABLE PARTITION - REFER SPECIFICATIONS

6 PROVIDE OVERHEAD COILING DOOR - REFER SPECIFICATIONS

7 PROVIDE HIGH-LOW DRINKING FOUNTAIN WITH BOTTLE FILLER FEATURE

13 PROVIDE FLOOR MTD. OVERHEAD BRACED TOILET PARTITION - REFER SPECIFICATIONS



A2.2.2



1



	11
SOFFIT VENT RIDGE VENT ATTIC VENT CAP TOTAL	
9 SQ.IN./LIN.FT. 15 SQ.IN./LIN.FT. 50 SQ.IN./EA VENTILATION	
ROOF AREA REQ'D VENT LENGTH LENGTH PROVIDED	HIGH / LOW
(SQ. FT.) (SQ. IN.) (LIN.FT.) VENT (SQ.IN.) (LIN.FT.) VENT (SQ.IN.) QTY. VENT (SQ.IN.) (SQ. IN.)	RATIO
DDITION 4,021 1,930 150 1,350 87 1,305 2,65	49% / 51%
G BUILDING & PORCH 2,350 1,128 104 936 28 420 4 200 1,550	40% / 60%
DDITION 1,515 727 60 540 24 360 2 100 1,00	46% / 54%

KEYED NOTES - ROOF PLAN KEYED NOTE

REMOVE EX. SHINGLE ROOF SYSTEM TO PLYWOOD SUBSTRATE - INSPECT FOR DETERIORATION AND PROVIDE PROPOSAL FOR REPAIRS - PROVIDE SHINGLE ROOF SYSTEM REMOVE EX. CUPOLA COMPLETE - INFILL SHEATHING TO MATCH ADJACENT

PROVIDE ARCHITECTURAL GRADE ASPHALT SHINGLES OVER TWO-LAYERS 15# BUILDING PAPER OR

OVERFRAME EXISTING ROOF TO FORM CRICKET - REFER STRUCTURAL DRAWINGS PROVIDE SHINGLE OVER RIDGE VENT - CUT SHEATHING TO VENT AT EXISTING ROOF

PROVIDE DRAFTSTOPPING WALL IN ATTIC - 1/2" GYP. BD. ONE SIDE OF ROOF TRUSS w/ LEVEL 1 FINISH -PROVIDE ACCESS DOOR NYSTROM MODEL DT MIN. SIZE 30"X48" PROVIDE TPO ROOFING SYSTEM OVER COVER BOARD AND 1" RIGID INSULATION - MIN. 1/4" PER FOOT SLOPE

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CARVER COMMUNITY CENTER EXPANSION

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Roof Plan

A2.4.1


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CIVIL ENGINEER: Lingg Property Consulting 256 West Patrick Street, Suite 2A Frederick, Maryland 21701 302.644.2121

Architect's Project Number: 2238 BID SET 12.5.2022

CARVER COMMUNITY CENTER EXPANSION

207 Lee Alley Frederick, Maryland 21701

<u>OWNER:</u>





Exterior Elevations

A3.0.0









KEYED NOTES - EXTERIOR ELEVATIONS KEYED NOTE

6 PROVIDE CLAY MASONRY VENEER (SOLDIER COURSE) - REFER WALL SECTIONS AND DETAILS

14 PROVIDE FIBER-CEMENT LAP SIDING (6" EXPOSURE) ON 1x WD. FURRING - REFER WALL SECTIONS AND

15 PROVIDE FIBER-CEMENT SHAKE SIDING ON 1x WD. FURRING - REFER WALL SECTIONS AND DETAILS 16 PROVIDE PAINTED NOMINAL 2'-0" DIA. UREATHANE VENTILATING LOUVER w/ BIRD / INSECT SCREEN

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Architect's Project Number:	2238
BID SET	12.5.2022

CARVER COMMUNITY CENTER EXPANSION

207 Lee Alley Frederick, Maryland 21701

OWNER:



Exterior Elevations & Building Sections

A3.1.1

BID SE



WALL SECTION

2

3/4" = 1'-0"





EXISTING EXTERIOR WALL - DEMO



EXISTING EXTERIOR WALL - NEW WORK













TYP. EXTERIOR WALL-MASONRY

UL DESIGN U364

RATED EXTERIOR WALL:

Wall Sections

A4.0.1

2022 \sim С С BID

TYP. EXTERIOR WALL-SIDING

٠

(MIN. R-6)

11

MIN. 2"

UL DESIGN U364

RATED EXTERIOR WALL:

PROVIDE 5/8" TYPE X GYP. BD.

w/ R-21 UNFACED BATT INSUL.

DOUBLE TOP PLATE

COMPOSITE INSUL. SHEATHING

w/ INTEGRATED AIR/WEATHER

MASONRY ANCHORS - DW-10 -

BARRIER - SEAL/TAPE ALL JOINTS & PENETRATIONS

SPACE 2'-8" H x 1'-4" V

MASONRY VENEER

P.T. SILL PLATE MID-HEIGHT FIRE

BLOCKING

2x6 WD. FRAMING

CARVER EXPANSION

BID SET

COMMUNITY CENTER

207 Lee Alley Frederick, Maryland 21701

209 Madison Street

Frederick MD 21701

301.662.8173



TYP. EXISTING EXTERIOR WALL

-

PROVIDE 5/8" TYPE X GYP. BD. PROVIDE MIN. R-15 BATT INSUL. (UNFACED) EX. 2x4 WD. FRAMING EX. PLY WD. SHEATHING

EX. MASONRY VENEER (CLEAN)

 REMOVE EXISTING GYP. BD & INSUL. - INSPECT EX. FRAMING - REPORT ANY **DETERIORATION & PROVIDE** PROPOSAL FOR REPAIRS - EX. PLY WD. SHEATHING — EX. MASONRY VENEER

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302.644.2121 Architect's Project Number: 2238

12.5.2022



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CARVER COMMUNITY CENTER EXPANSION

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OWNER:



209 Madison Street Frederick MD 21701 301.662.8173

ACCESSORIES SCHEDULE							
			ROOM NAME	COMMON AREA RESTROOM	TYP UNITS BATHROOM	BF UNITS BATHROOM	
OUNTING HEIGHT (U.O.N.)	MANUFACTURER	MODEL					
OP OF BAR 33"-36" MAX A.F.F., OR	BOBRICK	B-5806.99x18					
ERTICAL 3"-4" ABOVE HORIZONTAL BAR							
OP OF BAR 33"-36" MAX A.F.F.	BOBRICK	B-5806.99x36					
OP OF BAR 33"-36" MAX A.F.F.	BOBRICK	B-5806.99x42					
AX 40" A.F.F. TO BOTTOM OF RELECTIVE URFACE	HD SUPPLY	737803					
-9" FROM FRONT OF TOILET, 24" A.F.F	BOBRICK	B-76857					
USH BUTTON 44" A.F.F MAX	BOBRICK	B-2111					

		ROOM#			
		ROOM NAME	COMMON AREAS	BARRIER FREE DWELLING UNIT	TYPICAL DWELLING UNIT
	MODEL				
	FFHT1621TB				
	FFEF3054TB				
	PEM31DFBB				
D	D1000				

Interior Elevations

A6.1.1

DOOR SCHEDULE DOOR FIRE RATING PAIR WIDTH HEIGHT THICK. ELEV. MATL. FINISH MARK From Room: Name GLAZING ELI To Room: Name A100 EXTERIOR LOBBY / DROP-OFF 3'-0" 6'-8" 13/4" WS ALUM. ANNO. INSUL./TEMP. -A101A CORRIDOR LOBBY / DROP-OFF 3' - 0" 7' - 0" 1 3/4" FG H.M. PTD. TEMPERED A101B CORRIDOR LOBBY Yes 5'-0" 7'-0" 1 3/4" FG PTD. TEMPERED H.M. A102 CORRIDOR TOILET 3' - 0" 7' - 0" 1 3/4" F H.M. PTD. -3' - 0" 7' - 0" 1 3/4" F A103 CORRIDOR CHILDREN'S TOILET H.M. PTD. -A104 CORRIDOR Yes 5'-0" 7'-0" 13/4" F H.M. MECH. PTD. -A107 CORRIDOR KITCHEN 3' - 0" 7' - 0" 1 3/4" FG H.M. PTD. TEMPERED 3' - 0" 7' - 0" 1 3/4" FG H.M. A108A LOBBY / DROP-OFF 2-3 PLAYROOM PTD. TEMPERED A108B EXTERIOR 2-3 PLAYROOM PTD. INSUL./TEMP. 3' - 0" 6' - 8" 1 3/4" FG INSUL. H.M. Yes 6'-0" 7'-0" 13/4" WS B100 EXTERIOR LOBBY ALUM. ANNO. INSUL./TEMP. B101 LOBBY MEETING ROOM 3' - 0" 7' - 0" 1 3/4" FG H.M. PTD. TEMPERED B102 EXTERIOR 0-2 PLAY ROOM 3' - 0" 7' - 0" 1 3/4" FG INSUL. H.M. PTD. INSUL./TEMP. 3' - 0" 7' - 0" 1 3/4" FG H.M. B103 0-2 PLAY ROOM NURSERY PTD. TEMPERED B104A 0-2 PLAY ROOM 3' - 0" 7' - 0" 1 3/4" F STORAGE PTD. H.M. B104B EXTERIOR STORAGE 3'-0" 7'-0" 13/4" F INSUL. H.M. PTD. -B105 EXTERIOR MECH. Yes 6'-0" 7'-0" 1 3/4" F INSUL. H.M. PTD. C100A EXTERIOR LOBBY 3' - 0" 7' - 0" 1 3/4" WS ALUM. ANNO. INSUL./TEMP. C100B EXTERIOR LOBBY 3' - 0" 7' - 0" 1 3/4" FG INSUL. H.M. PTD. INSUL./TEMP C101 LOBBY OFFICE 3' - 0" 7' - 0" 1 3/4" FG H.M. PTD. TEMPERED C102 LOBBY OFFICE 3' - 0" 7' - 0" 1 3/4" FG H.M. PTD. TEMPERED 3' - 0" 7' - 0" 1 3/4" FG C103 LOBBY OFFICE H.M. PTD. TEMPERED PTD. C104 LOBBY COMPUTER CLASSROOM H.M. 3' - 0" 7' - 0" 1 3/4" FG TEMPERED C105A LOBBY FLEX CLASSROOM 3' - 0" 7' - 0" 1 3/4" FG H.M. PTD. TEMPERED 3' - 0" 7' - 0" 1 3/4" FG C105B LOBBY FLEX CLASSROOM H.M. PTD. TEMPERED C106 LOBBY CUST. CL. 3'-0" 7'-0" 13/4" F PTD. H.M. -C107 LOBBY WOMENS 3'-0" 7'-0" 13/4" F H.M. PTD. -C108 LOBBY MENS 3' - 0" 7' - 0" 1 3/4" F H.M. PTD. -C109 EXTERIOR MECH. Yes 6'-0" 7'-0" 1 3/4" F INSUL. H.M. PTD. -C110 COMMUNITY ROOM Yes 6'-0" 7'-0" 13/4" F STORAGE H.M. PTD. -C111A COMMUNITY ROOM KITCHEN 3' - 0" 7' - 0" 1 3/4" FG H.M. PTD. TEMPERED C111B COMMUNITY ROOM 3' - 0" 7' - 0" 1 3/4" FG PTD. KITCHEN H.M. TEMPERED ANNO. TEMPERED

C112A LOBBY Yes 6'-0" 7'-0" 1 3/4" WS ALUM. COMMUNITY ROOM COMMUNITY ROOM C112B EXTERIOR 3' - 0" 7' - 0" 1 3/4" FG INSUL. H.M. PTD. INSUL./TEMP. -_



Γ

FRAME				HEAD-JAMB		
EV.	MATL.	FINISH	Glazing	HDWR	DETAIL	COMMENTS
	ALUM.	ANNO.	INSUL./TEMP.	1		FIELD VERIFY EX. OPENING
	H.M.	PTD.	-	2	2A / A7.0.1	
	H.M.	PTD.	-	7	2A / A7.0.1	
	H.M.	PTD.	-	5	2A / A7.0.1	
	H.M.	PTD.	-	4	2A / A7.0.1	
	H.M.	PTD.	-	6	2A / A7.0.1	
	H.M.	PTD.	-	3	2A / A7.0.1	
	H.M.	PTD.	-	2	2A / A7.0.1	
	H.M.	PTD.	-	8		FIELD VERIFY EX. OPENING
	ALUM.	ANNO.	-	9		
	H.M.	PTD.	-	10	2A / A7.0.1	
	H.M.	PTD.	-	8		
	H.M.	PTD.	-	2	2A / A7.0.1	
	H.M.	PTD.	-	11	2A / A7.0.1	
	H.M.	PTD.	-	12		
	H.M.	PTD.	-	13		
	ALUM.	ANNO.	INSUL./TEMP.	14		
	H.M.	PTD.	-	16		
	H.M.	PTD.	-	15	2A / A7.0.1	
	H.M.	PTD.	-	15	2A / A7.0.1	
	H.M.	PTD.	-	15	2A / A7.0.1	
	H.M.	PTD.	-	10	2A / A7.0.1	
	H.M.	PTD.	-	10	2A / A7.0.1	
	H.M.	PTD.	-	10	2A / A7.0.1	
	H.M.	PTD.	-	11	2A / A7.0.1	
	H.M.	PTD.	-	4	2A / A7.0.1	
	H.M.	PTD.	-	4	2A / A7.0.1	
	H.M.	PTD.	-	13		
	H.M.	PTD.	-	6	2A / A7.0.1	
	H.M.	PTD.	-	11	2A / A7.0.1	
	H.M.	PTD.	-	10	2A / A7.0.1	
	ALUM.	ANNO.		17		
	H.M.	PTD.	-	16		

<u>NOTES</u>

1) EGRESS DOOR HARDWARE SHALL BE LEVER TYPE AND SHALL NOT REQUIRE KEYS OR SPECIAL KNOWLEDGE FOR OPERATION AND SHALL FREELY RELEASE IN THE DIRECTION OF EGRESS.

ABBREVIATIONS

ŀ
H
A
1
F
F
A
5
٦
E

HOLLOW CORE WOOD HOLLOW METAL ALUMINUM INSULATED PRE-HUNG WOOD PAINTED ANODIZED SOLID CORE WOOD

TEMPERED **BY-PASS PAIR**

HARDWARE SET 2

- (3) BB HINGES
- PASSAGE LATCH-SET
- (3) SILENCERS KICK PLATE (PUSH SIL
- WALL OR FLOOR STO

HARDWARE SET 3

- (3) BB HINGES CLASSROOM LATCH-S
- (3) SILENCERS
- KICK PLATE (PUSH SIL WALL STOP

HARDWARE SET 4

- (3) BB HINGES PASSAGE LATCH-SET
- CLOSER
- (3) SILENCERS
- KICK PLATE (PUSH SIL WALL STOP

HARDWARE SET 5

- (3) BB HINGES PASSAGE LOCKSET
- DEADBOLT THUMB
- INDICATOR
- WALL STOP
- (3) SILENCERS KICK PLATE (PUSH SIL

HARDWARE SET 6

- (4) BB HINGES
- (2) SPRING HINGES (II) STOREROOM LOCKSE
- (2) AUTOMATIC FLUSH
- (1) DUSTPROOF STRIK
- CLOSER
- (1) COORDINATOR w/
- PERIMETER SMOKE \$ (2) WALL STOP

HARDWARE SET 7

- (4) BB HINGES
- (2) SPRING HINGES (I
- PASSAGE LOCKSET
- (2) AUTOMATIC FLUSH
- (1) DUSTPROOF STRIK
- CLOSER w/ INTEGRAT
- (1) COORDINATOR w/ PERIMETER SMOKE \$
- KICK PLATE (PUSH SIL

OVERHEAD STOP (INA

- HARDWARE SET 8 (3) BB HINGES
- STOREROOM LOCKSE
- ELECTRIC STRIKE
- PROXIMITY CARD REA CLOSER w/ INTEGRAT
- KICK PLATE (PUSH SIL
- WEATHER-STRIPPING

BUMPER-SEAL THRES

- HARDWARE SET 9
- (2) ROTON HINGE EXIT DEVICES w/ CON
- RODS
- EXIT DEVICES w/ CON **RODS & ELECTRONIC**
- LOW-POWER AUTOMA
- LEAF ONLY) WEATHER-STRIPPING
- (2) KICK PLATE (PUSH
- BUMPER-SEAL THRES
- (2) PUSH-BUTTON OPERATOR(S)
- PROXIMITY CARD READER

HARDWARE SET 10

- (3) BB HINGES
- STOREROOM LOCKSET ELECTRIC STRIKE
- PROXIMITY CARD READER
- CLOSER
- (3) SILENCERS
- KICK PLATE (PUSH SIDE) 10" H. x DW-2" WALL STOP

HARDWARE SET 11

- (3) BB HINGES
- STOREROOM LOCKSET
- CLOSER
- OVERHEAD STOP
- (3) SILENCERS • KICK PLATE (PUSH SIDE) 10" H. x DW-2"

Window Schedule							
YPE MARK	QTY.	R.O. WIDTH	R.O. HEIGHT	U-VALUE	SHGC	STC Rating	Comments
А	1	2' - 6"	3' - 5"	0.28	0.40	27	FIXED
В	9	2' - 8"	1' - 0"	0.28	0.40	27	FIXED
С	9	2' - 8"	4' - 6"	0.28	0.40	27	SINGLE-HUNG
D	6	3' - 0"	4' - 6"	0.28	0.40	27	SINGLE-HUNG
E	4	3' - 4"	5' - 6"	0.28	0.40	27	SINGLE-HUNG
F	3	3' - 6"	1' - 0"	0.28	0.40	27	FIXED
G	21	3' - 6"	4' - 6"	0.28	0.40	27	SINGLE-HUNG
Н	1	4' - 0"	3' - 0"	0.28	0.40	27	FIXED

DOOR HARDWARE SCHEDULE

HARDWARE SET 1

DDWADE SET 4		ARCHITECTS
	• (3) BB HINGES	
RIM STYLE EXIT DEVICE – ALWAYS LOCKED	STOREROOM LOCKSET	MINER FEINSTEIN ARCHITECTS, LLC
- LATCH RETRACED BY KEY ON EXTERIOR	 CLOSER W/ INTEGRATED STOP KICK PLATE (PUSH SIDE) 12" H. x DW-2" 	241 East 4th Street Suite 207
LOW-POWER AUTOMATIC OPERATOR ELECTRIC STRIKE	WEATHER-STRIPPING	Frederick, Maryland 21701
WEATHER-STRIPPING (STOREFRONT)	BUMPER-SEAL THRESHOLD	501.700.7986 www.IMFAICHILECIS.Het
KICK PLATE (PUSH SIDE) 10" H. x DW-2"	HARDWARE SET 13	DESIGN ARCHITECT:
 BUMPER-SEAL THRESHOLD (2) PUSH-BUTTON OPERATOR(S) 	(2) BB HINGES (4) SPRING LINICES	Kerry Font Architecture
PROXIMITY CARD READER	(4) SPRING HINGES STOREROOM LOCKSET	836 Harbor View Terrace Annapolis Maryland 21409
RDWARE SET 2	• (2) OVERHEAD HOLD-OPEN / STOP(S)	704.264.7660
• (3) BB HINGES	(2) AUTOMATIC FLUSH BOLTS (1) DUSTREOOF STRIKE	
PASSAGE LATCH-SET (2) OF ENGED	WEATHER-STRIPPING	STRUCTURAL ENGINEER:
 (3) SILENCERS KICK PLATE (PUSH SIDE) 10" H. x DW-2" 	ASTRAGAL w/ WEATHER STRIPPING	Stead-fast LLC
WALL OR FLOOR STOP	BUMPER-SEAL THRESHOLD	Baltimore Maryland 21210
RDWARE SET 3	HARDWARE SET 14	443.838.4738
• (3) BB HINGES	ROTON HINGE RIM STYLE EXIT DEVICE – ALWAYS LOCKED	
CLASSROOM LATCH-SET (2) ON ENGERGE	- LATCH RETRACED BY KEY ON EXTERIOR	MEP ENGINEER:
 (3) SILENCERS KICK PLATE (PUSH SIDE) 10" H. x DW-2" 	LOW-POWER AUTOMATIC OPERATOR	RK Consulting, LLC
• WALL STOP	ELECTRIC STRIKE WEATHER-STRIPPING (STOREFRONT)	9204 Galther Road Gaithersburg, Maryland 20877
RDWARE SET 4	 KICK PLATE (PUSH SIDE) 10" H. x DW-2" 	301.948.2808
• (3) BB HINGES	BUMPER-SEAL THRESHOLD (2) PUSH PUTTON OPERATOR(S)	
PASSAGE LATCH-SET	 PROXIMITY CARD READER 	CIVIL ENGINEER:
CLOSER (3) SILENCERS		Lingg Property Consulting
 KICK PLATE (PUSH SIDE) 12" H. x DW-2" 	HARDWARE SET 15 • (3) BB HINGES	256 West Patrick Street, Suite 2A Frederick, Manyland 21701
WALL STOP	STOREROOM LOCKSET	302.644.2121
RDWARE SET 5	ELECTRIC STRIKE PROVINITY CARD BEADER	
(3) BB HINGES	CLOSER	
 PASSAGE LOCKSET DEADBOLT – THUMB TURN & OCCUPANCY 	(3) SILENCERS	Architect's Project Number: 2238
INDICATOR	 KICK PLATE (PUSH SIDE) 10" H. x DW-2" WALL STOP 	BID SET 12.5.2022
WALL STOP (3) SILENCERS		
 KICK PLATE (PUSH SIDE) 12" H. x DW-2" 	HARDWARE SET 16	
PDWADE SET 6	 RIM STYLE EXIT DEVICE – ALWAYS LOCKED 	
• (4) BB HINGES	- LATCH RETRACED BY KEY ON EXTERIOR	
• (2) SPRING HINGES (INACTIVE LEAF)	PROXIMITY CARD READER	
STOREROOM LOCKSET (2) AUTOMATIC FLUSH BOLTS	CLOSER w/ INTEGRATED STOP	
 (1) DUSTPROOF STRIKE 	KICK PLATE (PUSH SIDE) 12" H. x DW-2"	
CLOSER (1) COOPDINATOR W/ FILLER RAP	BUMPER-SEAL THRESHOLD	
PERIMETER SMOKE SEAL		
• (2) WALL STOP	• (5) BB HINGES	
RDWARE SET 7	• (1) BB ELECTRIC TRANSER HINGE	
• (4) BB HINGES	 EXIT DEVICES w/ CONCEALED VERTICAL RODS 	CARVER
(2) SPRING HINGES (INACTIVE LEAF) PASSAGE LOCKSET	EXIT DEVICES w/ CONCEALED VERTICAL	COMMUNITY CENTER
(2) AUTOMATIC FLUSH BOLTS	RODS & ELECTRONIC RETRACTION	EXPANSION
(1) DUSTPROOF STRIKE	 (2) KICK PLATE (PUSH SIDE) 10" H. x DW-2" 	
CLOSER W/ INTEGRATED STOP (1) COORDINATOR w/ FILLER BAR	PROXIMITY CARD READER	207 Lee Alley Frederick Maryland 21701
PERIMETER SMOKE SEAL	HARDWARE SET 18	
 KICK PLATE (PUSH SIDE) 12" H. x DW-2" OVERHEAD STOP (INACTIVE LEAE) 	• (3) BB HINGES	
	STOREROOM LOCKSET (3) SILENCERS	<u>OWNER:</u>
RDWARE SET 8	 KICK PLATE (PUSH SIDE) 10" H. x DW-2" 	
STOREROOM LOCKSET	WALL STOP	
ELECTRIC STRIKE		
PROXIMITY CARD READER CLOSER W/ INTECRATED STOP		
 KICK PLATE (PUSH SIDE) 12" H. x DW-2" 		
WEATHER-STRIPPING		
BUMPER-SEAL IHRESHOLD		209 Madison Street Frederick MD 21701
		301.662.8173
KUWARE SET 9 (2) ROTON HINGE		
EXIT DEVICES w/ CONCEALED VERTICAL		
RODS & ELECTRONIC RETRACTION		
LOW-POWER AUTOMATIC OPERATOR (ONE		
 WEATHER-STRIPPING (STOREFRONT) 		
• (2) KICK PLATE (PUSH SIDE) 10" H. x DW-2"		
BUMPER-SEAL THRESHOLD (2) PUSH-BUTTON OPERATOP(S)		

MINER FEINSTEIN



A7.0.1



CRITERIA	INSULATION INSTALLATION CRITERIA
arrier shall be installed in the building envelope.	Air-permeable insulation shall not be used as a sealing material.
nal envelope contains a continuous air barrier.	
the air barrier shall be sealed.	
any dropped ceiling/soffit shall be aligned with the y gaps in the air barrier shall be sealed. drop down stairs or knee wall doors to c spaces shall be sealed.	The insulation in any dropped ceiling/soffit shall be aligned with the air barrier.
e foundation and sill plate shall be sealed.	Cavities within corners and headers of frame walls shall be
e top plate and the top of exterior walls shall be	insulated by completely filling the cavity with a material having a thermal resistance of R-3 per inch minimum.
ie sealed.	Exterior thermal envelope insulation for framed walls shall be installed in substantial contact and continuous alignment with the air barrier.
en window/door jambs and framing, and skylights be sealed.	
clude the air barrier.	Rim joists shall be insulated.
all be installed at any exposed edge of insulation.	Floor framing cavity insulation shall be installed to maintain permanent contact with the underside of subfloor decking, or floor framing cavity insulation shall be permitted to be in contact with the top side of sheathing, or continuous insulation installed on the underside of floor framing and extends from the bottom to the top of all perimeter floor framing members.
unvented crawl spaces shall be covered with a rder with overlapping joints taped.	Where provided instead of floor insulation (unvented crawl spaces), insulation shall be permanently attached to the crawlspace walls.
penetrations, and flue shafts opening to exterior space shall be sealed.	Capped chases shall be insulated to surrounding ceiling R- values (maintain clearance from combustion flues).
	Batts in narrow cavities shall be cut to fit, or narrow cavities shall be filled by insulation that on installation readily conforms to the available cavity space.
e provided between the garage and conditioned	Band area shall be blocked, sealed and insulated.
tures installed in the building thermal envelope shall be vall.	Recessed light fixtures installed in the building thermal envelope shall be air tight and IC rated.
ng penetrations shall be sealed.	Batt insulation shall be cut neatly to fit around wiring and plumbing in exterior walls, or insulation that on installation readily conforms to available space shall extend behind piping and wiring.
talled at exterior walls adjacent to showers and e them from the showers and tubs.	Exterior walls adjacent to showers and tubs shall be insulated.
all be installed behind electrical or communication d boxes shall be installed.	
ots shall be sealed to the subfloor or drywall.	Boots in unconditioned spaces shall be insulated. Recommend insulating boots in conditioned spaces for condensation control.
be sealed, concealed fire sprinklers shall only be er that is recommended by the manufacturer. adhesive sealants shall not be used to fill voids kler cover plates and walls or ceilings.	
sealed to framing.	Insulation shall be in contact with blocking.
led in common wall between dwelling units.	
g fireplaces shall have tight- fitting flue dampers or	Fireplace chase insulation shall be restrained to stav in place.
or combustion air.	

MINER FEINSTEIN ARCHITECTS, LLC 241 East 4th Street | Suite 207 Frederick, Maryland 21701 301.760.7988 www.MFArchitects.net

DESIGN ARCHITECT: Kerry Font Architecture 836 Harbor View Terrace Annapolis, Maryland 21409 704.264.7660

STRUCTURAL ENGINEER: Stead-fast LLC 564 W University Pkwy Baltimore, Maryland 21210 443.838.4738

MEP ENGINEER: RK Consulting, LLC 9204 Gaither Road Gaithersburg, Maryland 20877 301.948.2808

CIVIL ENGINEER: Lingg Property Consulting 256 West Patrick Street, Suite 2A Frederick, Maryland 21701 302.644.2121

Architect's Project Number: 2238 BID SET 12.5.2022

CARVER COMMUNITY CENTER **EXPANSION**

207 Lee Alley Frederick, Maryland 21701

OWNER:



Air Sealing Details



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Air Sealing and Insulation Key Points

	COMPONENT	AIR BARRIER CRITERIA	INSULATION INSTALLATION CRITERIA
		A continuous air barrier shall be installed in the building envelope.	Air-permeable insulation shall not be used as a sealing material.
	General requirements	The exterior thermal envelope contains a continuous air barrier.	
		Breaks or joints in the air barrier shall be sealed.	
-		The air barrier in any dropped ceiling/soffit shall be aligned with the	
	Ceiling/attic	insulation and any gaps in the air barrier shall be sealed.	The insulation in any dropped ceiling/soffit shall be aligned with the air barrier
	12 A	Access openings, drop down stairs or knee wall doors to	with the air barrier.
		unconditioned attic spaces shall be sealed.	
		The junction of the foundation and sill plate shall be sealed.	Cavities within corners and headers of frame walls shall be
	Walls	The junction of the top plate and the top of exterior walls shall be	insulated by completely filling the cavity with a material having a
		sealed.	thermal resistance of R-3 per inch minimum.
		Knee walls shall be sealed.	Exterior thermal envelope insulation for framed walls shall be
			air barrier.
+	Mindowe ekuliahte	The space between window/deer jambs and framing, and skulights	
3	and doors	and framing shall be sealed.	
	Rim joists	Rim joists shall include the air barrier.	Rim joists shall be insulated.
	-	The air barrier shall be installed at any exposed edge of insulation.	Floor framing cavity insulation shall be installed to maintain
	Floors (including		permanent contact with the underside of subfloor decking, or floor framing cavity insulation shall be permitted to be in contact
	cantilevered floors)		with the top side of sheathing, or continuous insulation installed
	, ,		on the underside of floor framing and extends from the bottom to
_		European and his representation of the second	the top of all perimeter floor framing members.
	Crawl space walls	Exposed earth in unvented crawl spaces shall be covered with a Class I vapor retarder with overlapping joints taped.	Where provided instead of floor insulation (unvented crawl
		and the second	spaces), insulation shall be permanently attached to the crawlspace walls.
-		Duct shafts utility penetrations and flue shafts opening to exterior	
	Shafts, penetrations	or unconditioned space shall be sealed.	Capped chases shall be insulated to surrounding ceiling R-
			values (maintain clearance from combustion flues).
	Narrow cavities		Batts in narrow cavities shall be cut to fit, or narrow cavities shall
			be filled by insulation that on installation readily conforms to the available cavity space
	24 X X 29	Air sealing shall be provided between the garage and conditioned	
0	Garage separation	spaces.	Band area shall be blocked, sealed and insulated.
1	Recessed lighting	Recessed light fixtures installed in the building thermal envelope shall be	Recessed light fixtures installed in the building thermal
8	r to cooo a ngrinng	sealed to the drywall.	envelope shall be air tight and IC rated.
-		Wiring and plumbing penetrations shall be sealed.	Batt insulation shall be cut neatly to fit around wiring and
2	Plumbing and wiring	9 F	plumbing in exterior walls, or insulation that on installation
			and wiring.
	Shower/tub on exterior	The air barrier installed at exterior walls adjacent to showers and	Exterior walls adjacent to showers and tubs shall be insulated.
3	wall	tubs shall separate them from the showers and tubs.	n na mananana kana kerekanan 🦉 paraman kangan das kana kana kerekanan dari dari basar Andrea Kana (Andrea) (Andr
	Electrical/phone box	The air barrier shall be installed behind electrical or communication	
4	on exterior walls	boxes or air-sealed boxes shall be installed.	
5	HVAC register boots	HVAC register boots shall be sealed to the subfloor or drywall.	Boots in unconditioned spaces shall be insulated.
5	TTAN TEGISTER DUUIS	1	Recommend insulating boots in conditioned spaces for
		When required to be sealed, concealed fire sprinklers shall only be	concensation control.
6	Concealed sprinklers	sealed in a manner that is recommended by the manufacturer.	
		Caulking or other adhesive sealants shall not be used to fill voids	
	Disables for	between tire sprinkler cover plates and walls or ceilings.	for shaft a shall be to see that the bit of the
7	framing (e.g. beneath	BIOCKING Shall be sealed to framing.	insulation shall be in contact with blocking.
1	knee walls, cantilevered		
	floors, garage		
-	Separation waits)	Air barrier is installed in common wall between dwelling units	
8	Common walls	Neurona human England the United State State	Electron share (and the shall be used in the state of
9	Fireplaces	ivew wood-burning tireplaces shall have tight-fitting flue dampers or doors, and outdoor combustion air	Fireplace chase insulation shall be restrained to stay in place.
3	rilepiaces		
OT	E:		
41	E95		

Standard Truss with tapered insulation depth	4-inches
Energy Truss with full height insulation (recommended)	Insulation 4-in
NOTE: R-30 complete coverage is deemed equivalent to prescriptive R-38	¥
Standard rafter and top plate with tapered insulation depth	4-inches
Rafter on raised top plate with full height insulation (recommended)	Insulation
NOTE: R-30 complete coverage is deemed equivalent to prescriptive R-38	

Stairwell and Elevator Chase Air Sealing 16 Seal gap between levels FRAMED MULTI-STORY CONCRETE Cavity insulation plus exterior MASONRY UNIT sheathing LIVING UNITS STAIRWELL 13 or ELEVATOR CHASE 8 Seal penetrations through exterior sheathing Seal gap between levels 16 Recommend rigid foam between Seal gap between concrete concrete masonry units and wall and framed units at framed stud wall each level Steel framing requirements • Thermal break (e.g. rigid foam) required if steel studs







NOTE: NOT ALL DETAILS SHOWN ON THESE TYPICAL AIR SEALING DETAILS ARE APPLICABLE TO THE PROPOSED CONSTRUCTION PROJECT.

Air Sealing Details

A8.0.2

Building Code Design Criteria

IBC 2018 & ASCE 7-16

ASCE Risk Category: II	

ASCE Exposure Category: B

ASCE Importance Factor:	1	
Wind: Basic Wind Speed, V Exposure Category: Design Wind Design Wind	/ = 115 mph B Pressure at Walls (C&C): Uplift at Roof (C&C):	20 ps
Ŭ	Zone 1:	20 ps
	Zone 3:	70 ps
Design Wind	Pressure (MWRS)	25 ps
200.g.1 11.1.5		-0 po
Snow:		
Ground Snow Load:	30 psf	
Design Snow Load:	30 psf	
Seismic:		
SS = 0.15		
S1 = 0.041		
Site Class D		
Seismic Load / Floor	= 0.01 x dead load per floor	

Roof Live Load: 30 psf

Floor Live Load: 40 psf

Roof Dead Load: 15 psf + self-weight

Deflection Criteria: L / 240 for total loading

L/360 for live loading Geotechnical:

- 1,500 Allowable soil bearing pressure Frost depth: 30"

Foundation Notes

Ι.	All footings shall bear on undisturbed, firm natural soil or compacted fill capable of supporting a design bearing pressure of 1,500 psf. All foundation excavations shall be evaluated by a geotechnical engineer or testing agency prior to pouring	1.
	concrete.	Ζ.
2.	Footing bearing elevations shown in the drawings are a maximum, and shall be lowered as required to obtain the design bearing pressure.	3.
3.	Prior to commencing any foundation work, coordinate work with existing utilities. Foundations shall be lowered where required to avoid utilities.	4.
4.	Protect structures, utilities, sidewalks, pavements, and other facilities from	_
	damage caused by settlement, lateral movement, undermining, washout and	5.
	other hazards that could develop during excavation.	6.
5.	Install excavation support and protection systems to ensure minimum interference with roads, streets, walks and other adjacent occupied and used	7.
	facilities.	8.
6.	Locate excavation support and protection systems clear of permanent	9.
	construction and to permit forming and finishing of concrete surfaces.	10.
7.	Monitor excavation support and protection systems daily during progress and for	
	as long as excavation remains open. Promptly correct bulges, breakage or other evidence of movement to ensure excavation support and protection systems	11.
	remain stable.	12.
3.	Promptly repair damage to adjacent facilities caused by excavation.	
`~~	arata Nataa	Sh
-01	<u>crete notes</u>	1.
	All concrete design and construction shall be per ACI 318, latest edition.	
	All concrete shall be stone concrete conforming to the following:	2.
2.1.	Minimum ultimate compressive strength at 28 days of 5,000 psi.	3.

- Ζ.Ι.
- 2.2. Water-cement ration 0.4 max.
- 2.3. Slump 6" max with superplasticizer
- 2.4. Air content 7% ± 1-1/2%
- 2.5. Cement content 658 lb/cy min. Reinforcing steel shall conform to ASTM designation A615 Grade 60. Welded 3.
- wire mesh shall be ASTM designation A185 with a minimum fy of 60 ksi.
- Provide the following minimum cover for reinforcing steel; 4. 4.1. Slab top reinforcement - 1-1/2"
- 4.2. Slab bottom reinforcement - $\frac{3}{4}$ "
- 4.3. Walls and footings, formed - 1-1/2" 4.4. Walls and footings, cast against earth - 3"

Post-Installed Anchor Notes

- For applications in concrete, use non-destructive testing such as GPR or Xray to 1 determine the location of existing reinforcing steel. Locate new anchors to avoid existing reinforcing.
- Anchors are to be installed in accordance with the edge distance and spacing indicated on drawings as well as with manufacturer's requirements. In the event of a conflict, the greater minimum distance will govern.
- Anchors are to be installed in conformance with manufacturer's requirements. 3.
- Hammer drill all holes. Clean and dry prior to installation. 4.
- Minimum age of concrete for installation of adhesive anchors is 21 days. Provide special inspection for all post-installed anchors.

Brick Veneer Notes

- Brick masonry construction shall conform to the requirements of the TMS 402 "Building Code Requirements for Masonry Structures."
- Face brick shall comply with the requirements of ASTM C 216, Grade SW. Building 2. brick shall comply with the requirements of ASTM C 67.
- Mortar shall be ASTM C270, Type S Exterior or below grade, Type N or S exterior 3. or above grade.
- Portland cement shall conform to ASTM C 150/C 150M, Type I or Type II.
- Steel components and fasteners shall be hot dipped galvanized in conformance 5. with ASTM A-153 Class B-2.
- Anchorage of brick veneer is to conform to TMS 402, 12.2.2.5. 6.
- Provide a minimum of 1" between outside face of sheathing and inside face of 7. veneer
- Anchors shall be attached to studs or solid blocking with (2) #9 screws. Anchors to 8. be spaced no more than 16" on center vertically and 32" horizontally.
- Embed Anchors a minimum 2" into mortar, with a minimum of $\frac{5}{8}$ " mortar coverage 9. between anchor and exterior.

5.

2. 5.

7.

8.

9.

2. 3. 4. 5. 5.1. 5.2. 5.3.

5.5. 5.6. 5.7. 6.

5.4.

6.1.

Timber Framing Notes

All framing shall be in accordance with the latest editions, including errata of the "National Design Specification for Wood Construction" (ANSI/AWC NDS) as published by the American Wood Council (AWC).

- All wood products, fasteners and connectors shall be approved for use by the International Code Council Evaluation Service (ICC ES).
- All lumber materials used in the building shall be good, sound, dry material free from large and loose knots, shakes and other imperfections whereby the strength may be impaired, and of the size indicated on

the drawings. All workmanship, including nailing, blocking, bridging, etc., shall conform to the requirements of the IBC or IRC.

All beams, joists and rafters to be set with natural crown up.

- Place face grain in direction of span (traverse to joist span). Joist hangers, framing anchors and post anchors shall be galvanized steel as manufactured by Teco, USP, Simpson or approved equal. Special nails as supplied by manufacturer shall be used for required nailing.
- Provide seal of neoprene or other approved material where wood bears on masonry.
- Provide min. blocking between joists of 8'-0" o.c. (staggered) and at all end and intermediate supports. Exterior lumber and sill plates shall be pressure-treated (pt) per AWPA requirements and
- recommendations. Lumber shall not be permitted to be incised unless approved by the Engineer. Unless indicated on the plans, lumber shall be Douglas Fir-Larch or Southern Yellow Pine No. 2 or better

(1.6E)

Unless otherwise indicated on the plans, dimensional lumber shall be fastened per the fastener table.

heathing Notes

- All sheathing indicated shall be APA span rated, CD grade unless otherwise indicated, with exterior glue, Exposure 1, manufactured in accordance with APA PS 183, latest edition.
- Roof sheathing shall be 5/8" minimum, 48/24 rated, tongue and groove.
- Floor sheathing shall be 3/4" minimum, 48/24 rated, tongue and groove.
- Wall sheathing shall be 7/16" minimum.
- Lay sheathing with end joints staggered. Layout plywood to eliminate any panel width less than 1'-0". Provide spacing for expansion between panels in accordance with APA recommendations.

Wood Roof Truss Notes

Trusses are shown schematically only. Prefabricated wood trusses shall be designed to support the required live loads and mechanical equipment. Provide adequate number and type of trusses to carry out design intent.

Trusses shall conform to the National Design Specifications for Stress Grade Lumber and its Fastening, latest edition, and the National Design Standard for Metal Plate Connected Wood Truss Construction, latest edition.

Submit shop drawings and design calculations for approval prior to fabrication. Shop drawings to be signed and sealed by a professional engineer registered in the state of installation.

Floor trusses shall not be cut or drilled unless authorized by the engineer. Install vertical wood blocking between floors at all post supports in bearing walls.

Trusses shall be sized to avoid wood crushing at bearing points based on the wall width and material indicated on drawings. Notify the engineer of any proposed mechanical units or other equipment to be placed on trusses that exceed 200 pounds in operating weight.

Truss dead loads include an allowance for water-filled, non-metal sprinkler pipe loads of 5 psf. Trusses shall be designed for specific additional loading based on the location of any pipes 4" diameter or greater.

Contractor to	coordinate	pipe l	ocations	with	truss	manuf	actu	irer.

-	Fruss I	Desig	n Loa	ds			
	Live I	_oad	Dea	ad Load	·	ıd	
I russ Location	TC	BC	TC	BC	TC	BC	Total
Roof trusses	30	10	12	15	42	25	67
Roof trusses with mech. units	30	10	12	50	42	60	102

Note: Tabulated truss dead loads do not include truss self weight.

Engineered Wood Notes

All engineered wood products, fasteners, and connectors shall be approved for use by the International Code Council Evaluation Service (ICC ES).

Joist hangers, framing anchors and post anchors shall be galvanized steel as manufactured by Teco, USP, Simpson or approved equal. Special nails as supplied by manufacturer shall be used for required nailing.

Provide seal of neoprene or other approved material where wood bears on masonry.

Exterior members shall be pressure-treated (pt) per AWPA requirements and recommendations. Lumber shall not be permitted to be incised unless approved by the Engineer. Laminated Veneer Lumber products are indicated on the plans as "LVL" and shall conform to the

following: ASTM A2559

- Fb = 2,800 psi
- E = 2,000,000 psi
- Tension parallel to grain = 1,850 psi
- Compression parallel to grain = 2,300 psi
- Compression perpendicular to grain = 750 psi
- Horizontal shear parallel to grain = 285 psi

Parallel Strand Lumber products are indicated on the plans as "PSL" and shall conform to the following: ASTM A2559

- Fb = 2,000 psi
- E = 2,000,000 psi
- Tension parallel to grain = 2,400 psi
- Compression parallel to grain = 2,900 psi
- Compression perpendicular to grain = 750 psi
- Horizontal shear parallel to grain = 290 psi

ITEM	DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER(a,b,c)	SPACING OF FASTENERS
	Roof	1	1
1	Blocking between joists or rafters to top plate, toe nail	3-8d (2-1/2" x 0.113")	
2	Ceiling joists to plate, toe nail	3-8d (2-1/2" x 0.113")	
3	Ceiling joists not attached to parallel rafter, laps over partitions, face nail	3-10d	
4	Collar tie rafter, face nail or 1-1/4" x 20 gage ridge strap	3-10d (3" x 0.128")	
5	Rafter to plate, toe nail	2-16d (3-1/2" x 0.135")	
	Roof rafters to ridge, valley or hip rafters:		
6	toe nail	4-16d (3-1/2" x 0.135")	
	face nail	3-16d (3-1/2" x 0.135")	
	Wall		l
7	Built up corner studs	10d (3" x 0.128")	24"o.c.
8	Built up header, two pieces with 1/2" spacer	16d (3-1/2" x 0.135")	16" o.c. along each edge
9	Continued header, two pieces	16d (3-1/2" x 0.135")	16" o.c. along each edge
10	Continuous header to stud, toe nail	4-8d (2-1/2" x 0.113")	
11	Double Studs, face nail	10d (3" x 0.128")	24" o.c.
12	Double top plates, face nail	10d (3" x 0.128")	24" o.c.
13	Double top plates, minimum 48-inch offset of end joints, face nail in lapped area	8-16d (3-1/2" x 0.135")	
14	Sole plate to joist or blocking, face nail	16d (3-1/2" x 0.135")	16" o.c.
15	Sole plate to joist or blocking at braced wall panels	3-16d (3-1/2" x 0.135")	16" o.c.
16	Stud to sole plate, toe nail	3-18d (2-1/2" x 0.113") or 2-16d (3-1/2" x 0.135")	
17	Top or sole plate to stud, end nail	2-16d (3-1/2" x 0.135")	
18	Top plates, laps at corners and intersections, face nail	2-10d (3" x 0.128")	
19	1" brace to each stud and plate, face nail	2-8d (2-1/2" x 0.113") 2 staples 1-3/4"	
20	1" x 6" sheathing to each bearing, face nail	2-8d (2-1/2" x 0.113") 2 staples 1-3/4"	
21	1" x 8" sheathing to each bearing, face nail	2-8d (2-1/2" x 0.113") 3 staples 1-3/4"	
22	Wider than 1" x 8" sheathing to each bearing, face nail	3-8d (2-1/2" x 0.113") 4 staples1-3/4"	
	Floor	Ι	1
23	Joist to sill or girder, toe nail	3-8d (2-1/2" x 0.113")	
24	1" x 6" subfloor or less to each joist, face nail	2-8d (2-1/2" x 0.113") 2 staples 1-3/4"	
25	2" subfloor to joist or girder, blind and face nail	2-16d (3-1/2" x 0.135")	
26	Rim joist to top plate, toe nail (roof applications also)	8d (2-1/2" x 0.113")	6" o.c.
27	2" planks (plank and beam - floor and roof)	2-16d (3-1/2" x 0.135")	at each bearing
28	Built up girders and beams, 2-inch lumber layers	10d (3" x 0.128")	Nail each layer as follows: 32" o.c. at top and bottom and staggered. Two nails at ends and at each splice
29	Ledger strip supporting joists or rafters	3-16d (3-1/2" x 0.135")	At each joist or rafter

		SPACING OF F	ASTENERS	
ITEM	DESCRIPTION OF BUILDING MATERIALS	DESCRIPTION OF FASTENER(b,c,e)	Edges (inches)(i)	Intermediate supports(c,e) inches
	Wood structural panels, s	ubfloor, roof and interior wall sheathing to framing and partic	cleboard wall sheathing to framing	
30	3/8" - 1/2"	6d common (2" x 0.113") nail (subfloor wall)(i) 8d common (2-1/2" x 0.131") nail (roof)	6	12(g)
31	5/16" - 1/2"	6d common (2" x 0.113") nail (subfloor wall) 8d common (2-1/2" x 0.131") nail (roof)(f)	6	12(g)
32	19/32" - 1"	8d common nail (2-1/2" x 0.131")	6	12(g)
33	1-1/8" - 1-1/4"	10d common (3" x 0.148") nail or 8d (2-1/2" x 0.131" deformed nail	6	12
		Other wall sheathing(h)		
34	1/2" structural cellulosic fiberboard sheathing	1/2" galvanized roofing nail, 7/16" crown or 1" crown staple 16ga., 1-1/4" long	3	6
35	25/32" structural cellulosic fiberboard sheathing	1-3/4" galvanized roofing nail, 7/16" crown or 1" crown staple 16ga., 1-1/2" long	3	6
36	1/2" gypsum sheathingd	1-1/2" galvanized roofing nail; staple galvanized, 1-1/2" long; 1-1/4 screws, Type W or S	7	7
37	5/8" gypsum sheathingd	1-3/4" galvanized roofing nail; staple galvanized, 1-5/8" long; 1-5/8" screws, Type W or S	7	7
	V	lood structural panels, combination subfloor underlayment t	o framing	
38	3/4" and less	6d deformed (2" x 0.120") nail or 8d common (2-1/2" x 0.131") nail	6	12
39	7/8" - 1"	8d common (2-1/2" x 0.131") nail or 8d deformed (2-1/2" x 0.120") nail	6	12
40	1-1/8" - 1-1/4"	10d common (3" x 0.148") nail or 8d deformed (2-1/2" x 0.131") nail	6	12

Fastener Schedule for Structural Members

Note: Fastener requirements in these tables shall not be used to supersede specifically annotated requirements on the drawings and details

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CIVIL ENGINEER: Lingg Property Consulting 256 West Patrick Street, Suite 2A Frederick, Maryland 21701 302.644.2121

Architect's Project Number:

2238

BID SET 12.5.2022

CARVER COMMUNITY CENTER **EXPANSION** 207 Lee Alley

Frederick, Maryland 21701

OWNER: 209 Madison Street Frederick MD 21701 301.662.8173



I, Michael F. Dominelli, hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No. 28023 Expiration Date: 10-16-2024.

Structural Notes



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1



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2'-0" -



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12.5.2022

BID SET

Foundation Plan



(1) S-2 Roof Framing Plan / 3/16" = 1'-0"

N



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COMMUNITY CENTER

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Roof Framing Plan



1

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12.5.2022

1.1

BID SET

Bracing Plan



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Foundation Details





Cutting, Notching and Drilling Limitations $\underbrace{1}_{\text{S-5}} \frac{\text{Cu}}{\text{N.T.S.}}$

NOTE: Engineered wood products. Cuts, notches and holes bored in trusses, structural composite lumber, structural glue-laminated members or I-joists are prohibited except where permitted by the manufacturer's recommendations or where the effects of such alterations are specifically specified on the drawings or in the specifications.

<u>4</u> S-5

Truss to Bearing Wall Connection Detail N.T.S.

$\underbrace{\frac{7}{\text{s-5}}}_{\text{N.T.S.}} \underbrace{\text{Lintel and Header Detail}}_{\text{N.T.S.}}$



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1.	IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO EXAMINE THE NEW AND EXISTING ARCHITECTURAL, MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS AND SPECIFICATIONS, AND SHALL VERIFY ALL EXISTING CONDITIONS BEFORE COMMENCING WORK AND SHALL NOTIFY ARCHITECT AND/OR ENGINEER IF A CONDITION EXISTS WHICH PREVENTS THE CONTRACTOR FROM ACCOMPLISHING THE INTENT OF THE DRAWINGS.	13. RECTANGULAR DUCTWORK: ALL DUCTWORK SHALL CO CONSTRUCTION AS APPROVED BY THE SHEET-METAL CONTRACTORS NATIONAL ASSOCIATION. ALL LONGITUDII SEAMS AND CONNECTIONS SHALL BE SEALED, EQUIVALEN CLASS "A" DUCTWORK. ALL DUCTS SHALL BE MADE GALVANIZED SHEET STEEL. THE GAUGE OF THE SHI SHALL CONFORM TO SMACNA STANDARDS.
2.	IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ALL WORK AND MATERIALS TO ACCOMPLISH THE INTENT OF THE PLANS. PLANS INDICATE THE EXTENT, GENERAL CHARACTER AND LOCATION OF WORK DIAGRAMMATICALLY ONLY.	14. USE AIRTITE FITTINGS WITH SELF ADHESIVE RIN OF 4 SHEET METAL SCREWS AND WITH LOCKIN DAMPERS AT SUPPLY DUCT.
	ALL WORK AND MATERIALS SHALL BE INSTALLED IN ACCORDANCE WITH ALL CODES HAVING JURISDICTION AND SHALL BE STRICTLY OBSERVED.	15. LOW PRESSURE DUCTWORK SHALL BE INSTALLE STRUCTURE.
4. 5.	ALL WORK SHALL BE SUBJECT TO THE APPROVAL OF THE OWNER AND/OR HIS DULY AUTHORIZED REPRESENTATIVE. ALL WORK AND EQUIPMENT SHALL BE THOROUGHLY CLEANED AND THE	16. REGISTERS/GRILLES: TITUS 23RL FOR RETURN BOTH SHALL BE PROVIDED WITH AG-95 BALAN AND EXHAUST GRILLES, SAME AS 23RL WITHOU PAINT FINISH AS DIRECTED BY THE OWNERS RI
	CONTRACTOR SHALL PROVIDE A NEW SET OF FILTERS IN ALL HVAC EQUIPMENT AT THE TIME OF SUBSTANTIAL COMPLETION PLUS ONE ADDITIONAL SET FOR EACH SYSTEM TO BE READY FOR THE USE BY THE OWNER BEFORE FINAL INSPECTION AND APPROVAL BY THE ARCHITECT AND/OR HIS REPRESENTATIVE.	SCHEDULE FOR SIZES. 17. PROVIDE 1.5" FIBERGLASS INSULATION TO ALL DUCTS ALL JOINTS SHALL BE SEALED WITH M SHALL BE IN STRICT ACCORDANCE WITH MANUF RECOMMENDATIONS
6.	THE CONTRACTOR SHALL LAY OUT HIS WORK WITH THAT OF ALL OTHER TRADES AND BE RESPONSIBLE FOR ALL MEASUREMENTS, HE SHALL NOTIFY ARCHITECT AND/OR ENGINEER IF A CONDITION EXISTS WHICH PREVENTS WORK TO BE INSTALLED IN ACCORDANCE WITH THE INTENT OF THESE	18. DEMONSTRATE SYSTEM OPERATION TO OWNER. 19. MOUNT THERMOSTATS WHERE INDICATED ON (A
7.	CONTRACTOR SHALL BE RESPONSIBLE FOR AND PAY FOR ANY DAMAGES	20. OBTAIN AND PAY FOR ALL PERMITS REQUIRED 21. DUCTWORK DIMENSIONS SHOWN ON DRAWINGS
8.	THE CONTRACTOR SHALL GUARANTEE SERVICE, WORKMANSHIP, AND MATERIALS REPRESENTED BY HIM AND SHALL REPAIR OR REPLACE AT NO	WITHOUT CONSIDERATION FOR INSULATION OR S
	ADDITIONAL COST TO THE OWNER, ANY PART THEREOF WHICH MAY BECOME DEFECTIVE WITHIN THE PERIOD OF ONE (1) YEAR FOLLOWING THE DATE OF FINAL ACCEPTANCE BY THE ARCHITECT, EXCEPT ORDINARY WEAR AND TEAR.	REQUIRED FOR PROPER BALANCING OF SYSTEM 23. METAL DUCTWORK: FABRICATE ALL DUCTWORK, ALL OTHER DUCT RELATED ACCESSORIES FROM
9.	IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ASSURE THAT ALL SYSTEMS AND EQUIPMENT SUPPLIED SHALL BE COMPATIBLE WITH THE EXISTING BASE BUILDING SYSTEMS AND EQUIPMENT.	24. CHANGES TO DUCT DUE TO FIELD CONDITIONS THE DUCT SIZE FREE AREA IS MAINTAINED AND ENGINEER OF RECORD FOR APPROVAL.
10.	IN AREAS WHERE IT IS NECESSARY TO CUT FLOORS, WALLS, ROOF AND CEILINGS, THIS CONTRACTOR SHALL DO ALL CUTTING AND REPLACEMENT. BEFORE ANY CUTTING OR PATCHING, CONTRACTOR SHALL OBTAIN THE	25. TURNING VANES: PROVIDE SINGLE THICKNESS GALVANIZED STEEL IN ALL MITERED ELBOWS 30
11. <u>/ЕС</u>	APPROVAL OF THE OWNER. ALL FIXTURES AND EQUIPMENT SHALL BE CONNECTED AND MADE READY FOR USE UNLESS OTHERWISE NOTED. CHANICAL NOTES:	26. LEAKAGE: DUCT JOINTS SHALL BE SEALED WITH TESTING FOR ALL NEW AND EXISTING DUCTWOR SENSATION AND SHALL BE PERFORMED IN THE REPRESENTATIVE. PERFORM ALL TESTING AFTER COMPLETELY AND BEFORE COVERING WITH INSU MASONRY
1.	CONTRACTOR SHALL FIELD VERIFY ALL MEASUREMENTS AND LOCATIONS OF EQUIPMENT AND PRIOR TO ANY DUCTWORK FABRICATION. CONTRACTOR SHALL SUBMIT FOR APPROVAL, SHOP DRAWINGS ON ALL NEW WORK AND EQUIPMENT PRIOR TO FABRICATION AND INSTALLATION.	27. AIR BALANCING SHALL NOT BE PERFORMED UN EQUIPMENT IS PROPERLY INSTALLED AND IS 10 TEMPERATURE CONTROLS ARE INSTALLED AND SYSTEMS ARE LEANED. IT IS THE INTENT OF TH
2.	PROPER MOUNTINGS FOR ALL EQUIPMENT SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND SHALL BE INSTALLED BY THIS CONTRACTOR. PROVIDE APPROVED TYPE VIBRATION DAMPENING MEDIA WHEREVER CALLED FOR BY THE MANUFACTURER BETWEEN EQUIPMENT AND THE FLOOR OR CEILING. ISOLATORS SHALL BE KORFUND OR APPROVED	THAT THE ENTIRE PROJECT IS SUBSTANTIALLY COMPONENTS OF ALL MECHANICAL SYSTEMS CA OPERATION WITH ALL WINDOWS AND DOORS CL PIECEMEAL FASHION. A COPY OF THE TESTING SHALL BE PROVIDED TO THE BUILDING ENGINES
5.	EQUAL. IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO INSTALL THE	QUALITY ASSURANCE:
	NEW HEATING, VENTILATION AND AIR CONDITIONING SYSTEMS SO AS TO INSURE QUIET OPERATION. NO VIBRATION OR SOUND SHALL BE TRANSMITTED TO THE BUILDING STRUCTURE OR OCCUPIED AREAS. IT SHALL BE THIS CONTRACTOR'S RESPONSIBILITY TO CORRECT OR REPLACE ANY NOISY SYSTEMS OR EQUIPMENT GENERATING HIGHER THAN 40 NC IN THE WORKING ENVIRONMENT	1. UPON SUBSTANTIAL COMPLETION OF PROJECT S THREE (3) COPIES OF AIR BALANCING AND R HEREIN SHOWING THE AIR DISTRIBUTION SYSTI AND ARE DELIVERING SPECIFIED QUANTITIES.
•.	PHYSICAL DIMENSIONS AS WELL AS COOLING, HEATING CAPACITIES AND ELECTRICAL CHARACTERISTICS OF SUBMITTED UNITS SHALL MATCH THAT OF SPECIFIED EQUIPMENT. THE MECHANICAL CONTRACTOR IS RESPONSIBLE FOR	2. EACH PIECE OF EQUIPMENT SHALL BE IDENTIFI SERVICE, MANUFACTURER AND MODEL NUMBER. BE RECORDED AND INCLUDED IN THE FINAL BA
ō.	ALL COSTS DUE TO CHANGES RELATED TO SUBSTITUTION OF EQUIPMENT. COORDINATE WITH ELECTRICAL CONTRACTOR TO INSURE N.E.C. REQUIRED CLEARANCES FROM DUCTWORK, PIPING, ETC ARE MAINTAINED AROUND ELECTRICAL EQUIPMENT (PANEL BOARDS, SWITCHBOARDS, DISCONNECTS,	3. AFTER COMPLETION OF ADJUSTMENTS, THE AIR VENTILATING SYSTEMS SHALL BE TESTED, AND SHALL BE INCLUDED IN THE FINAL BALANCE RI SHALL BE IDENTIFIED AS TO ITS LOCATION AND MANUFACTURER OF AIR DEVICES AND SHALL LI AND ACTUAL CFM.
3.	CONTRACTOR SHALL REFER TO THE ELECTRICAL DRAWINGS FOR THE PROPER ELECTRICAL CHARACTERISTICS FOR ALL MOTORS, HEATERS, AND ALL OTHER ELECTRICAL DEVICES FURNISHED BY THE CONTRACTOR. IT IS THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR TO COORDINATE WITH THE ELECTRICAL CONTRACTOR FOR ALL REQUIRED ELECTRICAL CONNECTIONS AND CIRCUITS, ETC. REQUIRED FOR MECHANICAL EQUIPMENT, HEATERS, CONTROLS, ETC.	4. AFTER THE SYSTEMS HAVE BEEN BALANCED AN COMPLETED, RUN A SIX HOUR TEST ON BOTH CYCLE TO DETERMINE IF SYSTEM IS RESPONDIN CONTROLS. THERMOSTAT SETTING, THERMOSTAT AN INDEPENDENT TEMPERATURE MEASUREMENT BE RECORDED AT EACH THERMOSTAT.
7.	CONTRACTOR SHALL SUPPLY AND INSTALL ALL NECESSARY DUCT ACCESSORIES; SUCH AS VOLUME DAMPERS, FIRE DAMPERS, TURNING	5. UPON COMPLETION OF WORK PRESENT THE OW FINAL INSPECTION FROM LOCAL AUTHORITIES.
	AND CEILING ACCESS DOORS. THE DUCTWORK SHALL COMPLY WITH SMACNA DUCT CONSTRUCTION STANDARDS. COORDINATE INSTALLATION OF DUCT ACCESSORIES WITH OTHER WORK.	CONTROLS: THE CONTRACTOR SHALL FURNISH AND INSTALL ALL TRANSFORMERS, CONTROLS, HARDWARE, FITTINGS, P/
8.	PROVIDE FLEXIBLE DUCT CONNECTIONS WHEREVER DUCTWORK CONNECTS TO VIBRATING EQUIPMENT. CONSTRUCT FLEXIBLE CONNECTIONS OF NEOPRENE-COATED FLAMEPROOF FABRIC CRIMPED INTO DUCT FLANGES FOR ATTACHMENT TO DUCT AND EQUIPMENT. MAKE AIRTIGHT JOINT. PROVIDE ADEQUATE JOINT FLEXIBILITY TO ALLOW FOR THERMAL, AXIAL, TRANSVERSE, AND TORSIONAL MOVEMENT, AND ALSO CAPABLE OF ABSORBING VIBRATIONS OF CONNECTED EQUIPMENT.	INCLUDING ALL SAFETY DEVICES REQUIRED FOR PRO OPERATION OF SYSTEM IN ACCORDANCE WITH ALL L CONTRACTOR SHALL VERIFY ALL VOLTAGE AND POWE COORDINATE WITH ALL TRADES AS REQUIRED. CONTR SHALL BE PROVIDED BY THE VAV BOX MANUFACTUR THIS CONTRACTOR. PROVIDE 24VOLT TRANSFORMER, THERMOSTATIC CONTROL IS REQUIRED) AND WIRING
9.	PROVIDE FLEXIBLE CONNECTORS AT THE INLET AND OUTLET CONNECTION FOR EACH FAN AND AIR HANDLING UNIT.	INSTALLATION THAT MEETS THE DESIGN INTENT OF T OPERATION. ALL CONTROLS WORK SHALL BE COMPLETED CONTROLS VENDOR, SMART BT.
10.	EACH FLEXIBLE CONNECTOR SHALL ALLOW 1" OF FREE MOVEMENT AND SHALL BE COMPLETELY AIR TIGHT.	CONTRACTOR SHALL HAVE A \$75,000 ALLOWANCE FOR C

NFORM TO THE RECOMMENDED AND AIR CONDITIONING NAL AND TRANSVERSE JOINTS, T TO SMACNA CLASS A SEAL OF THE BEST GRADE EET STEEL AND DUCT SUPPORTS

FASTENED WITH A MINIMUM QUADRANT BALANCING

TIGHT TO UNDER SIDE OF

AND 272RL FOR SUPPLY. CING DAMPER. RETURN AIR BALANCING THE DAMPER. PRESENTATIVE. SEE

CONCEALED SUPPLY AIR ASTIC AND INSTALLATION ACTURER'S

60" AFF).

FOR THE WORK. ARE NET DIMENSIONS OUND LINING.

INDICATED AND/OR

HOUSINGS, DAMPERS, AND I GALVANIZED STEEL SHEETS.

SHALL BE MADE ONLY IF AFTER SUBMISSION TO THE

URNING VANES OF OR GREATER.

HARD CAST 601. LEAKAGE SHALL BE BY PHYSICAL PRESENCE OF THE OWNER'S THE SEALS HAVE CURED JLATION OR CONCEALING IN

TIL ALL MECHANICAL 00% OPERATIONAL, ALL ALIBRATED AND ALL HIS SPECIFICATION TO INSURE COMPLETE SO THAT ALL BE PUT INTO NORMAL

SED AND WORK IN A AND BALANCING REPORT R FOR REVIEW.

UBMIT TO THE OWNER ECORDS OF TESTS SPECIFIED EMS HAVE BEEN BALANCED

ED AS TO LOCATION, . THIS INFORMATION SHALL ANCE REPORT.

CONDITIONING, HEATING, AND THE INFORMATION RECORDED PORT. EACH AIR DEVICE SERVICE. SIZE, TYPE AND REQUIRED (DESIGNED)

D ALL ADJUSTMENTS HEATING AND COOLING NG TO TEMPERATURE TEMPERATURE READING, AND AT THE THERMOSTAT SHALL

NER WITH A CERTIFICATE OF

NECESSARY WIRING, RTS AND ACCESSORIES PER INSTALLATION AND DCAL CODE REQUIREMENTS. REQUIREMENTS AND ROLS OF THE VAV UNIT ER AND INSTALLED/WIRED BY SWITCHES, THERMOSTATS (IF FOR A COMPLETE HE SYSTEM CONTROL D BY THE BUILDING PREFERRED

NTROLS.

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DUCT UNDER POSITIVE PRESSURE	12 " ø	INDICATES ROUND DUCT
DUCT LINDER NEGATIVE PRESSURE	F	FAN
SQUARE FLOOM WITH TURNING VANES	CR	CEILING REGISTER
	CG	CEILING GRILLE
ROUND TO RECTANGULAR TRANSITION	CCWS/R	CONDENSER WATER SUP
	C.O.	CLEAN OUT
VOLUME DAMPER	DB/WB	DRY BULB/WET BULB A
SOUND LINED DUCTWORK	EAT/LAT	ENTERING/LEAVING AIR
	EWT/LWT	ENTERING/LEAVING WAT
	RTU	ROOFTOP UNIT
	TR.G.	TRANSFER GRILLE
	(ER)	EXISTING WORK SHALL
POINT OF CONNECTION NEW WORK	(E)	EXISTING WORK SHALL
TO EXISTING	(RR)	RELOCATE & RECONNEC
POINT OF START/STOP DEMOLITION WORK	(R)	RELOCATED & RECONNE
SOUMPE DIFFUSER W/ ROUND NECK - 100 CEM	T	THERMOSTAT (NEW)
SQUARE DIFICIENT W/ NOOND NECK FOO CHM	SD	DUCT SMOKE DETECTOR
24"X24" PERFORATED CEILING GRILLE UNDERCUT DOOR LOUVER DOOR	12X10-SL	1" SOUND LINED DUCT SHEETMETAL DIMENSION

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Architect's Project Number: DD SET BID SET

2238 10-26-22 10-26-22

CARVER COMMUNITY CENTER EXPANSION 207 Lee Alley Frederick, Maryland 21701

OWNER: 209 Madison Street Frederick MD 21701 301.662.8173

SYMBOLS LIST, GENERAL NOTES, AND DETAIL





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10-26-22 10-26-22

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FLOOR PLAN

M100

				IMC 2	2018 -	– VEI	NTILAT	TION (OU'	CALCULA FSIDE A	ATIONS .IR	S: AHU	[-1					EXHA	AUST	AIR			
ROOM LOCATION	ROOM NAME	OCCUPANCY CATEGORY	AREA (FT ²) (A _z)	AREA OUTDOOR AIR RATE PER IMC TABLE 403.3 (R _a) (CFM/FT ²)	AREA OUTDOOR AIR (R _a A _z) (CFM)	OCCUPANT LOAD RATE PER IMC TABLE 403.3 (PEOPLE/ 1000 FT ²)	DEFAULT OCCUPANCY C × F/1000 (P _z)	DESIGN OCCUPANCY (^P z)	OCCUPANT OUTDOOR AIR RATE PER IMC TABLE 403.3 (R _p) CFM/PERSON	OCCUPANT OUTDOOR AIR (R _p P _z)	BREATHING ZONE OUTDOOR AIR FLOW (V _b = R _p P _z +R _a A _z) (CFM)	ZONE AIR DISTRIBUTION EFFECTIVENESS (E z)	ZONE OUTDOOR AIR FLOW (V _{oz} = V _{bz} / E _z) (CFM)	MINIMUM REQUIRED OUTSIDE AIR FLOW (CFM)	DESIGNED OUTSIDE AIR FLOW (CFM)	DESIGN SYSTEM OUTSIDE AIR FLOW (CFM)	MINIMUM EXHAUST AIR FLOW (CFM/FT ²)	MINIMUM EXHAUST AIR FLOW (CFM/FIXTURE)	PLUMBING FIXTURE COUNT	MINIMUM REQUIRED EXHAUST AIR FLOW (CFM)	DESIGNED EXHAUST AIR FLOW (CFM)	DESIGN SYSTEM EXHAUST AIR FLOW (CFM)
	B100 – LOBBY	MAIN ENTRY LOBBIES	107	0.06	6.4	10	2	2	5	10	16.4	0.8	20.5	20.5	25							
	B101 – MEETING ROOM	CONFERENCE ROOMS	193	0.06	11.6	50	10	10	5	50	61.6	0.8	77.0	77.0	80							
GROUND FLOOR	B102 – 0–2 PLAY ROOM	DAYCARE	573	0.18	103.1	25	15	15	10	150	253.1	0.8	316.4	316.4	320	600						
	B103 – NURSERY	DAYCARE	174	0.18	31.3	25	5	8	10	80	111.3	0.8	139.1	139.1	150]						
	B104 – STORAGE	STORAGE ROOMS	93	0.12	11.2	-	-	_	_	_	11.2	0.8	14.0	14.0	25							

					_	IMC à	<u> 2018 -</u>	- VEP	N'I'ILA'I	L'ION (CALCUL	<u>ATION:</u>	<u>S: Ahl</u>)-2								
	SPACE INFO	RMATION								OU	TSIDE A	AIR							EXHA	AUST	AIR	
ROOM LOCATIO N	ROOM NAME	OCCUPANCY CATEGORY	AREA (FT ²) (A _z)	AREA OUTDOOR AIR RATE PER IMC TABLE 403.3 (R _a) (CFM/FT ²)	AREA OUTDOOR AIR (R _a A _z) (CFM)	OCCUPANT LOAD RATE PER IMC TABLE 403.3 (PEOPLE/ 1000 FT ²)	DEFAULT OCCUPANCY C x F/1000 (P _z)	DESIGN OCCUPANCY (P _z)	OCCUPANT OUTDOOR AIR RATE PER IMC TABLE 403.3 (R _p) CFM/PERSON	OCCUPANT OUTDOOR AIR (R _P P _Z)	BREATHING ZONE OUTDOOR AIR FLOW ($V_{bz} = R_p P_z + R_a A_z$) (CFM)	ZONE AIR DISTRIBUTION EFFECTIVENESS (E z)	ZONE OUTDOOR AIR FLOW (V _{oz} = V _{bz} / E _z) (CFM)	MINIMUM REQUIRED OUTSIDE AIR FLOW (CFM)	DESIGNED OUTSIDE AIR FLOW (CFM)	DESIGN SYSTEM OUTSIDE AIR FLOW (CFM)	MINIMUM EXHAUST AIR FLOW (CFM/FT ²)	MINIMUM EXHAUST AIR FLOW (CFM/FIXTURE)	PLUMBING FIXTURE COUNT	MINIMUM REQUIRED EXHAUST AIR FLOW (CFM)	DESIGNED EXHAUST AIR FLOW (CFM)	DESIGN SYSTEM EXHAUST AIR FLOW (CFM)
	A100 – LOBBY	MAIN ENTRY LOBBIES	164	0.06	9.8	10	2	2	5	10	19.8	0.8	24.8	24.8	50							
	A101 – CORRIDOR	CORRIDORS	144	0.06	8.6	-	-	-	-	-	8.6	0.8	10.8	10.8	20							1
GROUND FLOOR	A102 — TOILET	TOILET ROOMS - PUBLIC	65	-	-	-	-	_	-	-	-	-	_	_	25	600		50	1	50	100	500
	A103 – CHILDREN'S TOILET	TOILET ROOMS - PUBLIC	127	-	-	-	-	-	-	-	-	-	-	_	25			50	2	100	200	
	A107 – KITCHEN	KITCHENS (COOKING)	104	0.12	12.5	20	3	3	7.5	22.5	35.0	0.8	43.8	43.8	50]	0.7			91	200	
	A108 - 2-3 PLAYROOM	DAYCARE	549	0.18	98.8	25	14	14	10	140	238.8	0.8	298.5	298.5	430]

]	IMC 2	2018	- VEI	NTILAT	TION (CALCUL	ATION	S: AHU	J-3								
	SPACE INFORM	[ATION								OU	ΓSIDE Δ	AIR							EXH	AUST	AIR	
ROOM LOCATION	ROOM NAME	OCCUPANCY CATEGORY	AREA (FT ²) (A _z)	AREA OUTDOOR AIR RATE PER IMC TABLE 403.3 (R _a) (CFM/FT ²)	AREA OUTDOOR AIR (R _a A _z) (CFM)	OCCUPANT LOAD RATE PER IMC TABLE 403.3 (PEOPLE/ 1000 FT ²)	DEFAULT OCCUPANCY C x F/1000 (P _z)	DESIGN OCCUPANCY (P _z)	OCCUPANT OUTDOOR AIR RATE PER IMC TABLE 403.3 (R _p) CFM/PERSON	OCCUPANT OUTDOOR AIR (R _P P _Z)	BREATHING ZONE OUTDOOR AIR FLOW $(V_{bz} = R_pP_z + R_aA_z)$ (CFM)	ZONE AIR DISTRIBUTION EFFECTIVENESS (E z)	ZONE OUTDOOR AIR FLOW (V _{oz} = V _{bz} / E _z) (CFM)	MINIMUM REQUIRED OUTSIDE AIR FLOW (CFM)	DESIGNED OUTSIDE AIR FLOW (CFM)	DESIGN SYSTEM OUTSIDE AIR FLOW (CFM)	MINIMUM EXHAUST AIR FLOW (CFM/FT ²)	MINIMUM EXHAUST AIR FLOW (CFM/FIXTURE)	Plumbing Fixture Count	MINIMUM REQUIRED EXHAUST AIR FLOW (CFM)	DESIGNED EXHAUST AIR FLOW (CFM)	DESIGN SYSTEM EXHAUST AIR FLOW (CFM)
	C100 – LOBBY	MAIN ENTRY LOBBIES	427	0.06	25.6	10	5	5	5	25	50.6	0.8	63.3	63.3	100							
	C101 — MEETING RM.	CONFERENCE ROOMS	86	0.06	5.2	50	5	5	5	25	30.2	0.8	37.8	37.8	50							
GROUND FLOOR	C102 – OFFICE	OFFICE SPACES	86	0.06	5.2	5	1	1	5	5	10.2	0.8	12.8	12.8	15	1000						450
_	C103 — MEETING RM.	CONFERENCE ROOMS	84	0.06	5.1	50	5	5	5	25	30.1	0.8	37.8	37.8	50							
	C104 – COMPUTER TRAINING ROOM	COMPUTER LAB	417	0.12	50.1	25	11	11	10	110	160.1	0.8	200.1	200.1	205							
	C105 – FLEX ROOM	MULTIPURPOSE ASSEMBLY	633	0.06	38.0	120	76	76	5	380	418.0	0.8	522.5	522.5	530							
	C106 – CUST. CLOSET	JANITORS	15	-	_	-	-	-	-	-	-	-	-	-	-		1				50	
	C107 - WOMEN'S TOILET ROOM	TOILET ROOMS - PUBLIC	125	-	_	-	_	-	-	-	-	-	-	-	25			50	2	100	200]
	C108 - MEN'S TOILET ROOM	TOILET ROOMS - PUBLIC	121	_	_	_	_	-	-	-	-	-	-	_	25			50	2	100	200	<u> </u>

]	IMC 2	2018 -	– VEN	ITILAT	'ION (CALCULA	ATIONS	S: AHU	^[-4]								
	SPACE INFORM	MATION								OUT	rside A	AIR							EXH	AUST	AIR	
ROOM LOCATION	ROOM NAME	OCCUPANCY CATEGORY	AREA (FT ²) (A _z)	AREA OUTDOOR AIR RATE PER IMC TABLE 403.3 (R _a) (CFM/FT ²)	AREA OUTDOOR AIR (R _a A _z) (CFM)	OCCUPANT LOAD RATE PER IMC TABLE 403.3 (PEOPLE/ 1000 FT ²)	DEFAULT OCCUPANCY C x F/1000 (P _z)	DESIGN OCCUPANCY (P _z)	OCCUPANT OUTDOOR AIR RATE PER IMC TABLE 403.3 (R _P) CFM/PERSON	OCCUPANT OUTDOOR AIR (R _P P _Z)	BREATHING ZONE OUTDOOR AIR FLOW $(V_{bz} = R_p P_z + R_a A_z)$ (CFM)	ZONE AIR DISTRIBUTION EFFECTIVENESS (E z)	ZONE OUTDOOR AIR FLOW (V _{oz} = V _{bz} / E _z) (CFM)	MINIMUM REQUIRED OUTSIDE AIR FLOW (CFM)	DESIGNED OUTSIDE AIR FLOW (CFM)	DESIGN SYSTEM OUTSIDE AIR FLOW (CFM)	MINIMUM EXHAUST AIR FLOW (CFM/FT ²)	MINIMUM EXHAUST AIR FLOW (CFM/FIXTURE)	Plumbing Fixture Count	MINIMUM REQUIRED EXHAUST AIR FLOW (CFM)	DESIGNED EXHAUST AIR FLOW (CFM)	DESIGN SYSTEM EXHAUST AIR FLOW (CFM)
	C110 – STORAGE	STORAGE ROOMS	84	0.12	10.1	-	-	-	-	-	10.1	0.8	12.6	12.6	20							
GROUND FLOOR	C111 – KITCHEN	KITCHENS (COOKING)	179	0.12	21.5	20	4	4	7.5	30	51.5	0.8	64.4	64.4	70	1050	0.7			125.3	400	400
	C112 - COMMUNITY ROOM	MULTIPURPOSE ASSEMBLY	1157	0.06	69.4	120	139	139	5	695	764.4	0.8	955.5	955.5	960							

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2238 10-26-22 10-26-22

CARVER COMMUNITY CENTER EXPANSION 207 Lee Alley Frederick, Maryland 21701

<u>OWNER:</u> 209 Madison Street Frederick MD 21701 301.662.8173

VENTILATION CALCULATIONS

M200

AI	R CO	OLED) COI	NDEN	SING	UNI	ΓSC	CHED	ULE								G	AS FU	URNAC	CE AIR	HA	NDLIN	IG UN	NIT S	SCHED	ULE						
	COOLING DATA		HEATING DATA		ELECTRICA	l data	MANUFACTURER	MIN	LINUT	NOMINAI	SUPPLY	OUTSIDE AIR	NOMINAL COOLING	E.S.P		DX COC	LING COIL	DATA			GAS FUR	NACE HEA	ATING DATA	A		ELECT	RICAL DATA					
NO.	SERVING	NOM. CAPACITY TONS	AMBIENT TEMP. °F	CAPACITY MBH	CAPACITY MBH	MIN. CIR AMPS	MAX. FUSE AMPS	VOLTS/ PHASE	TRANE	SEER	UNIT	TON	IAL SUPPLY OUTSIDE AIR COOLING CFM CFM CAPACITY MBH			I.W.C	EAT DB. •F	EAT WB. *F	LAT DB. *F	LAT WB. F	fotal MBH	EAT DB. •F	EAT WB. *F	LAT DB. F	LAT WB. •F	TOTAL MBH	MCA	МОСР	VOLT !	HZ	PH	MANUFACIORER, MODEL NO.
CU-3	AHU-3	15	95	180.0	145.9	65.0	80	208/3	TWA18043D	17	AHU-1	5	1,500	600	60.0	1.0	82.8	67.8	56.0	55.5	58.8	44.1	36.5	95.0	55.6	78.7	13.9	15	208	30	1	TRANE, S9V2D120, UPFLOW
1 PROVIDE THERMAL EXPANSION VALVE SOLENOID VALVE SUCTION LINE ACCUMULATORS											AHU-2	5	1,500	600	60.0	1.0	82.8	67.8	56.0	55.5	58.8	44.1	36.5	95.0	55.6	78.7	13.9	15	208	30	1	TRANE, S9V2D120, UPFLOW
I. PROVIL AND A	LL CONTROL IN	TERLOCKS AS	RECOMMENDE	D BY THE CO	NDENSING UNIT N	IANUFACTUR	RE.				5501455				·																	

2. UNIT SHALL BE PROVIDED WITH LOW AMBIENT CONTROL DOWN TO 0°F AND HIGH AMBIENT UP TO 115°F

3. UNIT SHALL BE PROVIDED WITH A TWO STAGE COMPRESSOR.

AI	R CO	OLED	CON	IDENS	SING	UN	NIT S	CHEDUI	ĿΕ
			COOLING DAT	A		ELECTRICAL	DATA	MANUFACTURER	MAINI
NO.	SERVING	NOM. CAPACITY TONS	AMBIENT TEMP. °F	CAPACITY MBH	MIN. CIR AMPS	MAX. FUSE AMPS	VOLTS/ PHASE	USED FOR DESIGN TRANE	MIN. SEER
CU-1	AHU-1	5	95	72.0	21.0	35	208/3	4TTA4060	17
CU-2	AHU-2	5	95	72.0	21.0	35	208/3	4TTA4060	17
<u>NOTES:</u> 1. 2. 3.	PROVIDE THEF AND ALL CON UNIT SHALL B UNIT SHALL B	RMAL EXPANSIO TROL INTERLOO E PROVIDED V E PROVIDED V	DN VALVE, SOL CKS AS RECOI VITH LOW AMB VITH A TWO S	ENOID VALVE, MMENDED BY IENT CONTROL TAGE COMPRES	SUCTION LI The conder Down to Ssor.	INE, ACCUN NSING UNIT O'F AND H	IULATORS MANUFACTUR IGH AMBIENT	E. UP TO 115°F	



			FA	N S	C H	E D	ULE							
NO.	SYSTEM SERVED	CFM	E.S.P I.W.C	NOMINAL RPM	WATTS	HP	VOLTS/PH.	TYPE	BASIS OF DESIGN " GREENHECK "	Control Interlock	REMARKS			
RAF-1	AHU-1	1,500	1.0	1,725	-	1.5	208/3	INLINE	SQ-140	AHU-1	1, 2			
RAF-2	AHU-2	1,500	1.0	1,725	-	1.5	208/3	INLINE	SQ-140	AHU-2	1, 2			
RAF-3	AHU-4	3,350	1.5	1,725	-	2.0	208/3	INLINE	SQ-160	AHU-3	1, 2			
OAF-1	AHU-1	1,500	1.0	1,725	-	1.5	208/3	INLINE	SQ-140	AHU-1	1, 2			
OAF-2	AHU-2	1,500	1.0	1,725	_	1.5	208/3	INLINE	SQ-140	AHU-2	1, 2			
OAF-3	AHU-4	3,350	1.5	1,725	-	2.0	208/3	INLINE	SQ-160	AHU-3	1, 2			
EF-1	AHU-2	500	0.75	2200	-	3/4	208/1	INLINE	SQ-98-VG	AHU-2	2			
EF-2	AHU-3	450	0.75	2200	-	3/4	208/1	INLINE	SQ-98-VG	AHU-3	2			
EF-3	RTU-1	400	0.75	2200	-	3/4	208/1	INLINE	SQ-98-VG	RTU-1	2			
NOTES:														

1. PROVIDE FAN WITH INSULATED HOUSING AND VARIABLE FREQUENCY DRIVE (VFD). 2. INSTALL FAN WITH MANUFACTURER FURNISHED SPRING TYPE VIBRATION ISOLATORS.

PROVIDE ALL UNITS WITH THE FOLLOWING:

1. FILTER RACK AND FILTER.

2. ALL CONTROLS AND WALL MTD. THERMOSTAT, LOCATE 'T' STAT AS CLOSE AS POSSIBLE TO RETURN AIR REGISTER. COORDINATE WITH ARCHITECT. 3. PROVIDE FURNACE WITH 2 STAGE OF HEAT, 2ND STAGE AT 120 MBH INPUT.

PACKAGED ROOFTOP LINIT

								I A	UNA	ULL													
UNIT NO.	SUPPLY AIR	OUTSIDE AIR	FAN		COOLII	NG COIL D	ATA			GAS H	ieating d/	ATA		ELEC	FRICAL DA	λTA		MINIMUM I PERFORM	ENERGY MANCE	WEICHT	BASIS OF		
NO.		CFM	CFM	E.S.P.	EAT	EAT	LAT	LAT	TOTAL	EAT	LAT	TOTAL	MIN GAS INPUT	MCA	MOCP	VOLT	ΗZ	PH	AHRI 3	40/360	LBS.	DESIGN	REMARKS
				1.1.0.	DB. F	WB. F	DB. F	WB. [•] F	MBH	DB. F	DB. F	MBH	MBH						EER	IEER		TRANE	
RTU-1	ROOF	3,200	1,050	2.0	81.4	66.9	55.0	54.9	119.6	48.5	95.0	153	160			208	60	3	10.6	10.6	2,800	THC120	HIGH EFFICIENCY

NOTES:

1. PROVIDE UNIT WITH THE FOLLOWING: – FACTORY MOUNTED CIRCUIT BREAKER AND DISCONNECT – STAINLESS STEEL DRAIN PAN

– MERV 8 AND MERV 13 FINAL FILTER

- HOT GAS REHEAT FOR DEHUMIDIFICATION FROSTAT

– CLOGGED FILTER/FAN FAILURE SWITCH

– STAINLESS STEEL HEAT EXCHANGER BACNET INTERFACE

- CONDENSATE OVERFLOW SWITCH

- MODULATING ELECTRIC HEAT WITH SCR CONTROLLER - DIRECT DRIVE FANS WITH ECM
- 2. EXTERNAL STATIC PRESSURE INCLUDES THE STATIC PRESSURE DOWNSTREAM OF UNIT; IT DOES NOT INCLUDE THE STATIC PRESSURE DROP FROM INTERNAL COMPONENTS.

3. SELECT FANS FOR MEDIUM FILTER PRESSURE DROP.

4. DESIGN CONDITIONS: -SUMMER OUTSIDE AIR: 95°F/76°F DB/WB

-SUMMER INSIDE AIR: 75°F AND 50% RH

-WINTER OUTSIDE AIR: 0°F -WINTER INSIDE AIR: 72°F AND 30%RH

5. SEE CONTROLS DRAWINGS FOR ADDITIONAL INFORMATION.

											HEAT	PUM	P AI	R HA	NDLING U	NIT	SCHE	DUL	£				
	SUPPLY OUTSIDE AIR COOLING			E.S.P.		DX COC	DLING COIL	. DATA			DX COII	_ HEATING	DATA		ELECTRICAL HEATI	NG			ELECI	TRICAL DA	ATA		MANUFACTURER, MODEL NO.
	CFM	CFM	CAPACITY MBH		EAT DB. •F	EAT WB. •F	LAT DB. [•] F	LAT WB. •F	TOTAL MBH	EAT DB. [•] F	EAT WB. •F	LAT DB. [•] F	LAT WB. •F	total MBH	ELECTRIC HEAT KW	EAT/DB	LAT/DB F	МСА	MOCP	VOLT	ΗZ	РН	
	3,350	1,000	134.4	1.5"	80.8	66.9	54	53.9	134.4	50.4	40.9	85	56.5	103.1	35	56.5	85.0			208	60	3	TRANE, TWA1804*D*, UPFLOW DUAL COMPRESSOR
5 1	MITH THE FOL	LOWING:																					

2. ALL CONTROLS AND WALL MTD. THERMOSTAT, LOCATE 'T' STAT AS CLOSE AS POSSIBLE TO RETURN AIR REGISTER. COORDINATE WITH ARCHITECT.

	D I	F F U	SE]	R S C	ΗE	DI	U L E
NO.	TYPE	CFM RANGE	NECK DIA. IN.	NOMINAL DUCT SIZE IN.	FACE SIZE IN.	MAX. NC LEVEL	REMARKS
S-1	PLAQUE	0-150	6	-	24x24	25	TITUS OMNI
S-2	PLAQUE	151–350	8	-	24x24	25	TITUS OMNI
S-3	PLAQUE	0-150	6	-	12x12	25	TITUS OMNI
S-4	PLAQUE	151-300	8	-	12x12	25	TITUS OMNI
S-5	SUPPLY GRILLE	0-150	_	6x6	8x8	25	TITUS 300FS, ALUMINUM, 3/4" SPACING, DOUBLE DEFLECTION
S-6	SUPPLY GRILLE	151-300	_	10x10	12x12	25	TITUS 300FS, ALUMINUM, 3/4" SPACING, DOUBLE DEFLECTION
E-1	EXHAUST GRILLE	0-200	_	8x8	10x10	30	TITUS 350 FL, ALUMINUM, 3/4" SPACING, 35° DEFLECTION
E-2	EXHAUST GRILLE	201-400	_	12x12	14x14	30	TITUS 350 FL, ALUMINUM, 3/4" SPACING, 35° DEFLECTION
R-1	RETURN GRILLE	0-200	_	10x10	12x12	30	TITUS 350 FL, ALUMINUM, 3/4" SPACING, 35° DEFLECTION
R-2	RETURN GRILLE	201-400	_	12x12	14x14	30	TITUS 350 FL, ALUMINUM, 3/4" SPACING, 35° DEFLECTION
R-3	RETURN GRILLE	401-600	_	14x14	16x16	30	TITUS 350 FL, ALUMINUM, 3/4" SPACING, 35° DEFLECTION
R-4	RETURN GRILLE	0-1500	_	22x22	24x24	30	TITUS 350 FL, ALUMINUM, 3/4" SPACING, 35° DEFLECTION
NOTES:							

1. PROVIDE ALL LOUVERED FACE SUPPLY AIR DIFFUSERS WITH FACTORY INSTALLED R6 FOIL FACED INSULATION.

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2238 10-26-22 10-26-22

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SCHEDULES

M201



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GENERAL NOTES

- 1. SCOPE: PROVIDE AND INSTALL A COMPLETE PLUMBING AND FIRE SPRINKLER SYSTEMS AS INDICATED ON THE GENERAL NOTES AND DRAWINGS.
- 2. APPLICABLE CODES AND REGULATIONS: ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING LATEST CODES AND REGULATIONS. a. NATIONAL PLUMBING CODE
- b. 2015 INTERNATIONAL FIRE CODE AND NFPA.
- 2015 INTERNATIONAL BUILDING CODE d. 2015 INTERNATIONAL ENERGY CONSERVATION CODE
- 3. GENERAL CONDITIONS: ANY ERRORS OR OMISSIONS APPEAR IN THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT OF SUCH ERRORS OR OMISSIONS IN WRITING. IF THE CONTRACTOR FAILS TO GIVE SUCH NOTICE, THE CONTRACTOR WILL BE RESPONSIBLE FOR THE RESULTS OF SUCH ERRORS AND OMISSION AND FOR THE COST OF RECTIFYING THE SAME.
- 4. PERMITS, LICENSES AND FEES: THIS CONTRACTOR SHALL PAY ALL REQUIRED TRADE PERMIT FEES AND SHALL OBTAIN ALL NECESSARY TRADE PERMITS AND LICENSES FOR INSTALLATION OF THE WORK, COMPLETE.
- 5. VISIT TO SITE: THE CONTRACTOR SHALL VISIT THE SITE AND SHALL FAMILIARIZE HIMSELF WITH THE ALL CONDITIONS, EQUIPMENT, FINISHES, ETC., PRIOR TO THE START OF WORK. IF ANY DISCREPANCY IS DETECTED, IT SHOULD BE BROUGHT TO THE ARCHITECT'S ATTENTION WITH RECOMMENDATIONS FOR PROPER CORRECTIONS FOR THE ARCHITECT'S APPROVAL.
- 6. UTILITY SERVICES: PRIOR TO THE START OF WORK, CONTRACTOR SHALL COORDINATE ALL WATER SEWER UTILITY SERVICES WITH CIVIL DWGS AND UTILITY COMPANIES. ANY DISCREPANCY IS DETECTED, IT SHOULD BE BROUGHT TO THE ARCHITECT/ENGINEER'S ATTENTION WITH RECOMMENDATIONS FOR PROPER CORRECTIONS FOR THE ARCHITECT/ENGINEER'S APPROVAL.
- 7. CUTTING AND PATCHING: WHERE IT IS NECESSARY TO CUT FLOORS, WALLS OR CEILINGS FOR THE INSTALLATION OF ANY PLUMBING WORK, SUCH CUTTING SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR. ALL AFFECTED AREAS SHALL BE PATCHED BY THE GENERAL CONTRACTOR TO MATCH THE ORIGINAL CONDITION AND APPEARANCE. BEFORE ANY CUTTING AND PATCHING TAKES PLACE, THE CONTRACTOR SHALL OBTAIN THE APPROVAL OF THE ARCHITECT AND STRUCTURAL ENGINEER.
- 8. INSTALLATION: INSTALLATION OF PLUMBING FIXTURES, PIPING, VALVES, ETC. SHALL BE DONE IN NEAT AND WORKMANLIKE MANNER, AND SHALL CONFORM TO THE LATEST TRADE PRACTICES.
- 9. DRAWINGS: THE PLUMBING DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS AND WORK INCLUDED IN THE CONTRACT. THE ARCHITECTURAL AND ALL OTHER INVOLVED DISCIPLINES' DRAWINGS SHALL BE EXAMINED FOR EXACT LOCATION OF FIXTURES AND EQUIPMENT. THE CONTRACTOR SHALL FOLLOW DRAWINGS IN LAYING OUT WORK AND COORDINATE WITH ALL TRADES TO VERIFY SPACES IN WHICH WORK WILL BE INSTALLED.
- 10. WHERE THE WORK OF THE CONTRACTOR WILL BE INSTALLED IN CLOSE PROXIMITY OR INTERFERE WITH WORK OF OTHER TRADES. THE CONTRACTOR SHALL ASSIST IN WORKING OUT SPACE CONDITIONS TO MAKE A SATISFACTORY ADJUSTMENT. IF THE CONTRACTOR INSTALLED THIS WORK BEFORE COORDINATING, CAUSING INTERFERENCE WITH WORK OF OTHER TRADES, HE SHALL MAKE THE NECESSARY CHANGES IN THE WORK TO CORRECT THE CONDITION WITHOUT EXTRA CHARGE.
- 11. THE CONTRACTOR SHALL GIVE FULL COOPERATION TO OTHER TRADES AND ALLOW THE WORK OF ALL TRADES TO BE INSTALLED SATISFACTORILY AND WITH THE LEAST POSSIBLE INTERFERENCE OR DELAY.
- 12. CLEANING: ALL MATERIALS NOT TO BE USED SHALL BE REMOVED FROM SITE AND ALL DEBRIS SHALL BE CLEANED AND THE AREA OF WORK SHALL BE LEFT IN CLEAN CONDITION.
- 13. PLUMBING SYSTEMS: ALL SANITARY WASTE PIPING SHALL BE RUN AT 1/4" PER FT. SLOPE UNLESS OTHERWISE INDICATED.
- a. ALL PIPING SHALL BE INSTALLED ABOVE CEILING OR IN A CONCEALED SPACE, UNLESS OTHERWISE INDICATED. b. PROVIDE TRAP PRIMER VALVE FOR ALL FLOOR DRAINS. PRIMER VALVE SHALL BE CONNECTED TO THE NEAREST COLD WATER LINE SERVING A LAVATORY OR A SINK. 1/2" COPPER PIPING SHALL BE RUN FROM THE PRIMER VALVE TO THE DRAINS' TRAPS.
- 14. PLUMBING FIXTURE: PROVIDE AND INSTALL ALL WASTE AND SUPPLY PIPES TO ALL THE FIXTURES AND EQUIPMENT AS INDICATED. ALL EXPOSED TRIM SHALL BE CHROME-PLATED ALL PENETRATION THROUGH WALLS AND EXPOSED TO VIEW SHALL BE PROVIDED WITH CHROME-PLATED ESCUTCHEONS.
- 15. PIPING: ALL PIPING SHALL BE NEW AND SHALL BE CUT TO EXACT LENGTHS TO SUIT THE FIELD CONDITIONS. CONNECTION OF DISSIMILAR PIPING MATERIALS SHALL BE MADE BY MEANS OF DIELECTRIC FITTINGS. DO NOT INSTALL ANY PVC PIPING.
- a. WATER PIPING SHALL BE CPVC WATER PIPING, WITH CPVC FITTINGS. PROVIDE INSULATION ONLY FOR MAIN HORIZONTAL WATER DISTRIBUTION PIPING. WASTE/VENT AND STORM WATER PIPING: STANDARD CAST IRON, NO HUB PIPING WITH CAST IRON FITTING. b.
- COPPER AND PVC PIPING AND FITTINGS ARE ACCEPTABLE. ALL VENT THRU ROOFS SHALL BE PROVIDED WITH MESH SCREEN AT THE TERMINATION POINT. c. PROVIDE 1/2 INCH THICK FIBERGLASS PIPE INSULATION FOR HOT AND COLD WATER PIPING. HOT WATER
- PIPING SHALL BE INSULATED TO R=3.
- d. PROVIDE PIPE SUPPORTS AND HANGERS FOR ALL PIPES AND INSTALL SLEEVES FOR PIPES PENETRATING THROUGH WALLS.
- e. VALVES IN WATER PIPING SHALL BE 125 LB. CAST. BRONZE, SCREWED PATTERN VALVES WITH ADAPTERS FOR USE WITH COPPER TUBE. GASKETS SHALL BE 1/16 INCH THICK RED RUBBER TYPE.
- 16. GAS PIPING: GAS PIPING SHALL BE ASTM 53, SCHEDULE 40 BLACK STEEL WITH MALLEABLE IRON PIPE FITTINGS, ANSI B16.3, 150 CLASS STANDARD PATTERN, FOR THREADED JOINTS. 17. PROVIDE PLUG VALVE FOR GAS SYSTEM.
- 18. FIRE PROTECTION: SPRINKLER THE ENTIRE BUILDING AREAS WITH WET PIPE HYDRAULICALLY DESIGNED SPRINKLER SYSTEM, IN ACCORDANCE WITH NFPA 13R, AND ALL LOCAL CODES.
- a. CONTRACTOR SHALL COORDINATE SPRINKLERS WITH LIGHTING, DUCTWORK, PIPING, STRUCTURAL ELEMENTS AND CEILING
- LAYOUT, FOR PROPER SPRINKLER COVERAGE IN ACCORDANCE WITH NFPA 13R AND ALL LOCAL CODES. b. CONTRACTOR SHALL SUBMIT HYDRAULIC CALCULATIONS AND ALL RELATED SHOP DRAWINGS TO DCRA/FIRE PREVENTION DIVISION FOR REVIEW AND APPROVAL. PRIOR TO INSTALLATION.
- LOCATION OF ALL SPRINKLER HEADS SHALL BE COORDINATED WITH ARCHITECT. d. SPRINKLER CONTRACTOR SHALL PERFORM A WATER FLOW TEST AND SHALL PREPARE HYDRAULIC CALCULATIONS BASED ON
- THE RESULTS OF THE FLOW TEST. e. IT IS THE RESPONSIBILITY OF THE SPRINKLER CONTRACTOR TO LAYOUT THE SPRINKLER HEAD LOCATIONS TO PROVIDE CODE COMPLYING COVERAGE FOR THE ENTIRE BUILDING. THE SPRINKLER CONTRACTOR MUST FIELD VERIFY LOCATION OF ALL THE EXISTING BUILDING ELEMENTS TO MAINTAIN THE CEILING HEIGHT DUE TO NEW CONSTRUCTION (NO PIPING LAYOUT IS SHOWN ON CONTRACT DRAWINGS), MODIFY PIPING DROPS AND SWINGS, ETC. SPRINKLER HEADS SHALL BE COORDINATED WITH STRUCTURAL ELEMENTS, CEILING ELEVATIONS LIGHT FIXTURES, DUCTWORK, PIPING AND CEILING DIFFUSERS, THE SPRINKLER CONTRACTOR SHALL PROVIDE COORDINATED INSTALLATION DRAWINGS FOR EXISTING AND NEW PIPING, RELOCATE EXISTING PIPING AS REQUIRED. PREPARE CALCULATIONS AND PIPE SIZING BASED ON THE NEW LAYOUT FOR APPROVAL BY THE FIRE MARSHAL. DRAWINGS ARE TO BE SUBMITTED TO THE ARCHITECT FOR COORDINATION OF THE SPRINKLER HEAD LOCATIONS.
- 19. TEST OF PLUMBING SYSTEMS: ALL SYSTEMS SHALL BE HYDROSTATICALLY TESTED UNDER A PRESSURE NOT LESS THAN 175 LBS. PER SQUARE INCH. DRAINAGE PIPING SHALL BE TESTED WITH 10" OF WATER FOR AT LEAST 15 MINUTES.
- 20. STERILIZATION: BEFORE ACCEPTANCE FOR DOMESTIC OPERATION EACH UNIT OF COMPLETE WATER DISTRIBUTION SYSTEM SHALL BE DISINFECTED AND STERILIZED.

FIXTURE NO. P-1 P-1A

P-1B

P-2

P-2C

- P-3 P-3A
- P-4 P-5
- P-6
- P-7



PLUMBI	PLUMBING FIXTURE CONNECTION SCHEDULE AND SPECIFICATION											
FIXTURE	WASTE	VENT	cw	нw	DESCRIPTION	MANUFACTURER	MODEL NO.	FUACET MFG/MODEL				
WATER CLOSET	4"	2"	1"	_	FLR. MTD., FLUSH TANK, ELONGATED RIM, 1.28 G/F, SEAT WITH COVER.	AMERICAN STANDARD	215CA.104.020	-				
WATER CLOSET (ADA)	4"	2"	1"	_	H.C., FLR. MTD., FLUSH TANK, ELONGATED RIM, 1.28 G/F, SEAT WITH COVER.	AMERICAN STANDARD	215AA.104.020	-				
WATER CLOSET (BABY)	4"	2"	1"	-	LOW, BABY, FLR. MTD., FLUSH TANK, ELONGATED RIM, 1.28 G/F, SEAT WITH COVER.	AMERICAN STANDARD BABY DEVARO	2315.228	-				
LAVATORY	1-1/2"	1-1/2"	1/2"	1/2"	VANITY TYPE, WITH SEE ARCHITECTURAL SPECS, 0.5 GPM FAUCET.	AMERICAN STANDARD	_	AMERICAN STANDARD 7075V05.002.002				
LAVATORY (ADA)	1-1/2"	1-1/2"	1/2"	1/2"	H.C., WALL MTD, WITH CONCEALED ARMS. 0.5 GPM FAUCET., PROVIDE INSULATION FOR SUPPLIES AND DRAIN LINES.	AMERICAN STANDARD	0356.421	AMERICAN STANDARD 7075V05.002.002				
LAVATORY (ADA)	1-1/2"	1-1/2"	1/2"	1/2"	H.C., WALL MTD, WITH CONCEALED ARMS. 0.5 GPM FAUCET., PROVIDE INSULATION FOR SUPPLIES AND DRAIN LINES. RIM ELEVATION @ 24" A.F.F.	AMERICAN STANDARD	0356.421	AMERICAN STANDARD 7075V05.002.002				
LAVATORY (ADA)	1-1/2"	1-1/2"	1/2"	1/2"	H.C., WALL MTD, WITH CONCEALED ARMS. 0.5 GPM FAUCET., PROVIDE INSULATION FOR SUPPLIES AND DRAIN LINES. RIM ELEVATION @ 34" A.F.F.	AMERICAN STANDARD	0356.421	AMERICAN STANDARD 7075V05.002.002				
URINAL	2"	1-1/2"	3/4"	-	WALL MTD., VITREOUS CHINA, FLUSHING RIM, 0.5 G/F,	AMERICAN STANDARD AMERICAN STANDARD	6590.001.020 0255	SLOAN ROYAL 186				
URINAL	2"	1-1/2"	3/4"	-	WALL MTD., VITREOUS CHINA, FLUSHING RIM, 0.5 G/F, MOUNTED TO MEET ADA HEIGHT	AMERICAN STANDARD AMERICAN STANDARD	6590.001.020 0255	SLOAN ROYAL 186				
SINK (ADA)	1-1/2"	1-1/2"	1/2"	1/2"	H.C., STAINLESS STEEL, SELF-RIM, W/ DEPRESSED OFFSET DRAIN OPENING FOR, 1/2 HP DISPOSER	MOEN	GS201974RQ	AMERICAN STANDARD, 7074.000.002, 1.5 GPM FAUCET, W/BUILT IN AERATOR.				
DISHWASHER	*	_	_	1/2"	* CONNECT DRAIN TO SINK WITH VACUUM BREAKER, SEE ARCHITECTURAL SPECS							
ELECTRIC WATER COOLER	1-1/2"	1-1/2"	1/2"	1/2"	HANDICAP, ALL STAINLESS STEEL BODY, 2–STATIONS, HIGH LOW WATER COOLER.	ELKAY	EZSTL8C					
SERVICE SINK	3"	1-1/2"	1/2"	1/2"	ANAMELED CAST IRON, WALL MOUNTED, WITH RIM GAURD, AND 3" 'P' TRAP	AMERICAN STANDARDS						

ELECTRICAL WATER HEATER SCHEDULE												
NO.	GALLONS	RECOVERY	WATER TEMP.	WATER TEMP.		ELECTR	IC		STATE	SHIPPING	DIMENSIONS IN INCHES HEIGHT/DIAMETER	REMARKS
	STORAGE	GAL/H	IN	OUT	STANDARD KW	MAX. KW	VOLT	PHASE	MODEL #	WEIGHT		
HWH—1, HWH—2	30	15	40	110	4.5	6.0	208	1	PCE 30 20LSA	100	30-7/8, 21-3/4	

SYMBOLS LIST

	ABB.	DESCRIPTION
_	SAN., W.	SANITARY OR WASTE PIPING
-	V	VENT PIPING
_	C.W.	COLD WATER PIPING
_	H.W.	HOT WATER PIPING
_		SHUT OFF VALVE
Ð		PIPE UP, PIPE DOWN
		TEMPERING VALVE, ASSE 1070 THERMOSTATIC MIXING VALVE
	V.T.R.	VENT THRU ROOF, TERMINATE VENT MIN. 12" ABOVE FINISH ROOF

H.C.

HWH

NISHED FLOOR	
TED STAINLESS STEEL TUBING	
N NT DIAMETER	

INV. INVERT MTD. MOUNTED S.S. SANITARY SOIL STACK SANITARY VENT STACK V.S.

HANDICAP

HOT WATER HEATER

MINER FEINSTEIN ARCHITECTS

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BID SET	10

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CARVER COMMUNITY CENTER EXPANSION 207 Lee Alley Frederick, Maryland 21701

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SYMBOLS, GENERAL NOTES, DETAIL AND SCHEDULERS





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10-26-22 10-26-22

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PARTIAL FLOOR PLAN

P100



PARTIAL FLOOR PLAN

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PARTIAL FLOOR PLAN

P101

ELECTRICAL GENERAL NOTES:

- G1. IT IS THE INTENT OF THESE DRAWINGS TO PRODUCE A COMPLETE AND FUNCTIONING ELECTRICAL SYSTEM. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, TESTS AND OTHER SERVICES AS MAY BE NECESSARY TO ACHIEVE THIS PRODUCT. THE CONTRACTOR SHALL ACKNOWLEDGE ACCEPTANCE OF THE PLANS AS AN ADEQUATE DEFINITION OF THE SCOPE OF WORK AND EXTRA COST CLAIMS BASED ON DISCREPANCIES ON THE PLANS WILL NOT BE CONSIDERED.
- G2. ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE 2011 (NEC).NFPA 70 AND ALL APPLICABLE CODES AND STANDARDS. ALL NEW MATERIAL FURNISHED FOR THIS PROJECT SHALL BE LISTED BY UNDERWRITERS' LABORATORIES, INC (UL LISTED).
- G3. THE CONTRACTOR SHALL VISIT THE SITE AND EXAMINE CONDITIONS OF THE PREMISES AND THE CHARACTER AND EXTENT OF WORK REQUIRED PRIOR TO SUBMISSION OF BIDS. ANY DIFFICULTIES IN COMPLYING WITH THE DRAWINGS AND SPECIFICATIONS SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER OR HIS ENGINEERS BEFORE SUBMISSION OF BIDS.
- G4. SECURE AND PAY FOR ALL NECESSARY APPROVAL. PERMIT. INSPECTIONS. ETC. AND DELIVER THE OFFICIAL RECORDS OF THE GRANTING OF SUCH TO THE OWNER WITHOUT ADDITIONAL COST TO THE OWNER.
- G5. ELECTRICAL PLANS ARE DIAGRAMMATIC. DO NOT SCALE DRAWINGS.
- G6. CONSULT PLANS OF ALL OTHER TRADES FOR COORDINATION AND FOR RELATED AND ADJOINING WORK.
- G7. CIRCUIT NUMBERS ARE FOR IDENTIFICATION PURPOSES ONLY. CONTRACTOR SHALL BE RESPONSIBLE FOR CORRECTLY SPACING THE CIRCUITS IN THE PANEL AND BALANCE THE LOAD ON THE PHASES UNDER NORMAL OPERATING CONDITIONS.
- G8. SHOP DRAWINGS FOR ALL ELECTRICAL EQUIPMENT, FIXTURES, DEVICES AND MATERIALS SHALL BE SUBMITTED TO THE ENGINEERS FOR REVIEW AND APPROVAL BEFORE DELIVERY TO THE JOB SITE. EQUIPMENT, FIXTURES AND MATERIAL DELIVERED TO THE JOB SITE OR INSTALLED PRIOR TO APPROVAL OF THE SHOP DRAWINGS AND FOR WHICH THE SHOP DRAWINGS ARE SUBSEQUENTLY REJECTED, SHALL BE REPLACED WITH AN APPROVED ITEM AT NO ADDITIONAL COST TO THE OWNER.
- G9. PROVIDE ALL THE CONDUITS, WIRING, ETC. NECESSARY FOR A COMPLETE WIRING SYSTEM FOR ALL KITCHEN EQUIPMENT AS INDICATED ON THE ELECTRICAL AND ARCHITECTURAL PLANS.
- G10. ALL WORK SHALL BE DONE AT SUCH TIMES AND IN SUCH A MANNER AS WILL LEAST-INTERFERE WITH THE MAINTENANCE AND OPERATION OF ALL RELATED OR AFFECTED SYSTEMS. ALL POWER OUTAGES SHUT DOWNS, ETC. SHALL BE COORDINATED WITH THE
- G11. CONTRACTOR SHALL VERIFY THAT ALL DOOR SWINGS & EQUIPMENT LOCATION ARE CORRECT BEFORE INSTALLING LIGHT SWITCHES AND OUTLETS.
- G12. HORSEPOWER RATINGS INDICATED ON DRAWINGS MAY DIFFER FROM ACTUAL EQUIPMENT FURNISHED. IF FURNISHED EQUIPMENT DIFFERS FROM RATINGS ON DRAWINGS, CONTRACTOR SHALL NOTIFY THE PROJECT MANAGER FOR APPROPRIATE ACTION TO BE TAKEN. VERIFY ACTUAL WALK- IN FREEZER AND COOLER TO BE INSTALLED PRIOR TO ROUGH-IN AND WIRING.
- G13. CONTRACTOR SHALL NOTE U.L. LABELS ON MECHANICAL EQUIPMENT TO ACTUALLY BE INSTALLED CALLS FOR THE OVERCURRENT PROTECTIVE DEVICE TO BE FUSES. THE ELECTRICAL CONTRACTOR SHALL PROVIDE FUSED DISCONNECT SWITCH WITH PROPER SIZE FUSES AT THE SWITCH LOCATION INDICATED ON DRAWINGS AT NO ADDITIONAL CHARGE TO THE OWNER.
- G14. THE CORRECT NUMBER OF WIRES MAY NOT BE INDICATED FOR ALL CIRCUITS, ONLY THOSE WHERE CLARIFICATION IS NECESSARY. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL WIRES NECESSARY FOR THE PROPER FUNCTION OF THE SYSTEM WHETHER INDICATED ON DRAWINGS OR NOT.
- G15. ALL CONDUCTORS, RACEWAYS AND CABLES SHALL BE CONCEALED IN WALL OR RUN ALONG THE BEAM UNLESS INDICATED OTHERWISE.
- G16. THE LIGHTING FIXTURES SHALL BE FURNISHED AND INSTALLED COMPLETE WITH ACCESSORIES (INCLUDING LAMPS) MOUNTING DEVICES, ETC. BY THE CONTRACTOR.
- G17. ALL PENETRATIONS OF FLOOR AND WALLS SHALL BE FIRE STOPPED IN ACCORDANCE WITH BOCA, NEC AND NFPA.
- G18. CONDUCTORS SHALL BE INSTALLED CONTINUOUS BETWEEN DEVICES, WITH SPLICE LOCATED ONLY IN JUNCTION BOXES OR IN CABINETS.
- G19. THE ELECTRICAL CONTRACTOR SHALL COORDINATE ALL MOUNTING HEIGHTS FOR SWITCHES, RECEPTACLES, CEILING MOUNTED LIGHTING FIXTURES AND DISCONNECT SWITCHES BY THE USE OF ARCHITECTURAL DRAWINGS, SHOULD ANY CONFLICTS BECOME APPARENT THE CONTRACTOR SHALL REQUEST CLARIFICATION PRIOR TO INSTALLATION, IF INSTALLATION. IF THE WORK IS NOT COORDINATED ANY REMEDIAL WORK SHALL BE REDONE AT NO ADDITIONAL COST TO THE OWNER.
- G20. ALL LIGHTING FIXTURES SHALL BE INSTALLED IN STRICT ACCORDANCE WITH N.E.C., ARTICLE 370-15 AND 410-15, AND SHALL PROPERLY AND SUITABLE SUPPORT THE WEIGHT OF ANY FIXTURE INSTALLED.
- G21. EMERGENCY UNIT EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH N.E.C. ARTICL<u>E_</u>700-12(e).
- G22. PROVIDE TEMPORARY SERVICE AS NECESSARY FOR LIGHTING AND POWER EQUIPMENT (DRILLS, SAWS, ETC.). VERIFY TEMPORARY REQUIREMENTS WITH GENERAL CONTRACTOR. TEMPORARY LIGHTING AND POWER SHALL MEET OSHA REQUIREMENTS AND LOCAL CODES. TEMPORARY POWER SHALL BE DIRECTED BY COORDINATED WITH THE APARTMENT OFFICE MANAGER OR OWNER,
- G23. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH POWER COMPANY (DOMINION VIRGINA POWER) FOR TIMELY CONNECTION OF NEW ELECTRICAL SERVICE FEEDER. THE CONTRACTOR SHALL ALSO PROVIDE CONDUITS FOR TELEPHONE AND CABLE TELEVISION IF REQUIRED BY THE PROVIDERS.
- G24. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH UTILTY CO. (PEPCO) WHETHER OR NOT AN OUTAGE IS REQUIRED.

WIRES AND CABLES

- 1. ALL WIRE AND CABLE SHALL BE COPPER WITH THHN/THWN IN AND ALL WIRE SIZES ARE BASED ON COPPER CONDUCTORS W INSULATION UNLESS INDICATED OTHERWISE ALL CONNECTORS, ETC., SHALL BE LISTED FOR 75°C.
- 2. PROVIDE WIRING NOT SMALLER THAN #12 AWG FOR THE POWER DISTRIBUTION.
- 3. ALL CIRCUITS 120/208 VOLT OVER 100 FEET FROM PANEL OUTLET SHALL HAVE CONDUCTORS ONE SIZE LARGER THAN NO REQUIRED WHETHER INDICATED ON PANEL SCHEDULE OR NOT. ELECTRICAL BOXES AND FITTINGS
- 1. ALL BOXES AND FITTINGS SHALL BE OF CODE-GAUGE STEEL.
- 2. JUNCTION AND PULL BOXES SHALL BE GALVANIZED CODE-GAU STEEL WITH SCREW ON COVER OF TYPES, SHAPES AND SIZES EACH RESPECTIVE LOCATION.

WIRING DEVICES

- 1. PROVIDE DUPLEX. SPECIFICATION GRADE RECEPTACLES 2 POLE. GROUNDING WITH GREEN HEXAGONAL EQUIPMENT GROUND SCRE TERMINALS AND POLES INTERNALLY CONNECTED TO MOUNTING 125 VOLTS, WITH METAL PLASTER EARS, SIDE WIRING, NEMA CO 5-20r. SEE NOTE D9.
- 2. RECEPTACLES SHALL BE GFI WITH WEATHERPROOF TYPE COV
- 3. DUPLEX, NEMA 5-20R WITH GFI PLATE COVER SHALL BE WEATHERPROOF TYPE.
- **EQUIPMENT SPECIFICATIONS:**
- 1. ALL ELECTRICAL WIRING SHALL BE IN CONDUITS FROM DEVICE ELECTRICAL PANEL AND MINIMUM SIZE OF THE CONDUIT SHALL
- 2. PROVIDE LIQUID TIGHT FLEXIBLE CONDUIT FOR CONNECTION OF OTHER ELECTRICAL EQUIPMENT WHERE SUBJECT TO MOVEMENT AND ALSO WHERE SUBJECT TO ONE OR MORE OF THE FOLLOW UNLESS NOTED OTHERWISE: A. MOIST AND HUMID ATMOSPHERE WHERE CONDENSATE CAN EXPECTED TO ACCUMULATE. B. SUBJECT TO DRIPPING OIL, GREASE OR WATER.
- 3. ALL CONDUITS SHALL BE GROUNDED PER NEC. CONDUITS ENT BOXES, PANEL CABINETS ETC. MUST BE FITTED WITH A DOUBL BUSHING.
- 4. EXPOSED CONDUIT IN KITCHEN AREAS SHALL BE RIGID STEEL, WALL CONDUIT, ENCASED FULL EXPOSED LENGTH WITH CHROM

PANELBOARDS

- ENCLOSURES: SURFACE MOUNTED CABINETS. NEMA PB1. TYPE 1. FRONT COVER, DIRECTORY CARD WITH PROTECTIVE COVER.
- 2. GROUND BUS: EQUIPMENT GROUND BUS: ADEQUATE FOR BRANCH-CIRCUIT EQU GROUND CONDUCTORS; BONDED TO BOX.
- CONDUCTOR CONNECTORS: SUITABLE FOR USE WITH CONDUCTOR MAIN AND NEUTRAL LUGS: MECHANICAL TYPE.
- GROUND LUGS AND BUS CONFIGURED TERMINATORS COMPRESSION TYPE. 4. FUTURE DEVICES: MOUNTING BRACKETS, BUS CONNECTIONS AND NECESSARY APPURTENANCES REQUIRED FOR FUTURE INSTALLATION OF DEVICES.
- PANELBOARD SHORT-CIRCUIT RATING: RATED TO INTERRUPT SYMMETRICAL 5. SHORT CIRCUIT CURRENT AVAILABLE AT TERMINALS. MINIMUM INTERRUPTING RATING SHALL BE 14,000 AMPERES AT 240V.
- 6. ALL BREAKERS SERVING HEATING AND AIR-CONDITIONING EQUIPMENT SHALL BE UL LISTED AS "HACR" TYPE.
- 14. SAFETY SWITCHES: FUSIBLE AND NON-FUSIBLE SHALL BE FURNISHED AND INSTALLED EITHER AS SHOWN ON THE CONTRACT DRAWINGS OR AS REQUIRED BY NATIONAL ELECTRICAL CODE. SAFETY SWITCHES SHALL BE RATED GENERAL DUTY FOR INDOOR USE AND HEAVY DUTY FOR USE WITH MOTORS, A/C EQUIPMENT, ETC. SWITCHED SHALL BE RATED NEMA-3R FOR OUTDOOR INSTALLATION.
- 15. CONTRACTOR SHALL CONNECT NEW FIRE ALARM DEVICES TO EXISTING FCI FIRE ALARM CONTROL PANEL. NEW FIRE ALARM DEVICES SHALL MATCH EXISTING DEVICES IN ALL RECPECT. NEW FIRE ALARM CABLING SHALL BE RUN IN CONDUIT SYSTEM MINIMUM CONDUIT SIZE SHALL BE 3/4".

		SYMBOLS LIST		
ISULATION /ITH 75°C LUGS,	•	2'x4' FLUORESCENT LIGHTING FIXTURES, THE LETTER INDICATES TYPE, SEE LIGHTING FIXTURE SCHEDULE LIGHTING FIXTURES ON EMERGENCY CIRCUIT.	[PP] []	PO\ FU:
ER	O1	WALL MOUNTED LIGHTING FIXTURE.	"FBO"	INS
	↓ € ↓	LIGHTED FACE. ARROWS AS INDICATED ON DRAWING.	,	FIX
O FIRST DRMALLY	₽ ₽	SELF-CONTAINED EMERGENCY BATTERY PACK - 7'-0". 20A, 125V, 3W DUPLEX TEMPER RESISTANT RECEPTACLES, + 18" A.F.F. U.O.N.	#	ELE OF SH(INS
	₩P	20A, 125V, 3W DUPLEX TEMPER RESISTANT RECEPTACLES, + 18" A.F.F. W/ GFI AND WEATHERPROOF COVER	ייכויי	A T /
GE SHEET TO SUIT	æ	, 20A, 125V, 3W DUPLEX TEMPER RESISTANT RECEPTACLE (NEMA 5–20R) WITH GROUND FAULT CURRENT INTERRUPTER. MOUNTED +6" ABOVE COUNTER TOP BACKSPLASH.		ALA
	⊕	QUADRUPLES RECEPTACLES,	E	F
, 3 WIRE, EWS, GROUND YOKE, 20 AMPERES, ONFIGURATION		TELEPHONE/DATA OUTLET TELEPHONE OUTLET DATA OUTLET	H(L) H(F) 30	F H C F M R
WER .	ΓV ⊥ S S _D S _M	20A, 120V SINGLE POLE LIGHTING SWITCH MOUNTED +48" AFF UON. DIMMER SWITCH MOTOR RATED TOGGLE SWITCH WITH THERMAL OVERLOAD PROTECTION.	SD	F
BACK TO THE _ BE 3/4".	S ₀	OCUPANCY SENSOR, WALL MOUNTED +48"AFF OCUPANCY SENSOR, WALL MOUNTED +48"AFF		
F MOTOR AND FOR AND VIBRATION, WING CONDITIONS	SO	OCUPANCY SENSOR, CEILING MOUNTED		
BE	J	JUNCTION BOX.		
ERING THE OUTLET E LOCKNUT AND				
THREADED THICK IE PLATED.				
1. HINGED				
UIPMENT				
R MATERIAL.				

	<lighting fixture="" schedule=""></lighting>											
A	в	С	D	E								
TYPE MAR	QTY.	TYPE	MANUFACTURER	BRAND								
A	52	STACK 2X4: Refer To Type Catalog	Acuity Brands Lighting	Lithonia Lighting								
B	24	WF6: Refer To Type Catalog	Acuity Brands Lighting	Lithonia Lighting								
C	5	FML4W: Refer To Type Catalog	Acuity Brands Lighting	Lithonia Lighting								
D	1	FMML: FMML 7 840	Acuity Brands Lighting	Lithonia Lighting								
E	11	ELM4L: ELM2L	Acuity Brands Lighting	Lithonia Lighting								
F	8	ECRG RD: EXRG M6	Acuity Brands Lighting	Lithonia Lighting								
G	5	WDGE2 LED: Refer To Type Catalog	Acuity Brands Lighting	Lithonia Lighting								
H	4	Westgate_CRE-MP-06-30K-SIL: Westgate_CRE	WESTGATE MANUFACTURING									
J	7	FMVCSLS: Refer To Type Catalog	Acuity Brands Lighting	Lithonia Lighting								

GENERAL NOTES:

1 ABOVE FIXTURES ARE BASIS OF DESIGN-PENDING CLIENT APPROVAL. ALL FIXTURE ARE TO BE LED, 30K DAMMABLE.

(2) GENERAL CONTRACTOR TO VERIFY ALL FIXTURE COMPONENTS WITH EXISTING CONDITIONS PRIOR TO ORDERING.

(3) ELECTRICAL CONTRACTOR TO CHECK AND VERIFY WITH LIGHTING SYSTEM MANUFACTURER'S THE LIGHTING FIXTURES COMPATIBILITY SUCH AS COMBINATION OF 0-10V DRIVER & DIMMABLE LIGHT FIXTURE. CONSULT WITH MANUFACTURER'S PRIOR TO COMMENCE WORK ON LIGHTING SYSTEM.

(4) ELECTRICAL CONTRACTOR TO PROVIDE COMPLETE LIGHTING CONTROL SYSTEM SHOP DRAWINGS WITH CUT SHEETS.

(5) ALLOWS LIGHTING FIXTURES TO ON/OFF DIMMING, CHANGE CRI (COLOR) & SWITCH TO NIGHT LIGHT COORDINATE WITH THE ARCHITECT FOR LOCATIÓN OF HOLDER.

OWER PACK

USED DISCONNECT SWITCH SUBSCRIPT INDICATES IP/ POLES/FUSES. "FBO" DENOTES FURNISHED BY OTHER STALLED BY ELECTRICAL CONTRACTOR.

XTURE CONTROLLED BY WIFI

ECTRICAL WIRING. NUMBER OF SLASH MARKS INDICATE NUMBER WIRES WHEN MORE THAN TWO. GROUND WIRE NOT IOWN, BUT REQUIRED. ALL CIRCUITS SHALL HAVE A SEPARATE SULATED GROUND WIRE.

ARM SYMBOLS

FIRE ALARM MANUAL STATION MTG. HT. 3'-6''

FIRE ALARM STROBE VISUAL ALARM SINGLE MTG. HT.6'-6" OR 6" BELOW CEILING IS DENOTES CANDELA RATING FIRE ALARM COMBINATION HORN AND VISUAL ALARM SINGLE MTG. HT.6'-6" OR 6" BELOW CEILING IS DENOTES CANDELA RATING

FIRE ALARM SMOKE DETECTOR

Ĩ	F
	COMMENTS
	LAY-IN TROFFER
	WAFER LED 6" DIA.
	4 FT. WRAP-AROUND
	CUST. CL. LIGHT
	EMERGENCY LIGHTS
	EXIT SIGNS
-	EXT. WALL PACK (CUT-OFF)
	DECORATIVE EXT. WALL SCONCE
	VANITY LIGHT

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Architect's Project Number: DD SET BID SET

2238 10-26-22 10-26-22

CARVER COMMUNITY CENTER EXPANSION 207 Lee Alley Frederick, Maryland 21701

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SYMBOLS LIST, GENERAL NOTES, AND SCHEDULE





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> FLOOR PLAN -ELECTRICAL POWER RISER DIAGRAM AND DETAIL





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FLOOR PLAN - LIGHTING

E101

FIRE ALARM RISER DIAGRAM

	MDP SCHEDULE											
	PAN	iel "M	DP"	400A 3ø 4W 120/208V	MLO.							
СКТ	POLE	TRIP	FRAME	WIRE/CONDUIT	SERVICE							
1	3	150	200	4 #3/0 + 4"G - 2-1/2"C	PANEL 'A'							
2	3	150	200	4 #3/0 + 4"G - 2-1/2"C	PANEL 'B'							
3	3	60	100	3 #4" + 8"G - 1"C	RTU-1							
4	3	35	100	3 #6" + 8"G - 1"C	CU-1							
5	3	35	100	3 #6" + 8"G - 1"C	CU-2							
6	3	35	100	3 #6" + 8"G - 1"C	CU-3							
7	3				SPACE							
8	3				SPACE							
9	3				SPACE							
10	3				SPACE							

CONNECTED LOAD =

 $\frac{118.6 \text{KVA x1000}}{\sqrt{3} \text{x208V}} = 329.4 \text{ A}$

	PANEL SCHEDULE												
PANEL "A" 20	OA MLO							3 PHA	SE	4	WIRE	120/208 VOLT 22 к А.	-S I.C.
FEEDER FOR	BRANCH CONDUCTORS	_	K V A	0	BREAKER	POS		BREAKER	LOAD PE	ER PHAS	E IN KVA	BRANCH CONDUCTO	RS FEEDER FOR
NURSERY RM RECEPTACLE	2#12+1#12 G. 3/4" C	1.0			20	1	2	20	0.6			2#12+1#12 G. 3/4" (C STORAGE/MECH RM RECEP
PLAY RM RECEPTACLE	2#12+1#12 G. 3/4" C		1.0		20	3	4	20		1.0		2#12+1#12 G. 3/4" (C PLAY RM RECEPT
MEETING RM RECEPTACLE	2#12+1#12 G. 3/4" C			1.2	20	5	6	20			1.0	2#12+1#12 G. 3/4" (C LOBBY & OUTDOOR OUTLE
WATER COOLER	2#12+1#12 G. 3/4" C	1.2			20	7	8	20	1.2			2#12+1#12 G. 3/4" (DROP OFF AREA RECEPT
RANGE	3#6+1#10 G. 3/4" C		4.0		50	9	10	20		1.0		2#12+1#12 G. 3/4" (C REFRIGERATOR
-	-			4.0	2P	11	12	20			1.5	2#12+1#12 G. 3/4" (C KITCHEN RECEPTACLE
HOOD E FAN/LIGHT	2#12+1#12 G. 3/4" C	1.0			20	13	14	20	1.5			2#12+1#12 G. 3/4" (C KITCHEN RECEPTACLE
PLAY RM RECEPTACLE	2#12+1#12 G. 3/4" C		0.8		20	15	16	20		0.8		2#12+1#12 G. 3/4" (C CORRIDOR/MECH RM RECF
PLAY RM RECEPTACLE	2#12+1#12 G. 3/4" C			1.0	20	17	18	20			1.3	2#12+1#12 G. 3/4" (
EXIT/NIGHT LIGHTS	2#12+1#12 G. 3/4" C	0.9			20	19	20	20	1.1			2#12+1#12 G. 3/4" (C LIGHTING
CANOPY LIGHTING	2#12+1#12 G. 3/4" C		0.8		20	21	22	15		1.6		2#12+1#12 G. 3/4" (C AHU-2
H. W. HTR	2#12+1#10 G. 3/4" C			2.6	30	23	24	15			0.5	3#12+1#12 G. 3/4" (C RAF-1
-	-	2.6			2P	25	26		0.5			-	-
RAF-2	2#12+1#12 G. 3/4" C		0.5		15	27	28	ЗР		0.5		-	-
-	-			0.5		29	30	15			1.6	2#12+1#12 G. 3/4" (C AHU-1
-	-	0.5			ЗP	31	32	20	0.6			2#12+1#12 G. 3/4" (C FACP
SPARE	-		-		20	33	34	20		0.3		2#12+1#12 G. 3/4" (C EF-1
SPARE	-			-	20	35	36	20			-	-	SPARE
SPARE	-	-			-	37	38	-	-			-	SPACE
SPACE	-		-		-	39	40	-		-		-	SPACE
SPACE				_	_	41	42	_			-	_	SPACE
		7.2	7.1	9.3	Α		В	С	4.9	4.9	5.9		
	CTED OAD = 39	9.3	KVA		12.1	22	2.0	15.2					

TOTAL CONNECTED LUAD = 39,3 KVA DEMAND LOAD LIGHTING 4.1 KVA x 125% CONV, OUTLETS 9.6 KVA

= 9.6 KVA = 25.7 KVA

TOTAL DEMAND LOAD 40,7 KVA

 $I = \frac{40.7 \text{ KVA } \times 1000}{\sqrt{3} \times 208 \text{V}} = 113.0 \text{ A}$

PANEL SCHEDULE													
PANEL "B" 200A MLO 3 PHASE 4 WIRE 120/208 VOLTS 22 K A.I.C.													
FEEDER FOR	BRANCH CONDUCTORS		КVА	G	BREAKER	POS	ITION IBER	BREAKER SIZE	LOAD PI	ER PHAS	E IN KVA	BRANCH CONDUCTORS	FEEDER FOR
COMPUTER RM RECEPTACLE	2#12+1#12 G. 3/4" C	1.0			20	1	2	20	0.8			2#12+1#12 G. 3/4" C	MEETING RM 101 RECEPT
COMPUTER RM RECEPTACLE	2#12+1#12 G. 3/4" C		1.0		20	3	4	20		1.8		2#12+1#12 G. 3/4" C	MEETING RM 103 RECEPT
COMPUTER RM RECEPTACLE	2#12+1#12 G. 3/4" C			1.0	20	5	6	20			1.8	2#12+1#12 G. 3/4" C	OFFICE RECEPT
FLEX RM RECEPT	2#12+1#12 G. 3/4" C	1.0			20	7	8	20	1.2			2#12+1#12 G. 3/4" C	COMMUNITY RM RECEPT
FLEX RM RECEPT	2#12+1#12 G. 3/4" C		1.0		20	9	10	20		1.0		2#12+1#12 G. 3/4" C	COMMUNITY RM RECEPT
RANGE	3#6+1#10 G. 3/4" C			4.0	50	11	12	20			1.0	2#12+1#12 G. 3/4" C	REFRIGERATOR
-	_	4.0			2P	13	14	20	1.5			2#12+1#12 G. 3/4" C	ABOVE COUNTER RECEP
HOOD E FAN/LIGHT	2#12+1#12 G. 3/4" C		1.0		20	15	16	20		1.5		2#12+1#12 G. 3/4" C	ABOVE COUNTER RECEP
MECH/STORAGE/KITCH RECEP	2#12+1#12 G. 3/4" C			0.8	20	17	18	20			1.2	2#12+1#12 G. 3/4" C	WATER COOLER
LIGHTING	2#12+1#12 G. 3/4" C	0.4			20	19	20	20	0.8			2#12+1#12 G. 3/4" C	EXIT & NIGHT LIGHTING
LIGHTING	2#12+1#12 G. 3/4" C		1.3		20	21	22	20		0.2		2#12+1#12 G. 3/4" C	RTU-1
AHU-3	2#12+1#12 G. 3/4" C			2.6	15	23	24	20			0.3	2#12+1#12 G. 3/4" C	EF-2
H.W. HTE	2#12+1#10 G. 3/4" C	1.6			30	25	26	15	0.5			3#12+1#12 G. 3/4" C	RAF-3
-	-		2.3		2P	27	28			0.5		-	-
SPARE	_			2.3	20	29	30	3P			0.5	-	-
SPARE	-	-			20	31	32	20	-			-	SPARE
SPARE	-		-		20	33	34	20		-		-	SPARE
SPARE	_			-	20	35	36	20			-	-	SPARE
SPAC	_	-			-	37	38	-	-			-	SPACE
SPACE	-		-		-	39	40	-		-		-	SPACE
SPACE	-			_	-	41	42	-			-	-	SPACE
		8.0	6.6	9.2	Α		B	С	4.8	4.0	4.1		
TOTAL CONNE	CTED LOAD = 36	6,7	KVA		12.8	10	,6	13.3					

LIGHTING 4.1 KVA x 125% CONV, OUTLETS 9.6 KVA LESSTHAN 10KVA @ 100% MECH LOAD @100%

= 4.0 KVA = 10.0KVA

= 23,5 KVA

TOTAL DEMAND LOAD 37.5 KVA

 $I = \frac{37.5 \text{ KVA } \text{x1000}}{\sqrt{3} \text{x208V}} = 104.2 \text{ A}$

NO SCALE

KVA 40.7 37.5 17.6 7.6 7.6 7.6 118.6

MECH LOAD @100%

LESSTHAN 10KVA @ 100%

= 5.4 KVA

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PANEL SCHEDULES AND FIRE ALARM **RISER DIAGRAM**

