



CLEARWATER HOUSING AUTHORITY
BARBEE TOWERS

COMMISSION #: 19079.00

PROJECT MANUAL

VOL I

May 15, 2020
Revised November 4, 2020

**CLEARWATER HOUSING AUTHORITY – BARBEE TOWERS
PROJECT MANUAL**

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**SECTION 00100
INSTRUCTIONS TO BIDDERS**

PART 1- GENERAL

DESCRIPTION OF WORK

HUD Form 5369 "Instruction to Bidders for Contracts – Public and Indians Housing Programs," pages 1 through 4, dated Oct. 2002 follow this Section and are incorporated into the Contract Documents.

See Section 00110 "Supplementary Instructions to Bidders" for modifications to HUD Form 5369.

END OF SECTION

**SECTION 00110
SUPPLEMENTARY INSTRUCTION TO BIDDERS**

PART I – GENERAL

1.01 SCOPE

- A. This Section sets forth the modifications and additions to Section 00100 "Instructions to Bidders" HUD Form 5369.
- B. In those instances that a clause is amended, modified, voided, or superseded, the provisions of such Clause not specifically amended, modified, voided or superseded shall remain in effect. Should a conflict exist between the provisions of the Agreement, and those of the Specifications, the requirements of the Agreement shall apply.

1.02 MODIFICATIONS AND ADDITIONS

- A. Clause 2, add the following subclause (C): "(C) Contractor must submit questions concerning interpretations and bidding in writing to: Bessolo Design Group, Contact: Project Architect, 7901 4th Street North, Suite 200., St. Petersburg, FL 33702 (727.894.4453)/ph or (727) 896-8662 fax).
- B. Clause 12, Indian Preference Requirements: Delete Clause 12 in its entirety.

END OF SECTION

**SUPPLEMENTARY INSTRUCTIONS TO BIDDERS
SECTION 00110-1**

05/15/2020

SECTION 00300
BID PROPOSAL FORM

PROPOSAL FORM

(Submit in quadruplet on Contractor's Letterhead)

DATE:

TIME:

For: project

Gentlemen:

The undersigned, hereinafter called "Bidder," having visited the site of the proposed project and familiarized himself with the local conditions, nature and extent of the Work, and having examined carefully the Drawings, Specifications, the Form of Agreement, and other Contract Documents with the Bond requirements therein, proposes to furnish all labor, materials, equipment and other items, facilities, and services for the proper execution and completion of _____, in full accordance with the Advertisement for Bid, Invitation to Bid, Instructions to Bidders, and all other documents relating thereto, on file in the office of _____ and, if awarded the Contract, to complete the said Work within the time limits specified or stipulated herein for the following Bid price.

Base Bid: _____

Dollars \$ _____

With foregoing as a Base Bid, the following cost of alternate proposals are submitted in accordance with the drawings and specifications.

The Bidder hereby agrees that:

- a. The above proposal shall remain in full force and effect for a period of ninety (90) calendar days after the time and date of receipt of Bids and that this Bidder will not revoke or cancel this proposal or withdraw from the competition within the said ninety (90) calendar days.
- b. In case he be notified in writing by mail, telegraph, or delivery of the acceptance of this proposal within ninety (90) days after the time set for the opening of bids, the undersigned agrees to execute within ten (10) days a formal written contract for the work for the above stated compensation and at the time to furnish and deliver to the Owner a Performance Bond and a Payment Bond in accordance with the requirements of the Supplementary General Conditions of the Contract, both in an amount equal to 100% of the contract sum or shall assure completion per Clause 10 of HUD- Form 5369. The premium for such bond will be paid by the Prime Contractor.
- c. The undersigned agrees to commence actual physical work on the site with an adequate force and equipment within ten (10) calendar days of the date of receipt of written notice to commence and to complete fully all work within ___ consecutive calendar days from and including said date.
- d. Enclosed herewith is a bid bond in the amount of _____ Dollars (\$) (being not less than 5% of the Base Bid). The undersigned agrees that the above stated amount is the proper measure of liquidated damages, which the Owner will sustain by the failure of the undersigned to execute the contract and to furnish the Performance Bond and Payment Bond in case this proposal is accepted, and further agrees to the following:
*If this proposal is accepted within ninety (90) after the date set for the opening of bids and the undersigned fails to execute the contract within ten (10) days after notice of such acceptance or if he fails to furnish both Performance Bond and Payment Bond, and proper insurance, the obligation of the bid bond will remain in full

force and effect and money payable thereon shall be paid into the funds of the Owner as liquidated damages for such failures; otherwise, obligation of the Bond will be null and void.

*If the Contractor should fail, for reasons other than enumerated in General Condition HUD Form 5370, Clause 32, "Default" and other applicable clauses subsequently determined as nonjustifiable by the Owner to complete the project by the stipulated time, then the Contractor shall hereby agree as condition on this contract to pay to the Owner, amounts in accordance with the following, not as a penalty but as liquidated damages for such breach of contract, for each calendar day that the Contractor shall be in default after stipulated date.

LIQUIDATED DAMAGES _____

The above amount is agreed upon as a proper measure of liquidated damages which Owner will sustain per day, by failure of Contractor to complete work at stipulated time and is not construed in any penalty.

Attached is a fully and truthfully executed form HUD-5369, "Representation, Certifications, and other Statements of Bidders – Public and Indian Housing Programs."

Attached 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 proposals for the contract for which this proposal is submitted.

Attached is a Sworn Statement Pursuant to Section 287.133 (3)(a), Florida Statutes, on Public Entity Crimes.

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

ALTERNATES

The Undersigned proposes the following alternate prices for work more fully described in the Contract Documents. It is understood that the Owner shall accept or reject the alternates as his own best interests shall determine. All alternates noted with "(Price Required)": are to be completed for the Bid Proposal to be considered complete. None of the alternate Prices are to be included in the Guaranteed Maximum Base Bid Price. All alternate prices are to include full compensation for the work including overhead and profit.

ALTERNATE NO. 1: (Price Required)

~~The additional cost to provide and install a ducted return air for the air conditioning system for each residence. The cost for the ducted return shall not be included in the base bid price.~~

~~The additional cost to provide a 100% Performance Bond, and a 100% Labor and Material Payment Bond as per Article 7 of the General Conditions. The cost for the bonds is not to be included in the Base Bid Price.~~

ALTERNATE NO. 2: (Price Required)

~~Cost to provide and install underground electric service to each residence in lieu of the overhead service shown. The cost for the underground electric service is not to be included in the Base Bid.~~

~~Cost to provide Builder's Risk Insurance per Article 11 of the General Conditions. The cost for the Builder's Risk Insurance is not to be included in the Base Bid.~~

ALTERNATE NO. 3: (Price Required)

ADD/DEDUCT \$ _____

ALTERNATE NO. 4: (Price Required)

ADD/DEDUCT \$ _____

BID ACCEPTANCE:

In submitting this proposal, the undersigned understands that the right is reserved by the Architect to reject any and all bids or parts thereof and to waive any informalities, defects or irregularities in the bids, as may be deemed in its best interest. If written notice of acceptance of this proposal is mailed, telegraphed, faxed, or delivered to the undersigned within forty-five (45) days after the opening thereof, or at any time thereafter before this Proposal is withdrawn, the undersigned agrees to execute and deliver the Contract in the prescribed form and furnish a Performance and Payment Bond, each in a sum equal to 100% of the total contract price, and the policies of insurance or certificates of insurance within seven (7) days after the Contract is executed by the Owner.

TIME OF COMPLETION:

We, the undersigned agree to commence with construction within _____ calendar days after signing a Contract, and to complete the project within _____ calendar days after Notice To Proceed from the Owner. Contract includes _____ days of inclement weather. Time is of the essence in this project, and the contract will provide that if the contractor fails to commence work and complete the project in the time frame stated above, or an approved extension thereof, the contractor shall pay to the Owner as fixed, agreed and liquidated damages, but not as a penalty, the sum of \$300.00 for each calendar day of delay.

We, the undersigned, acting through its authorized officers and intending to be legally bound, agree that this Bid Proposal shall constitute an offer by the undersigned to enter into a contract with the acts and things therein provided, which offer shall be irrevocable for a period of 60 calendar days from the date of the opening hereof and that the Owner may accept this offer at any time during said period by notifying the undersigned of the acceptance of said offer. To the extent the period specified herein is in excess of any period specified by law for award of contract, submissions of this Proposal constitutes the written consent of the undersigned to an extension of time for award of the contract to the end of such period.

ADDENDA:

The undersigned agrees that the following addenda, which have been issued during the bidding period, have been received and have been considered both before and in the preparation of this proposal.

Addendum No. _____ dated _____

Addendum No. _____ dated _____

Addendum No. _____ dated _____

CONTRACTOR’S STATEMENTS OF BID QUALIFICATION:

ADDRESS, LEGAL STATUS AND SIGNATURE OF BIDDER:

The undersigned Bidder does hereby designate the address given below as the legal address to which all notices, directions, or other communications shall be served or mailed.

The undersigned in submitting this proposal to Bessolo Design Group, Inc., and in consideration of receipt and consideration of this proposal by Bessolo Design Group, Inc., intends to be legally bound by this proposal.

The undersigned Bidder does hereby declare that the Bidder has the legal status checked below:

_____ Individual _____ Partnership
_____ Corporation incorporated under the laws of _____.

Attached is the M.B.E. Utilization Summary 00710, page 4.

Florida Construction Industries Licensing Board Certification.

(Name of Holder) (Certificate no.)

In witness whereof, the bidder has hereunto set this signature and affixed his seal this _____ day of _____, 202__ AD.

(CORPORATE SEALED IF BIDDER IS A CORPORATION)

BIDDER: _____
NAME

BY: _____
NAME

TITLE

Witness (Secretary's Attest)
if Bidder is Corporation

**SECTION 00320
REPRESENTATIONS, CERTIFICATIONS AND OTHER
STATEMENTS OF BIDDERS**

PART I – GENERAL

DESCRIPTION OF WORK:

HUD Form 5369-A "Representations, Certifications, and other Statements of Bidders – Public and Indian Housing, " pages one through three inclusive, dated November 1992 follow this Section and are hereby included in the Project Manual and are incorporated into the Contract Documents.

Bidders shall include a fully and truthfully executed original of this form, along with the specified number of conformed copies, with the bid package. Failure to do so may be grounds for rejection of the bid as being non-responsive. Bidders must fill in the appropriate information in the blank spaces of the form and check the appropriate boxes where applicable. Bidders are hereby informed that certain clauses may or may not be applicable to this solicitation, based upon the dollar value of the bid proposal being submitted. Bidders shall be solely responsible for determining the applicable clauses where the contract dollar amount (amount of the bid proposal) is the deciding factor. Where the contract amount may be affected by bid alternates, Bidders shall complete the form based upon the highest possible dollar value.

For purposes of this solicitation, bidders are hereby informed that Clause 8 of the following Form HUD-5369-A is not applicable.

END OF SECTION

**REPRESENTATIONS, CERTIFICATIONS AND OTHER
STATEMENTS OF BIDDERS
SECTION 00320 -1**

05/15/2020

**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 Affecting the Work** of the *General Conditions of the Contract for Construction*). 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, except 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 Indian-owned 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 be 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)(1) 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)(1) 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" [] is, [] 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. "Women-owned 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 | [] Asian Pacific Americans |
| [] Hispanic 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)

**SECTION 00330
FORM OF NON-COLLUSIVE AFFIDAVIT**

STATE OF FLORIDA
_____ COUNTY

_____, being first duly sworn, deposes and says that he is _____, (A partner or officer of the firm of, etc.) the party making the foregoing proposal or bid, that such proposal or bid is genuine and not collusive or sham; that said bidder has not colluded, conspired, connived or agreed, directly or indirectly, with any bidder or person, to put in 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 the bid price or affiant or of any other bidder, or to fix any overhead, profit, or cost element of said bid price, or of that of any other bidder, or to secure any advantage against _____ Housing Authority or any person interested in the proposed Contract; and that all statements in said Proposal or Bid are true.

Signature of Bidder,
if Bidder is an individual

Signature of Partner,
if Bidder is a Partner

Signature of Officer,
if Bidder is a corporation
(Corporate seal required if
Corporation)

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

Notary Public

My Commission expires _____

END OF SECTION

**SECTION 00340
PREVIOUS PARTICIPATION CERTIFICATE**

PART I - GENERAL

HUD Form 2530, "Previous Participation Certificate", pages one and two inclusive; and "Instructions for Completing the Previous Participation Certificate, HUD Form 2530," pages one and two inclusive are included herein on the following pages. These forms may be submitted as part of the bid package. If not submitted as part of the bid package, the successful bidder shall submit a fully and truthfully executed certificate within three (3) working days of the bid opening. Failure to submit the certificate by that date may render the bid non-responsive. No contract award will be made without a properly executed certificate which has been reviewed by HUD and based upon that review, a HUD authorization to award has been received by the Owner.

The Bidder shall indicate whether or not this document is included with the bid package at Clause 12 of form HUD-5369-A, "Representation, Certifications, and other Statement of Bidders – Public and Indian Housing Programs" include in this Project Manual at Section 00320.

END OF SECTION

Previous Participation Certification

OMB Approval No. 2502-0118
(Exp. 02/29/2016)

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Office of Housing/Federal Housing Commissioner

WUFGrcetvo gpvqhCi tlewwwt g
Farmers Home Administration

Rctv Kw dg eqo rıgvf d{ Rtlpekr cm qhO wıłko kř Rtqlgevu (See instructions)		Hqt J WF J S Hb J C wug qprř	
Reason for submission: 30 Agency name and City where the application is filed		4. Project Name, Project Number, City and Zip Code	
5. Loan or Contract amount \$	6. Number of Units or Beds	7. Section of Act	8. Type of Project (check one) <input type="checkbox"/> Existing <input type="checkbox"/> Rehabilitation <input type="checkbox"/> Proposed (New)

90Nłwcmrtqr qvř Rtlpekr cm ecpf ewej qti epl ełqp ej ctv hqt cm qti epl ełqp

Name and address of Principals and Affiliates (Name: Last, First, Middle Initial) proposing to participate	: T qg qh Gcej Rtlpekr cnlp Rt qlgev	; 0Gzrgevř ' Qy pgt uj lr lp Rt qlgev	320UP qt KřUGo rıřř gt P wo dgt

Certifications: The principal(s) listed above hereby apply to HUD or USDA FmHA, as the case maybe, for approval to participate as principal(s) in the role(s) and project listed above. The principal(s) each certify that all the statements made on this form are true, complete and correct to the best of their knowledge and belief and are made in good faith, including any Exhibits attached to this form. **Y ctłpi** <HUD will prosecute false claims and statements. Conviction may result in criminal and/or civil penalties. The principal(s) further certify that to the best of their knowledge and belief:

- Schedule A contains a listing, for the last ten years, of every project assisted or insured by HUD, USDA FmHA and/or State and local government housing finance agencies in which the principal(s) have participated or are now participating.
- For the period beginning 10 years prior to the date of this certification, and except as shown on the certification:
 - No mortgage on a project listed has ever been in default, assigned to the Government or foreclosed, nor has it received mortgage relief from the mortgagee;
 - The principals have no defaults or noncompliance under any Conventional Contract or Turnkey Contract of Sale in connection with a public housing project;
 - There are no known unresolved findings as a result of HUD audits, management reviews or other Governmental investigations concerning the principals or their projects;
 - There has not been a suspension or termination of payments under any HUD assistance contract due to the principal's fault or negligence;
 - The principals have not been convicted of a felony and are not presently the subject of a complaint or indictment charging a felony. (A felony is defined as any offense punishable by imprisonment for a term exceeding one year, but does not include any offense classified as a misdemeanor under the laws of a State and punishable by imprisonment of two years or less);
 - The principals have not been suspended, debarred or otherwise restricted by any Department or Agency of the Federal Government or of a State Government from doing business with such Department or Agency;
 - The principals have not defaulted on an obligation covered by a surety or performance bond and have not been the subject of a claim under an employee fidelity bond;
- All the names of the principals who propose to participate in this project are listed above.
- None of the principals is a HUD/FmHA employee or a member of a HUD/FmHA employee's immediate household as defined in Standards of Ethical Conduct for Employees of the Executive Branch in 5 C.F.R. Part 2635 (57 FR 35006) and HUD's Standard of Conduct in 24 C.F.R. Part 0 and USDA's Standard of Conduct in 7 C.F.R. Part 0 Subpart B.
- None of the principals is a participant in an assisted or insured project as of this date on which construction has stopped for a period in excess of 20 days or which has been substantially completed for more than 90 days and documents for closing, including final cost certification, have not been filed with HUD or FmHA.
- None of the principals have been found by HUD or FmHA to be in noncompliance with any applicable fair housing and civil rights requirements in 24 CFR 5.105(a). (If any principals or affiliates have been found to be in noncompliance with any requirements, attach a signed statement explaining the relevant facts, circumstances, and resolution, if any).
- None of the principals is a Member of Congress or a Resident Commissioner nor otherwise prohibited or limited by law from contracting with the Government of the United States of America.
- Statements above (if any) to which the principal(s) cannot certify have been deleted by striking through the words with a pen, and the relevant principal(s) have initialed each deletion (if any) and have attached a true and accurate signed statement (if applicable) to explain the facts and circumstances.

Pco g qh Rtlpekr cn	Uli pcwrt g qh Rtlpekr cn	Egt vřlecıqp Fcvř*o o řř ř {{{	Ctgc Eqf g cpf Vgř0Pq0
Vj kłřto rtgrctřř d{ řřtlpvpcog+		Ctgc Eqf g cpf Vgř0Pq0	

Previous Participation Certification

OMB Approval No. 2502-0118
(Exp. 02/29/2016)

Uej gf wng C< Nkuvqh Rt gxlqwu Rt qlgevu cpf Ugevlqp : Eqpvt cevu0 Below is a complete list of the principals' previous participation projects and participation history in multifamily Housing programs of HUD/FmHA, State and local Housing Finance Agencies. **Pqvg<** Read and follow the instruction sheet carefully. Make full disclosure. Add extra sheets if you need more space. Double check for accuracy. If no previous projects, write by your name, "**P q r t g x l q w u r c t v l e k r c v l q p . H l t u v G z r g t l g p e g ö .**"

1. Principals Name (Last, First)	2. List of previous projects (Project name, project ID and, Govt. agency involved)	3. List Principals' Role(s) (indicate dates participated, and if fee or identity of interest participant)	4. Status of loan (current, defaulted, assigned, foreclosed)	5. Was the Project ever in default during your participation [g u P q K { g u g z r r e l p		6. Last MOR rating and Physical Insp. Score and date

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Received and checked by me for accuracy and completeness; recommend approval or refer to Headquarters after checking appropriate box.

Date (mm/dd/yyyy)	Tel No. and area code	<input type="checkbox"/> A. No adverse information; form HUD-2530 approval recommended. <input type="checkbox"/> B. Name match in system <input type="checkbox"/> C. Disclosure or Certification problem <input type="checkbox"/> D. Other (attach memorandum)		
Staff	Processing and Control			
Supervisor		Director of Housing/Director, Multifamily Division	Approved <input type="checkbox"/> Yes <input type="checkbox"/> No	Date (mm/dd/yyyy)

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Carefully read these instructions and the applicable regulations. A copy of those regulations published at 24 C.F.R. 200.210 to 200.245 can be obtained from the Multifamily Housing Representative at any HUD Office. Type or print neatly in ink when filling out this form. Mark answers in all blocks of the form. If the form is not filled completely, it will delay approval of your application.

Attach extra sheets as you need them. Be sure to indicate "Continued on Attachments" wherever appropriate. Sign each additional page that you attach if it refers to you or your record.

Ectghwí tgcí vj g egtvllcevg dghgt g (qvwí p h)

Any questions regarding the form or how to complete it can be answered by your HUD Office Multifamily Housing Representative.

Rwt rquc< This form provides HUD with a certified report of all previous participation in HUD multifamily housing projects by those parties making application. The information requested in this form is used by HUD to determine if you meet the standards established to ensure that all principal participants in HUD projects will honor their legal, financial and contractual obligations and are acceptable risks from the underwriting standpoint of an insurer, lender or governmental agency. HUD requires that you certify your record of previous participation in HUD/USDA-FmHA, State and Local Housing Finance Agency projects by completing and signing this form, before your project application or participation can be approved.

HUD approval of your certification is a necessary precondition for your participation in the project and in the capacity that you propose. If you do not file this certification, do not furnish the information requested accurately, or do not meet established standards, HUD will not approve your certification.

Note that approval of your certification does not obligate HUD to approve your project application, and it does not satisfy all other HUD program requirements relative to your qualifications.

Y j q O vwí p cpf Hlg Hqt o J WF/4752<

Form HUD-2530 must be completed and signed by all principals applying to participate in HUD multifamily housing projects, including those who have no previous participation. The form must be signed and filed by all principals and their affiliates who propose participating in the HUD project. Use a separate form for each role in the project unless there is an identity of interest.

Principals include all individuals, joint ventures,

partnerships, corporations, trusts, non-profit organizations, any other public or private entity that will participate in the proposed project as a sponsor, owner, prime contractor, turnkey developer, managing agent, nursing home administrator or operator, packager, or consultant. Architects and attorneys who have any interest in the project other than an arm's length fee arrangement for professional services are also considered principals by HUD.

In the case of partnerships, all general partners regardless of their percentage interest and limited partners having a 25 percent or more interest in the partnership are considered principals. In the case of public or private corporations or governmental entities, principals include the president, vice president, secretary, treasurer and all other executive officers who are directly responsible to the board of directors, or any equivalent governing body, as well as all directors and each stockholder having a 10 percent or more interest in the corporation.

Affiliates are defined as any person or business concern that directly or indirectly controls the policy of a principal or has the power to do so. A holding or parent corporation would be an example of an affiliate if one of its subsidiaries is a principal.

Gzevrklp hqt Eqtrqtevkpu – All principals and affiliates must personally sign the certificate except in the following situation. When a corporation is a principal, all of its officers, directors, trustees and stockholders with 10 percent or more of the common (voting) stock need not sign personally if they all have the same record to report. The officer who is authorized to sign for the corporation or agency will list the names and title of those who elect not to sign. However, any person who has a record of participation in HUD projects that is separate from that of his or her organization must report that activity on this form and sign his or her name. The objective is **hmd**disclosure.

Gzgo rvkpu ó The names of the following parties do not need to be listed on form HUD-2530: Public Housing Agencies, tenants, owners of less than five condominium or cooperative units and all others whose interests were acquired by inheritance or court order.

Y j gt g cpf Y j gp Hqt o J WF/4752 O vwí Dg Hlgí

<The original of this form must be submitted to the HUD Office where your project application will be processed at the same time you file your initial project application. This form must be filed with applications for projects, or when otherwise required in the situations listed below:

- Projects to be financed with mortgages insured under the National Housing Act (FHA).

- Projects to be financed according to Section 202 of the Housing Act of 1959 (Elderly and Handicapped).
- Projects in which 20 percent or more of the units are to receive a subsidy as described in 24 C.F.R. 200.213.
- Purchase of a project subject to a mortgage insured or held by the Secretary of HUD.
- Purchase of a Secretary-owned project.
- Proposed substitution or addition of a principal or principal participation in a different capacity from that previously approved for the same project.
- Proposed acquisition by an existing limited partner of an additional interest in a project resulting in a total interest of 25 percent or more or proposed acquisition by a corporate stockholder of an additional interest in a project resulting in a total interest of 10 percent or more.
- Projects with U.S.D.A., Farmers Home Administration, or with state or local government housing finance agencies that include rental assistance under Section 8 of the Housing Act of 1937. For projects of this type, form HUD-2530 should be filed with the appropriate applications directly to those agencies.

Tgxly qh Cf xgtug Fvgto lpcvkp< If approval of your participation in a HUD project is denied, withheld, or conditionally granted on the basis of your record of previous participation, you will be notified by the HUD Office. You may request reconsideration by the HUD Review Committee. Alternatively, you may request a hearing before a Hearing Officer. Either request must be made in writing within 30 days from your receipt of the notice of determination.

If you do request reconsideration by the Review Committee and the reconsideration results in an adverse determination, you may then request a hearing before a Hearing Officer. The Hearing Officer will issue a report to the Review Committee. You will be notified of the final ruling by certified mail.

Ur gelle Nlpg Ípwt wevkpu<

Tgeupp hqt uwdó kvlpi this Certification: e.g., refinance, change in ownership, change in management agent, transfer of physical assets, etc.

Dnem3< Fill in the name of the agency to which you are applying. For example: HUD Office, Farmers Home Administration District office, or the name of a State or local housing finance agency. Below that, fill in the name of the city where the office is located.

Dnem 4< Fill in the name of the project, such as "Greenwood Apts." If the name has not yet been selected, write "Name unknown." Below that, enter the HUD contract or project identification number, the Farmers Home Administration project number, or

the State or local housing finance agency project or contract number. Include **cm** project or contract identification numbers that are relevant to the project. Also enter the name of the city in which the project is located, and the ZIP Code.

Dnem 5< Fill in the dollar amount requested in the proposed mortgage, or the annual amount of rental assistance requested.

Dnem 6< Fill in the number of apartment units proposed, such as "40 units." For hospital projects or nursing homes, fill in the number of beds proposed, such as "100 beds."

Dnem 7< Fill in the section of the Housing Act under which the application is filed.

Dnem 9< Definitions of all those who are considered principals and affiliates are given above in the section titled "Who Must Sign and File...."

Dnem: < Beside the name of each principal, fill in the appropriate role. The following are examples of possible roles that the principals may assume: Owner/Mortgagor, Managing Agent, Sponsor, Developer, General Con-tractor, Packager, Consultant, Nursing Home Administrator etc.

Dnem; < Fill in the percentage of ownership in the proposed project that each principal is expected to have.

Dnem 32< Fill in the Social Security Number or IRS employer number of every principal listed, including affiliates.

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Be sure that Schedule A is filled-in completely, accurately and the certification is properly dated and signed, because it will serve as a legal record of your previous experience. All Multifamily Housing projects involving HUD/ FmHA, and State and local Housing Finance Agencies in which you have previously participated **o vwí dg** listed. Applicants are reminded that previous participation pertains to the individual principal within an entity as well as the entity itself. A newly formed company may not have previous participation, but the principals within the company may have had extensive participation and disclosure of that activity is required.

Eqno p 40 *All previous projects must be listed or your certification cannot be processed.* Include the name of all projects, project number, city where it is located and the governmental agency (HUD, USDA-FmHA or state or local housing finance agency) that was involved.

Eqno p 50 List the role(s) as a principal, dates participated and if fee or identity of interest (IOI) with owners.

Equo p 60 Indicate the current status of the loan. Except for current loan, the date associated with the status is required. Loans under a workout arrangement are considered assigned. For all noncurrent loans, an explanation of the status is required.

Equo p 70 Explain any project defaults during your participation.

Equo p 80 Provide the latest Management Review (MOR) rating and Physical Inspection score.

Egtvllcvtqp After you have completed all other parts of

form HUD-2530, including schedule A, read the Certification carefully. In the box below the statement of the certification, fill in the names of all principals and affiliates as listed in block 7. Each principal should sign the certification with the exception in some cases of individuals associated with a corporation (see "Exception for Corporations" in the section of the instructions titled "Who Must Sign and File Form HUD-2530). Principal who is signing on behalf of the entity should attach signature authority document. Each principal who signs the form

should fill in the date of the signature and a telephone number. By providing a telephone number, HUD can reach you in the event of any questions.

If you cannot certify and sign the certification as it is printed because some statements do not correctly describe your record, use a pen to strike through those parts that differ with your record, and then sign and certify.

Attach a signed statement of explanation of the items you have struck out on the certification. Item 2e. relates to felony

convictions within the past 10 years. If you are convicted of a felony within the past 10 years, strike out 2e. and attach statement of explanation. A felony conviction will not necessarily cause your participation to be disapproved unless there is a criminal record or other evidence that your previous conduct or method of doing business has been such that your participation in the project would make it an unacceptable risk from the underwriting stand point of an insurer, lender or governmental agency.

The Department of Housing and Urban Development (HUD) is authorized to collect this information by law (42 U.S.C. 3535(d) and 24 C.F.R. 200.217) and by regulation at 24 CFR 200.210. This information is needed so that principals applying to participate in multifamily programs can become HUD-approved participants. The information you provide will enable HUD to evaluate your record with respect to established standards of performance, responsibility and eligibility. Without prior approval, a principal may not participate in a proposed or existing multifamily project. HUD uses this information to evaluate whether or not principals pose an unsatisfactory underwriting risk. The information is used to evaluate the potential principals and approve only individuals and organizations that will honor their legal, financial and contractual obligations.

Rtlxce{ CevUcvgp The Housing and Community Development Act of 1987, 42 U.S.C. 3543 requires persons applying for a Federally-insured or guaranteed loan to furnish his/her Social Security Number (SSN). HUD must have your SSN for identification of your records. HUD may use your SSN for automated processing of your records and to make requests for information about you and your previous records with other public agencies and private sector sources. HUD may disclose certain information to Federal, State and local agencies when relevant to civil, criminal, or regulatory investigations and prosecutions. It will not be otherwise disclosed or released outside of HUD, except as required and permitted by law. You must provide all of the information requested in this application, including your SSN.

Rwdnle tgrqtvpi dwtf gp for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. This agency may not collect this information, and you are not required to complete this form, unless it displays a currently valid OMB control number.

A response is mandatory. Failure to provide any of the information will result in your disapproval of participation in this HUD program.

**SECTION 00500
AGREEMENT BETWEEN OWNER AND CONTRACTOR
(AIA Document A101-2017)**

THIS AGREEMENT

made this _____ day of _____ in the year Two thousand _____

BY AND BETWEEN

Orlando Housing Authority

hereinafter called the OWNER, and

(Contractor's Name, Address & Federal Tax ID No.)
hereinafter called the CONTRACTOR

The Owner and the Contractor agree as set forth below.

ARTICLE 1. THE CONTRACT DOCUMENTS – The Contract Documents consist of this Agreement, the Contractor's proposal, conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, all Addenda issued prior to execution of this Agreement and all Modifications issued subsequent thereto. These form the Contract, and all are as fully a part of the Contract as if attached to this Agreement or repeated herein. An enumeration of the drawings, specifications and addenda is as follows:

DRAWINGS: (PROJECT NUMBER, PROJECT TITLE, NUMBER OF PAGES OF DRAWINGS & WHO PREPARED BY)

SPECIFICATIONS: (PROJECT NUMBER, PROJECT TITLE & WHO PREPARED BY)

ADDENDA: (EACH ADDENDUM NUMBER, DATE & NUMBER OF PAGES)

In event of conflict in the provision of said Contract Documents, or any of them, the provisions of the basic Agreement which immediately precedes the Signatures of the parties shall control over the Specifications, the General Conditions and Supplementary General Conditions, and the Supplementary General Conditions shall control over the General Conditions of said Standard Form A201 of the American Institute of Architects. The General Conditions of Contract will control over all the other parts of the contract documents. In the event of a conflict between the Specifications and the Drawings the Specifications will control.

ARTICLE 2. The Contractor shall perform all the work required by the Contract Documents for items as specified in the (BASE BID & ALTERNATE NOS.).

ARTICLE 3 CONTRACT SUM – The owner shall pay the Contractor for the performance of the work, subject to additions and deductions by Change Order as provided in the Conditions of the contract, in current funds, the Contract Sum of (Amount of Contract in Alphabetical Terms

Followed By Amount in Numerical Terms.)

IN WITNESS WHEREOF, the parties hereto have executed this Agreement the day and year first written above.

CONTRACTOR

OWNER

APPROVED:

APPROVED:

By _____
Corporate President's Signature

By _____
Owner's Signature

ATTEST:

AS WITNESSED:

By _____
Corporate Secretary's Signature

By _____
Witness's Signature

AS WITNESSED:

By _____
Witness's Signature

APPROVED AS TO FORM AND LEGALITY:

CORPORATE SEAL

By _____
Office of the General Counsel



AIA[®] Document A201[™] – 2017

General Conditions of the Contract for Construction

for the following PROJECT:

(Name and location or address)

Clearwater Housing Authority - Barbee Towers
1100 E. Druid Road
Clearwater, FL 33756

THE OWNER:

(Name, legal status and address)

Clearwater Housing Authority
P.O. Box 14807
Clearwater, FL 33766

THE ARCHITECT:

(Name, legal status and address)

Bessolo Design Group, Inc.
7901 4th Street North, Suite 200
St. Petersburg, FL 33702

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ADDITIONS AND DELETIONS:

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

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

For guidance in modifying this document to include supplementary conditions, see AIA Document A503[™], Guide for Supplementary Conditions.

Init.

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

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

§ 1.1.2 The Contract

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

§ 1.1.3 The Work

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

§ 1.1.4 The Project

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

§ 1.1.5 The Drawings

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

§ 1.1.6 The Specifications

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

§ 1.1.7 Instruments of Service

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

§ 1.1.8 Initial Decision Maker

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

§ 1.2 Correlation and Intent of the Contract Documents

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

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

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

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

§ 1.3 Capitalization

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

§ 1.4 Interpretation

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

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

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

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

§ 1.6 Notice

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

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

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document

G202™–2013, Project Building Information Modeling Protocol Form, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

ARTICLE 2 OWNER

§ 2.1 General

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

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

§ 2.2 Evidence of the Owner's Financial Arrangements

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

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

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

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

§ 2.3 Information and Services Required of the Owner

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

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

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

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

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

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

§ 2.4 Owner's Right to Stop the Work

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

§ 2.5 Owner's Right to Carry Out the Work

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

ARTICLE 3 CONTRACTOR

§ 3.1 General

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

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

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

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

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

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

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

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

§ 3.3 Supervision and Construction Procedures

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

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

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

§ 3.4 Labor and Materials

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

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

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

§ 3.5 Warranty

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

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

§ 3.6 Taxes

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

§ 3.7 Permits, Fees, Notices and Compliance with Laws

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

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

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

§ 3.7.4 Concealed or Unknown Conditions

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

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

§ 3.8 Allowances

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

§ 3.8.2 Unless otherwise provided in the Contract Documents,

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

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

§ 3.9 Superintendent

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

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

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

§ 3.10 Contractor's Construction and Submittal Schedules

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

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

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

§ 3.11 Documents and Samples at the Site

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

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delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 Shop Drawings, Product Data and Samples

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

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

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

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

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

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

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

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

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

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

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

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

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

§ 3.13 Use of Site

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

§ 3.14 Cutting and Patching

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

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

§ 3.15 Cleaning Up

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

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

§ 3.16 Access to Work

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

§ 3.17 Royalties, Patents and Copyrights

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

§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

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

ARTICLE 4 ARCHITECT

§ 4.1 General

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

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

§ 4.2 Administration of the Contract

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

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

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

§ 4.2.4 Communications

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

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

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

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

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

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

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

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

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

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

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

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

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

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

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

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

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

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

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

§ 5.3 Subcontractual Relations

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

§ 5.4 Contingent Assignment of Subcontracts

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

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

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

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

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

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

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

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

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

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

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

§ 6.2 Mutual Responsibility

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

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

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

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

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

§ 6.3 Owner's Right to Clean Up

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

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

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

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

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

§ 7.2 Change Orders

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

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

§ 7.3 Construction Change Directives

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

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

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

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

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

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

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

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

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

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

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

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

§ 7.4 Minor Changes in the Work

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

ARTICLE 8 TIME

§ 8.1 Definitions

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

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

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

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

§ 8.2 Progress and Completion

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

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

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

§ 8.3 Delays and Extensions of Time

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

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

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

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

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

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

§ 9.2 Schedule of Values

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

§ 9.3 Applications for Payment

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

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

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

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

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

§ 9.4 Certificates for Payment

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

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

§ 9.5 Decisions to Withhold Certification

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

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

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

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

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

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

§ 9.6 Progress Payments

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

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

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

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

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

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

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

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

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§ 9.7 Failure of Payment

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

§ 9.8 Substantial Completion

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

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

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

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

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

§ 9.9 Partial Occupancy or Use

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

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

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

§ 9.10 Final Completion and Final Payment

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

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

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

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

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

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

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

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

§ 10.2 Safety of Persons and Property

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

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

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

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

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

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

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

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

§ 10.2.8 Injury or Damage to Person or Property

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

§ 10.3 Hazardous Materials and Substances

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

§ 10.3.2 Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the Architect will

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promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

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

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

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

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

§ 10.4 Emergencies

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

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

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

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

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

§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or

expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 Owner's Insurance

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

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

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

§ 11.3 Waivers of Subrogation

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

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

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

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

§11.5 Adjustment and Settlement of Insured Loss

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

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

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

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

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

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

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

§ 12.2.2 After Substantial Completion

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

that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

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

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

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

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

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

§ 12.3 Acceptance of Nonconforming Work

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

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

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

§ 13.2 Successors and Assigns

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

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

§ 13.3 Rights and Remedies

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

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

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§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

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

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

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

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

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

§ 13.5 Interest

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

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

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

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

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

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

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

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

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

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

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

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

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

§ 14.3 Suspension by the Owner for Convenience

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

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

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

§ 14.4 Termination by the Owner for Convenience

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

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

- .1 cease operations as directed by the Owner in the notice;

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- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

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

§ 15.1.2 Time Limits on Claims

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

§ 15.1.3 Notice of Claims

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

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

§ 15.1.4 Continuing Contract Performance

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

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

§ 15.1.5 Claims for Additional Cost

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

§ 15.1.6 Claims for Additional Time

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

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

§ 15.1.7 Waiver of Claims for Consequential Damages

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

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

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

§ 15.2 Initial Decision

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

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

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

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

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

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

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

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

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

§ 15.3 Mediation

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

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

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

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

§ 15.4 Arbitration

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

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

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

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

§ 15.4.4 Consolidation or Joinder

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

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

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

**SECTION 00600
INSURANCE AND BONDS**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications, apply to this section.

1.02. BONDS

- A. PERFORMANCE AND PAYMENT BONDS shall be furnished to the Owner, by the Contractor, in an amount equal to 100 percent of the Contract sum as security for the faithful performance of the Contract and the payment of all persons performing labor and furnishing materials in connection with the Contract. Said payment bond shall also be executed in statutory bond and filed in the office of the Clerk of the District Court of the county in which the Project is located. Contractor shall provide the Owner with a certified copy of said statutory bond as so filed.
- B. BONDS FURNISHED shall be written by a SURETY approved by the US. Treasury Department and licensed to do business in the State in which the Project is located. No work shall be commenced until bonds are in force.
- C. FORM OF BOND shall be AIA Document A312, 2010 edition, issued and approved by the American Institute of Architects.
- D. POWER OF ATTORNEY for the surety company agent must accompany each bond issued, and must be certified to include the date of the bonds.
- E. PROVIDE TRIPLICATE COPIES of the bond forms and power of attorney.

1.03. INSURANCE

- A. See AIA A101-2017 Exhibit A for required coverage.

PART 2 - MATERIALS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

DRAFT AIA® Document A101™ – 2017

Exhibit A

Insurance and Bonds

This Insurance and Bonds Exhibit is part of the Agreement, between the Owner and the Contractor, dated the « » day of « » in the year «2020 »
(In words, indicate day, month and year.)

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

Clearwater Housing Authority - Barbee Towers
1100 E. Druid Road
Clearwater, FL 33756

THE OWNER:
(Name, legal status and address)

Clearwater Housing Authority
P.O. Box 14807
Clearwater, FL 33766

THE CONTRACTOR:
(Name, legal status and address)

TBD

TABLE OF ARTICLES

- A.1 GENERAL
- A.2 OWNER'S INSURANCE
- A.3 CONTRACTOR'S INSURANCE AND BONDS
- A.4 SPECIAL TERMS AND CONDITIONS

ARTICLE A.1 GENERAL

The Owner and Contractor shall purchase and maintain insurance, and provide bonds, as set forth in this Exhibit. As used in this Exhibit, the term General Conditions refers to AIA Document A201™-2017, General Conditions of the Contract for Construction.

ARTICLE A.2 OWNER'S INSURANCE

§ A.2.1 General

Prior to commencement of the Work, the Owner shall secure the insurance, and provide evidence of the coverage, required under this Article A.2 and, upon the Contractor's request, provide a copy of the property insurance policy or policies required by Section A.2.3. The copy of the policy or policies provided shall contain all applicable conditions, definitions, exclusions, and endorsements.

§ A.2.2 Liability Insurance

The Owner shall be responsible for purchasing and maintaining the Owner's usual general liability insurance.

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

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

This document is intended to be used in conjunction with AIA Document A201™-2017, General Conditions of the Contract for Construction. Article 11 of A201™-2017 contains additional insurance provisions.

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§ A.2.3 Required Property Insurance

§ A.2.3.1 Unless this obligation is placed on the Contractor pursuant to Section A.3.3.2.1, the Owner shall purchase and maintain, from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located, property insurance written on a builder's risk "all-risks" completed value or equivalent policy form and sufficient to cover the total value of the entire Project on a replacement cost basis. The Owner's property insurance coverage shall be no less than the amount of the initial Contract Sum, plus the value of subsequent Modifications and labor performed and materials or equipment supplied by others. The property insurance shall be maintained until Substantial Completion and thereafter as provided in Section A.2.3.1.3, unless otherwise provided in the Contract Documents or otherwise agreed in writing by the parties to this Agreement. This insurance shall include the interests of the Owner, Contractor, Subcontractors, and Sub-subcontractors in the Project as insureds. This insurance shall include the interests of mortgagees as loss payees.

§ A.2.3.1.1 Causes of Loss. The insurance required by this Section A.2.3.1 shall provide coverage for direct physical loss or damage, and shall not exclude the risks of fire, explosion, theft, vandalism, malicious mischief, collapse, earthquake, flood, or windstorm. The insurance shall also provide coverage for ensuing loss or resulting damage from error, omission, or deficiency in construction methods, design, specifications, workmanship, or materials. Sub-limits, if any, are as follows:

(Indicate below the cause of loss and any applicable sub-limit.)

Causes of Loss	Sub-Limit

§ A.2.3.1.2 Specific Required Coverages. The insurance required by this Section A.2.3.1 shall provide coverage for loss or damage to falsework and other temporary structures, and to building systems from testing and startup. The insurance shall also cover debris removal, including demolition occasioned by enforcement of any applicable legal requirements, and reasonable compensation for the Architect's and Contractor's services and expenses required as a result of such insured loss, including claim preparation expenses. Sub-limits, if any, are as follows:

(Indicate below type of coverage and any applicable sub-limit for specific required coverages.)

Coverage	Sub-Limit

§ A.2.3.1.3 Unless the parties agree otherwise, upon Substantial Completion, the Owner shall continue the insurance required by Section A.2.3.1 or, if necessary, replace the insurance policy required under Section A.2.3.1 with property insurance written for the total value of the Project that shall remain in effect until expiration of the period for correction of the Work set forth in Section 12.2.2 of the General Conditions.

§ A.2.3.1.4 Deductibles and Self-Insured Retentions. If the insurance required by this Section A.2.3 is subject to deductibles or self-insured retentions, the Owner shall be responsible for all loss not covered because of such deductibles or retentions.

§ A.2.3.2 Occupancy or Use Prior to Substantial Completion. The Owner's occupancy or use of any completed or partially completed portion of the Work prior to Substantial Completion shall not commence until the insurance company or companies providing the insurance under Section A.2.3.1 have consented in writing to the continuance of coverage. The Owner and the Contractor shall take no action with respect to partial occupancy or use that would cause cancellation, lapse, or reduction of insurance, unless they agree otherwise in writing.

§ A.2.3.3 Insurance for Existing Structures

If the Work involves remodeling an existing structure or constructing an addition to an existing structure, the Owner shall purchase and maintain, until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, "all-risks" property insurance, on a replacement cost basis, protecting the existing structure against direct physical loss or damage from the causes of loss identified in Section A.2.3.1, notwithstanding the undertaking of the Work. The Owner shall be responsible for all co-insurance penalties.

§ A.2.4 Optional Extended Property Insurance.

The Owner shall purchase and maintain the insurance selected and described below.

(Select the types of insurance the Owner is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance. For each type of insurance selected, indicate applicable limits of coverage or other conditions in the fill point below the selected item.)

- [] **§ A.2.4.1 Loss of Use, Business Interruption, and Delay in Completion Insurance**, to reimburse the Owner for loss of use of the Owner's property, or the inability to conduct normal operations due to a covered cause of loss.
-
- [] **§ A.2.4.2 Ordinance or Law Insurance**, for the reasonable and necessary costs to satisfy the minimum requirements of the enforcement of any law or ordinance regulating the demolition, construction, repair, replacement or use of the Project.
-
- [] **§ A.2.4.3 Expediting Cost Insurance**, for the reasonable and necessary costs for the temporary repair of damage to insured property, and to expedite the permanent repair or replacement of the damaged property.
-
- [] **§ A.2.4.4 Extra Expense Insurance**, to provide reimbursement of the reasonable and necessary excess costs incurred during the period of restoration or repair of the damaged property that are over and above the total costs that would normally have been incurred during the same period of time had no loss or damage occurred.
-
- [] **§ A.2.4.5 Civil Authority Insurance**, for losses or costs arising from an order of a civil authority prohibiting access to the Project, provided such order is the direct result of physical damage covered under the required property insurance.
-
- [] **§ A.2.4.6 Ingress/Egress Insurance**, for loss due to the necessary interruption of the insured's business due to physical prevention of ingress to, or egress from, the Project as a direct result of physical damage.
-
- [] **§ A.2.4.7 Soft Costs Insurance**, to reimburse the Owner for costs due to the delay of completion of the Work, arising out of physical loss or damage covered by the required property insurance: including construction loan fees; leasing and marketing expenses; additional fees, including those of architects, engineers, consultants, attorneys and accountants, needed for the completion of the construction, repairs, or reconstruction; and carrying costs such as property taxes, building permits, additional interest on loans, realty taxes, and insurance premiums over and above normal expenses.
-

§ A.2.5 Other Optional Insurance.

The Owner shall purchase and maintain the insurance selected below.

(Select the types of insurance the Owner is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance.)

[« »] § A.2.5.1 **Cyber Security Insurance** for loss to the Owner due to data security and privacy breach, including costs of investigating a potential or actual breach of confidential or private information. *(Indicate applicable limits of coverage or other conditions in the fill point below.)*

« »

[« »] § A.2.5.2 **Other Insurance**
(List below any other insurance coverage to be provided by the Owner and any applicable limits.)

Coverage	Limits
----------	--------

ARTICLE A.3 CONTRACTOR'S INSURANCE AND BONDS

§ A.3.1 General

§ A.3.1.1 **Certificates of Insurance.** The Contractor shall provide certificates of insurance acceptable to the Owner evidencing compliance with the requirements in this Article A.3 at the following times: (1) prior to commencement of the Work; (2) upon renewal or replacement of each required policy of insurance; and (3) upon the Owner's written request. An additional certificate evidencing continuation of commercial liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment and thereafter upon renewal or replacement of such coverage until the expiration of the periods required by Section A.3.2.1 and Section A.3.3.1. The certificates will show the Owner as an additional insured on the Contractor's Commercial General Liability and excess or umbrella liability policy or policies.

§ A.3.1.2 **Deductibles and Self-Insured Retentions.** The Contractor shall disclose to the Owner any deductible or self-insured retentions applicable to any insurance required to be provided by the Contractor.

§ A.3.1.3 **Additional Insured Obligations.** To the fullest extent permitted by law, the Contractor shall cause the commercial general liability coverage to include (1) the Owner, the Architect, and the Architect's consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions for which loss occurs during completed operations. The additional insured coverage shall be primary and non-contributory to any of the Owner's general liability insurance policies and shall apply to both ongoing and completed operations. To the extent commercially available, the additional insured coverage shall be no less than that provided by Insurance Services Office, Inc. (ISO) forms CG 20 10 07 04, CG 20 37 07 04, and, with respect to the Architect and the Architect's consultants, CG 20 32 07 04.

§ A.3.2 Contractor's Required Insurance Coverage

§ A.3.2.1 The Contractor shall purchase and maintain the following types and limits of insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Contractor shall maintain the required insurance until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, unless a different duration is stated below:
(If the Contractor is required to maintain insurance for a duration other than the expiration of the period for correction of Work, state the duration.)

« »

§ A.3.2.2 Commercial General Liability

§ A.3.2.2.1 Commercial General Liability insurance for the Project written on an occurrence form with policy limits of not less than (\$2,000,000) each occurrence, (\$4,000,000) general aggregate, and « » (\$ « ») aggregate for products-completed operations hazard, providing coverage for claims including

- .1 damages because of bodily injury, sickness or disease, including occupational sickness or disease, and death of any person;
- .2 personal injury and advertising injury;
- .3 damages because of physical damage to or destruction of tangible property, including the loss of use of such property;
- .4 bodily injury or property damage arising out of completed operations; and

.5 the Contractor's indemnity obligations under Section 3.18 of the General Conditions.

§ A.3.2.2.2 The Contractor's Commercial General Liability policy under this Section A.3.2.2 shall not contain an exclusion or restriction of coverage for the following:

- .1 Claims by one insured against another insured, if the exclusion or restriction is based solely on the fact that the claimant is an insured, and there would otherwise be coverage for the claim.
- .2 Claims for property damage to the Contractor's Work arising out of the products-completed operations hazard where the damaged Work or the Work out of which the damage arises was performed by a Subcontractor.
- .3 Claims for bodily injury other than to employees of the insured.
- .4 Claims for indemnity under Section 3.18 of the General Conditions arising out of injury to employees of the insured.
- .5 Claims or loss excluded under a prior work endorsement or other similar exclusionary language.
- .6 Claims or loss due to physical damage under a prior injury endorsement or similar exclusionary language.
- .7 Claims related to residential, multi-family, or other habitational projects, if the Work is to be performed on such a project.
- .8 Claims related to roofing, if the Work involves roofing.
- .9 Claims related to exterior insulation finish systems (EIFS), synthetic stucco or similar exterior coatings or surfaces, if the Work involves such coatings or surfaces.
- .10 Claims related to earth subsidence or movement, where the Work involves such hazards.
- .11 Claims related to explosion, collapse and underground hazards, where the Work involves such hazards.

§ A.3.2.3 Automobile Liability covering vehicles owned, and non-owned vehicles used, by the Contractor, with policy limits of not less than (\$1,000,000) per accident, for bodily injury, death of any person, and property damage arising out of the ownership, maintenance and use of those motor vehicles along with any other statutorily required automobile coverage.

§ A.3.2.4 The Contractor may achieve the required limits and coverage for Commercial General Liability and Automobile Liability through a combination of primary and excess or umbrella liability insurance, provided such primary and excess or umbrella insurance policies result in the same or greater coverage as the coverages required under Section A.3.2.2 and A.3.2.3, and in no event shall any excess or umbrella liability insurance provide narrower coverage than the primary policy. The excess policy shall not require the exhaustion of the underlying limits only through the actual payment by the underlying insurers.

§ A.3.2.5 Workers' Compensation at statutory limits.

§ A.3.2.6 Employers' Liability with policy limits not less than (\$1,000,000) each accident, << >> (\$ << >>) each employee, and << >> (\$ << >>) policy limit.

§ A.3.2.7 Jones Act, and the Longshore & Harbor Workers' Compensation Act, as required, if the Work involves hazards arising from work on or near navigable waterways, including vessels and docks

§ A.3.2.8 If the Contractor is required to furnish professional services as part of the Work, the Contractor shall procure Professional Liability insurance covering performance of the professional services, with policy limits of not less than << >> (\$ << >>) per claim and << >> (\$ << >>) in the aggregate.

§ A.3.2.9 If the Work involves the transport, dissemination, use, or release of pollutants, the Contractor shall procure Pollution Liability insurance, with policy limits of not less than << >> (\$ << >>) per claim and << >> (\$ << >>) in the aggregate.

§ A.3.2.10 Coverage under Sections A.3.2.8 and A.3.2.9 may be procured through a Combined Professional Liability and Pollution Liability insurance policy, with combined policy limits of not less than << >> (\$ << >>) per claim and << >> (\$ << >>) in the aggregate.

§ A.3.2.11 Insurance for maritime liability risks associated with the operation of a vessel, if the Work requires such activities, with policy limits of not less than « » (\$ « ») per claim and « » (\$ « ») in the aggregate.

§ A.3.2.12 Insurance for the use or operation of manned or unmanned aircraft, if the Work requires such activities, with policy limits of not less than « » (\$ « ») per claim and « » (\$ « ») in the aggregate.

§ A.3.3 Contractor's Other Insurance Coverage

§ A.3.3.1 Insurance selected and described in this Section A.3.3 shall be purchased from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Contractor shall maintain the required insurance until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, unless a different duration is stated below:

(If the Contractor is required to maintain any of the types of insurance selected below for a duration other than the expiration of the period for correction of Work, state the duration.)

« »

§ A.3.3.2 The Contractor shall purchase and maintain the following types and limits of insurance in accordance with Section A.3.3.1.

(Select the types of insurance the Contractor is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance. Where policy limits are provided, include the policy limit in the appropriate fill point.)

[] § A.3.3.2.1 Property insurance of the same type and scope satisfying the requirements identified in Section A.2.3, which, if selected in this section A.3.3.2.1, relieves the Owner of the responsibility to purchase and maintain such insurance except insurance required by Section A.2.3.1.3 and Section A.2.3.3. The Contractor shall comply with all obligations of the Owner under Section A.2.3 except to the extent provided below. The Contractor shall disclose to the Owner the amount of any deductible, and the Owner shall be responsible for losses within the deductible. Upon request, the Contractor shall provide the Owner with a copy of the property insurance policy or policies required. The Owner shall adjust and settle the loss with the insurer and be the trustee of the proceeds of the property insurance in accordance with Article 11 of the General Conditions unless otherwise set forth below: *(Where the Contractor's obligation to provide property insurance differs from the Owner's obligations as described under Section A.2.3, indicate such differences in the space below. Additionally, if a party other than the Owner will be responsible for adjusting and settling a loss with the insurer and acting as the trustee of the proceeds of property insurance in accordance with Article 11 of the General Conditions, indicate the responsible party below.)*

« »

[] § A.3.3.2.2 Railroad Protective Liability Insurance, with policy limits of not less than « » (\$ « ») per claim and « » (\$ « ») in the aggregate, for Work within fifty (50) feet of railroad property.

[] § A.3.3.2.3 Asbestos Abatement Liability Insurance, with policy limits of not less than « » (\$ « ») per claim and « » (\$ « ») in the aggregate, for liability arising from the encapsulation, removal, handling, storage, transportation, and disposal of asbestos-containing materials.

[] § A.3.3.2.4 Insurance for physical damage to property while it is in storage and in transit to the construction site on an "all-risks" completed value form.

[] § A.3.3.2.5 Property insurance on an "all-risks" completed value form, covering property owned by the Contractor and used on the Project, including scaffolding and other equipment.

[] § A.3.3.2.6 Other Insurance
(List below any other insurance coverage to be provided by the Contractor and any applicable limits.)

Coverage

Limits

§ A.3.4 Performance Bond and Payment Bond

The Contractor shall provide surety bonds, from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located, as follows:

(Specify type and penal sum of bonds.)

Type	Penal Sum (\$0.00)
Payment Bond	100% of contract value
Performance Bond	100% of contract value

Payment and Performance Bonds shall be AIA Document A312™, Payment Bond and Performance Bond, or contain provisions identical to AIA Document A312™, current as of the date of this Agreement.

ARTICLE A.4 SPECIAL TERMS AND CONDITIONS

Special terms and conditions that modify this Insurance and Bonds Exhibit, if any, are as follows:

<< >>

SECTION 00702
SUPPLEMENTARY CONDITIONS

The following supplements modify, amend or delete articles of "General Conditions". Where a portion of the General Conditions is amended, modified or deleted by these Conditions, the unaltered portions of that article, paragraph, subparagraph, or clause shall remain in effect.

ARTICLE 1 - GENERAL PROVISIONS

1.2 Correlation and Intent

1.2.1.1 In the event of conflicts or discrepancies among the Contract Documents, interpretations will be based on the following priorities:

1. The Agreement.
2. Addenda, with those of later date having precedence over those of earlier date.
3. The Supplementary Conditions.
4. The General Conditions of the Contract for Construction.
5. Specifications
6. Working Drawings, wherein precedence shall be large-scale drawings, over small scale, figured dimensions over scaled dimensions, and noted materials over graphic indications.

ARTICLE 2 - OWNER

Whenever the term "Owner" is used in the Specification, it shall refer to the Orlando Housing Authority, 390 N. Bumby Avenue, Orlando, Florida.

Any papers delivered to, or notice to or demand upon Owner shall be sufficiently given to the above mentioned address.

2.3.6 Delete Subparagraph 2.3.6 and substitute the following:

The Contractor will be furnished PDF files of the Construction Drawings and Specifications project manual. It is the Contractor's responsibility to make all prints required for the project and his subcontractors at no cost to the Owner.

ARTICLE 3 CONTRACTOR

3.2.2 Supplement Subparagraph 3.2.2 as follows:

The Contractor shall give written notice to the Architect of any materials, equipment or design features which he believes inadequate or unsuitable; in violation of laws, ordinances or rules and regulations of all authorities having jurisdiction over the work; and of any necessary items or work omitted from the Drawings or Specifications.

Should conflict occur between the Contract Documents, the Contractor is deemed to have based his bid on the more costly method unless a specific written interpretation has been made by the Architect prior to the contract execution.

- 3.4 Labor and Materials
- 3.4.2.1 After the Contract has been executed, the Owner and the Architect will consider a formal request for the substitution of products in place of those specified only under the conditions set in the General Requirements (Division 1 of the Specifications).
- 3.4.2.2 By making requests for substitutions based on Subparagraph 3.4.3 above, the Contractor
1. represents that the Contractor has personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that specified;
 2. represents that the Contractor will provide the same warranty for the substitution that the Contractor would for that specified;
 3. certifies that the cost data presented is complete and includes all related costs under this Contract except the Architect's redesign costs, and waives all claims for additional costs related to the substitution which subsequently becomes apparent; and
 4. will coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.
- 3.4.2.3 Not later than thirty (30) days from the Contract date, the Contractor shall submit for approval, a list showing the name of the manufacturer and /or suppliers and installers proposed to be used for each of the products, equipment and materials that are proposed for use in the project.
- 3.4.2.4 The Architect will reply in writing to the Contractor stating whether the Owner or the Architect, after due investigation, has reasonable objection to any such proposal. If adequate data on any proposed manufacturer or installer is not available, the Architect may state that action will be deferred until the Contractor provides further data. Failure of the Owner or Architect to reply promptly shall constitute notice of no reasonable objection. Failure to object to a manufacturer shall not constitute a waiver of any of the requirements of the Contract Documents, and all products furnished by the listed manufacturer must conform to such requirements.
- 3.5 Warranty
- Add the following subparagraph:
- 3.5.1.1 "Unless otherwise stipulated in the specifications, the Contractor shall guarantee all materials, workmanship, and equipment for a period of one (1) year from the date of final acceptance of the complete project by the Owner."
- 3.6 Taxes
- Add the following to 3.6:
- Upon completion of the work, contractors shall furnish the Owner with a certified statement to the effect that all sales and use taxes due the Federal Government, State, County and/or Municipality Government have been paid.

ARTICLE 5 - SUBCONTRACTORS

- 5.2 Award of Subcontracts and Other Contracts for Portions of the Work.
- Add the following to Subparagraph 5.2.1

5.2.1.1 The Owner reserves the right to require the Contractor to employ certain Subcontractors upon written confirmation.

5.2.1.2 Not later than 30 days after the date of commencement, the Contractor shall furnish in writing to the Owner through the Architect the names of persons or entities proposed as manufacturers for each of the products identified in the General Requirements (Division 1 of the Specifications) and, where applicable, the name of the installing Subcontractor.

Add the following to Subparagraph 7.1.4:

7.1.4 The following form shall be used to provide an itemized accounting of changes to the Work.

1. WORK BY THE PRIME CONTRACTORS OWN FORCES:

(a)	<u>Materials</u>	(itemized breakdown)	\$ _____
(b)	<u>Labor</u>	(itemized breakdown)	\$ _____
		Sub-Total (1)	\$ _____
(c)	* <u>Rent of Equipment</u>	(itemized breakdown)	\$ _____
		Sub-Total (2)	\$ _____
(d)	<u>Overhead & Profit</u>	Total (1)	\$ _____

2. WORK BY SUB-CONTRACTOR (IF APPLICABLE):

(a)	<u>Materials</u>	(itemized breakdown)	\$ _____
(b)	<u>Labor</u>	(itemized breakdown)	\$ _____
		Sub-Total (3)	\$ _____
(c)	* <u>Rent of Equipment</u>	(itemized breakdown)	\$ _____
		Sub-Total (4)	\$ _____
(d)	<u>Overhead & Profit</u>		\$ _____
		Sub-Total (5)	\$ _____
(e)	<u>Prime Contractor's Overhead and Profit</u>		\$ _____
		Total (2)	\$ _____
(f)	Insurance (Workmen's Compensation, Social Security or as otherwise required and/or Specified)		\$ _____
(g)	Guarantee Bond (on Totals 1 and/or 2 as applicable)		\$ _____
		Total (3)	\$ _____

- Rates not in excess of those prevailing in areas.
(Note: The Architect shall carefully review the change orders for cost of materials and estimates

For labor to insure that normal rental costs and times are used for work units established by Estimating guides generally applicable for the locality of the project.)

ARTICLE 9 PAYMENTS AND COMPLETION

9.3 Application for Payment

9.3.1 The form of Application for Payment shall be a notarized AIA Document G702, Application and Certification for Payment, supported by AIA Document G703, Continuation Sheet. Four copies shall be submitted.

All progress payment requests received by the Architect by the 25th day of the month and in satisfactory form for approval will be paid by the owner to the Contractor within 30 days.

9.4 Certificates for Payment

Add the following Subparagraph:

9.4.3 Certificates for payment will be issued for ninety percent (90%) of the value of the materials properly stored at the site and work done if in full compliance with the contract during the preceding calendar month, provided the progress made is such to indicate with the completion of all work done under the contract is within the specified time. The remaining ten percent (10%) shall be retained until the final completion of the contract and final acceptance by the Architect.

Retained percentages are held for the sole protection and benefit of the Owner, and no other person, firm or corporation shall have or assert any lien, claims, right of priority herein or thereto or be entitled to receive any part thereof. The retained funds will be released only if there are no sureties on the project that have been filed as of said time and provided further that all required lien releases under the Contract documents have been filed and furnished with the appropriate party.

9.8 Substantial Completion

9.8.1 Add the following Sentence:

Substantial completion will have been reached when, in the Architect's opinion, the Work is 100% complete with the exception of a few minor items delayed for reasons beyond the control of the Contractor. However, items late in completion because of the Contractor's negligence or lack of foresight will not be deemed valid exceptions. The project must have a valid, legal "Certificate of Occupancy".

9.8.2 Add the following Sentence:

Upon execution of the Certificate of Substantial Completion, the Contractor is entitled to then submit an Application for Payment to increase the total payments to 100 percent (100%) of the Contract Sum, less such amounts, as the Architect shall determine for incomplete Work and unsettled claims.

ARTICLE 11 INSURANCE AND BONDS

11.1 Contractor's Insurance and Bonds

11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as will protect the Contractor from claims set forth below which may arise out

of or result from the Contractor's operations and completed operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

- .1 Claims under workers' compensation, disability benefit and other similar employee benefit acts that are applicable to the Work to be performed;
- .2 Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;
- .3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;
- .4 Claims for damages insured by usual personal injury liability coverage;
- .5 Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;
- .6 Claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle;
- .7 Claims for bodily injury or property damage arising out of completed operations; and
- .8 Claims involving contractual liability insurance applicable to the Contractor's obligations under Section 3.18.

11.1.2 Delete Subparagraph 11.1.2 and substitute the following:

The Contractor shall furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder. Bonds may be obtained through the Contractor's usual source and the cost thereof shall be included in the Contract Sum. The amount of each bond shall be equal to 100 percent of the Contract Sum.

- 11.1.2.1 The Contractor shall deliver the required bonds to the Owner not later than seven (7) Days, following the date the Agreement is entered into, or if the Work is to be commenced prior thereto in response to a letter of intent, the Contractor shall, prior to the commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished.

END OF SECTION

General Conditions for Construction Contracts - Public Housing Programs

U.S. Department of Housing and Urban Development
Office of Public and Indian Housing
OMB Approval No. 2577-0157 (exp. 3/31/2020)

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

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, HAs would be unable to enforce their contracts.

Public reporting burden for this collection of information is estimated to average 1.0 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Responses to the collection of information are required to obtain a benefit or to retain a benefit.

The information requested does not lend itself to confidentiality.

HUD may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB 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 Contract (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.
 - (l) "Work" means materials, workmanship, and manufacture and fabrication of components.
- (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.

2. Contractor's Responsibility for Work

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- (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", or "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 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 contractor 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 _____ (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 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—
 - (1) 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

this contract within _____ 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 _____ 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:
 - (1) 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 Contracting Officer may require to assure the protection of the PHA's interest in 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 no wise 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, services, or site; or,
 - (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 \$ _____ [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 \$ _____ [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 \$ _____ [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 non-renewed 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:

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

39. Equal Employment Opportunity

During the performance of this contract, the Contractor agrees as follows:

- (a) The Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, or handicap.
- (b) The Contractor shall take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, national origin, or handicap. Such action shall include, but not be limited to, (1) employment, (2) upgrading, (3) demotion, (4) transfer, (5) recruitment or recruitment advertising, (6) layoff or termination, (7) rates of pay or other forms of compensation, and (8) selection for training, including apprenticeship.

- (c) The Contractor shall post in conspicuous places available to employees and applicants for employment the notices to be provided by the Contracting Officer that explain this clause.
- (d) The Contractor shall, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, or handicap.
- (e) The Contractor shall send, to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, the notice to be provided by the Contracting Officer advising the labor union or workers' representative of the Contractor's commitments under this clause, and post copies of the notice in conspicuous places available to employees and applicants for employment.
- (f) The Contractor shall comply with Executive Order 11246, as amended, and the rules, regulations, and orders of the Secretary of Labor.
- (g) The Contractor shall furnish all information and reports required by Executive Order 11246, as amended, Section 503 of the Rehabilitation Act of 1973, as amended, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto. The Contractor shall permit access to its books, records, and accounts by the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
- (h) In the event of a determination that the Contractor is not in compliance with this clause or any rule, regulation, or order of the Secretary of Labor, this contract may be canceled, terminated, or suspended in whole or in part, and the Contractor may be declared ineligible for further Government contracts, or Federally assisted construction contracts under the procedures authorized in Executive Order 11246, as amended. In addition, sanctions may be imposed and remedies invoked against the Contractor as provided in Executive Order 11246, as amended, the rules, regulations, and orders of the Secretary of Labor, or as otherwise provided by law.
- (i) The Contractor shall include the terms and conditions of this clause in every subcontract or purchase order unless exempted by the rules, regulations, or orders of the Secretary of Labor issued under Executive Order 11246, as amended, so that these terms and conditions will be binding upon each subcontractor or vendor. The Contractor shall take such action with respect to any subcontract or purchase order as the Secretary of Housing and Urban Development or the Secretary of Labor may direct as a means of enforcing such provisions, including sanctions for noncompliance; provided that if the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the Contractor may request the United States to enter into the litigation to protect the interests of the United States.
- (j) Compliance with the requirements of this clause shall be to the maximum extent consistent with, but not in derogation of, compliance with section 7(b) of the Indian Self-Determination and Education Assistance Act and the Indian Preference clause of this contract.

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:
 - (1) 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 DOL-recognized 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.

**SECTION 00711
SUPPLEMENTARY GENERAL CONDITIONS**

PART I – GENERAL

1.01 SCOPE

- A. This Section sets forth the modifications and additions to the General Conditions of the contract for Construction HUD-5370 (1/2014)
- B. In those instances that a Clause of the General Conditions is amended, modified, voided, or superseded by the Agreement, the provisions of such Clause not specifically amended, modified, voided or superseded shall remain in effect. Should a conflict exist between the provisions of the Agreement and those of the specifications, the requirements of the Agreement shall apply.

1.02 MODIFICATIONS AND ADDITIONS

- A. Article 1 – Definitions
 - 1. Clause 1 (c) shall have the following added: The term Contracting Office refers to OWNER NAME & ADDRESS.
 - 2. Clause 1 (h) shall have the following added: The term _____ or Owner refers to **Clearwater** Housing Authority.
- B. Clause II – Contractor's Responsibility for Work Add the following subclauses;
 - 1. The Contractor shall be responsible for cutting, fitting or patching, required to complete the Work or to make its parts fit together properly.
 - 2. The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Housing Authority or separate contractors by cutting, patching or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter such construction by the Housing Authority or a separate contractor except with written consent of the Housing Authority and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Housing Authority or a separate contractor the Contractor's consent to cutting or otherwise altering the Work.
- C. Clause 9 Specifications and Drawings for Construction: Paragraph (a) delete the sentence, "In case of discrepancies between drawing and specifications, the specifications shall govern."
- D. Clause 13 Health, Safety & Accident Precaution - Add the following subclauses:
 - 1. To the fullest extent permitted by law, the contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorney's fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the work itself) including loss of use resulting therefrom, but only to the extent caused in whole or in part by negligent acts or omissions of the Contractor, a Subcontractor, or anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder.

Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this subclause. The Contractor for and in consideration of ten (\$10) Dollars and other good valuable considerations shall provide aforementioned indemnification.

2. In claims against any person or entity indemnified under this subclause (f) by an employee of the Contractor, or Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under this subclause shall not be limited by limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workmen's compensation acts, disability benefits acts or other employee benefit acts.
3. The obligations of the Contractor under this Clause shall not extend to the liability of the Architect, the Architect's consultants, and agents and employees of any of them arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, Change Orders, designs or specifications, or (2) the giving of or the failure to give directions or instructions by the Architects, the Architect's consultants, and agents and employees of any of them provided such giving or failure to give is the primary cause of the injury or damage.

E. Clause 27 Payments - Add the following subclause:

1. The Architect may decide not to certify payment and may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if the Architect's opinion the representation to the Owner required by Clause 27 (i) cannot be made. The amount of the Application, the Architect will notify the Contractor and Owner. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also decide not to certify payment because of subsequently discovered evidence or subsequent observations may nullify the whole or part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss because of:
 - a. defective Work not remedied;
 - b. third party claims filed or reasonable evidence indicating probable filing of such claims;
 - c. failure of the Contractor to make payments properly to Subcontractors for labor, materials or equipment;
 - d. reasonable evidence that the Work cannot be completed for the unpaid balance of the contract Sum;
 - e. damage to the Owner or another contractor;
 - f. reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
 - g. persistent failure to carry out the Work in accordance with the Contractor Documents.

- F. Clause 36 Insurance, subclause (b); delete last sentence. The Contractor is required to carry Builders Risk Insurance.

- G. Clause 38 Contractor/Subcontracting with Small and minority Firms, Women's Business Enterprise and Labor Surplus Area Firms add the following subclauses;
 - 1. CMBE Participation Goal 15% of Base of bid;
 - 2. Each bidder shall meet, exceed or demonstrate that it could not meet, despite its good faith efforts, the project goal of the Housing Authority.
 - 3. Attached to and hereby incorporated in the Contract Documents is a MBE Utilization Summary, which must be submitted with Contractor's bid. Award of the Contract shall be conditioned upon submission of the MBE participation information and upon satisfaction of the project goal or, if the goal is not met, upon demonstration that good faith efforts were made to meet the goals. Failure to satisfy these requirements shall result in the bid being deemed non-responsive and rejected. If the Utilization Summary does not indicate the goal has been met, then the Contractor must dispatch for overnight delivery to the Housing Authority all documentation of good faith effort not later than two (2) working days after notification has not been met.
 - 4. If the apparent low bidder is determined not to have made a good faith effort, the Housing Authority will review the next lowest apparent responsive bid. This process will be repeated until a responsible bid is found.

- H. Clause 41, delete in its entirety.

MINORITY BUSINESS ENTERPRISE (MBE)
UTILIZATION SUMMARY

Prime Contractor _____

_____ Housing Authority

PROJECT NAME

Base Bid \$ _____

Total MBE Goal \$ _____

Certified MBE Contractor's /Subcontractor's Name & Address	Trade		Dollar Amount

Total Dollar Amount Achieved for MBE Goal \$ _____

MBE Percentage of Base Bid Achieved 15% (Percentage may be rounded to the nearest tenth %)

Note: If the Utilization Summary Form does not indicate that the goal has been met, then the prime contractor must dispatch for overnight delivery to the Housing Authority all documents of good faith effort not later than two (2) working days after notification that the goal has not been met.

Certified true and correct by:

Contractor's Representative Title Date

SPECIFICATIONS

Part I General Conditions:

- A. General conditions of HUD Form 51915-A, shall form a part of these specifications.
- B. Contractor shall comply with all local licensing and registration regulations.
- C. Contractor shall maintain adequate casualty and workmen's compensation insurance.
- D. Job site shall be maintained in a neat and organized manner throughout the duration of this job.
- E. Contractor shall comply with all local and OSHA regulations.
- F. General contractor shall submit a "Partial Release of Lien" to Housing Authority at the time of each draw and a full "Release of Lien" prior to or at the time of final payment to render the project free of any liens.
- G. Contractor to give 48 hour notice to Housing Authority before entering any unit.
- H. General contractor agrees not to subcontract or assign any portion of this work without Owner's written approval.

Part () Inspections:

- A. Periodic, unannounced inspections may be made at any time by the appropriate Housing Authority representative. These inspections do not relieve the contractor from his responsibility of proper workmanship and specification compliance. Manufacturer does not warrant the contractor's workmanship, and our inspections do not guarantee that the job has been done correctly. If we discover deficiencies, the contractor will be informed and expected to take corrective action. The inspections are merely an attempt to reduce mistakes and provide a better chance for success of the system. Failures resulting from inadequate preparation, improper installation, or any other reason other than defect in the manufacturer used are not covered.

Part () Clean Up:

- A. All building and grounds shall be left in the same state of cleanliness as was found before job commencement.

END OF SECTION

Supplementary Conditions of the Contract for Construction

U.S. Department of Housing
and Urban Development
Office of Housing
Federal Housing Commissioner

OMB Approval No. 2502-0470
(Expires 12/31/2016)

Public reporting burden for this collection of information is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. This information is required to obtain benefits and voluntary. HUD may not collect this information, and you are not required to complete this form, unless it displays a currently valid OMB control number.

This information collection is necessary to ensure that viable projects are developed. It is important to obtain information from applicants to assist HUD in determining if nonprofit organizations initially funded continue to have the financial and administrative capacity needed to develop a project and that the project design meets the needs of the residents. The Department will use this information to set forth the obligations of the contractor or subcontractor performing under the covered contract. This information is required in order to obtain benefits. This information is considered non-sensitive and no assurance of confidentiality is provided.

Article 1 – Labor Standards

Instructions

Whenever only FHA mortgage insurance is involved, use paragraph (A) and (C) of Article 1 – Labor Standards. Whenever any direct form of assistance (Section 8, Section 202/811 Capital Advance, grants etc.) is involved, use paragraphs (A) and (B) and (C) of Article 1 – Labor Standards.

Applicability

The Project or Program to which the construction work covered by this contract pertains is being assisted or insured by the United States of America and the following Federal Labor Standards Provisions are included in this Contract or related instrument pursuant to the provisions applicable to such Federal assistance or insurance.

A. 1. (i) Minimum Wages. All laborers and mechanics employed or working upon the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), 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 particular 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 on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR Part 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 Part 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.

(ii) (a) Any class of laborers or mechanics 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 therefore only when the following criteria have been met:

(1) The work to be performed by the classification

requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(b) 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, Employment Standards Administration, U.S. Department of Labor, Washington, D.C. 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. (Approved by the Office of Management and Budget under OMB control number 1215-0140.)

(c) 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 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. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)

(d) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs A.1.(ii)(b) or (c) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) 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.

(iv) 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. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)

2. Withholding. 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 on the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 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, sponsor, applicant, or owner, 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. The Comptroller General shall make such disbursements in the case of direct Davis-Bacon Act contracts.

3. (i) Payrolls and basic records. 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 at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, 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 any 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. (Approved by the Office of Management and budget under OMB Control Numbers 1215-0140 and 1215-0017.)

(ii) (a) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to HUD or its designee if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant, sponsor, or owner, as the case may be, 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 29 CFR Part 5.5(a)(3)(i). This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal Stock Number 029-005-00014-1), U.S. Government Printing Office, Washington, D.C. 20402. The prime 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 1215-0149.)

(b) 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:

- (1)** That the payroll for the payroll period contains the information required to be maintained under 29 CFR Part 5.5(a)(3)(i) and that such information is correct and complete;
- (2)** 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;

(3) 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.

(c) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph A.3.(ii)(b) of this section.

(d) 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 231 of Title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph A.3.(i) of this section available for inspection, copying, or transcription by authorized representatives of HUD or its designee 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, sponsor, applicant, or owner, 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 Part 5.12.

4. (i) Apprentices and Trainees. 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, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, 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 the Bureau of Apprenticeship and Training 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 above, 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 journeymen 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 determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Bureau

of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, 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.

(ii) 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's 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 on 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 on 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 on 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 on 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.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

5. Compliance with Copeland Act Requirements. The contractor shall comply with the requirements of 29 CFR Part 3 which are incorporated by reference in this contract.

6. Subcontracts. The contractor or subcontractor will insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as HUD or its designee may be appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR Part 5.5.

7. Contract termination; debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. 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.

9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract 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 HUD or its designee, the U.S. Department of Labor, or the employees or their representatives.

10. (i) Certification of Eligibility. By entering into this contract the contractor certifies 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 Government contracts by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001. Additionally, U.S. Criminal Code, Section 1010, Title 18, U.S.C., "Federal Housing Administration transactions", provides in part: "Whoever, for the purpose of . . . influencing in any way the action of such Administration . . . makes, utters or publishes any statement, knowing the same to be false . . . shall be fined not more than \$5,000 or imprisoned not more than two years, or both."

B. 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 shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty 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 forty hours in such workweek.

2. Violation; liability for unpaid wages, liquidated damages. In the event of any violation of the clause set forth in subparagraph (1) of this paragraph, the contractor and any subcontractor responsible therefore 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 clause set forth in subparagraph (1) of this paragraph, 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 forty hours without payment of the overtime wages required by the clause set forth in subparagraph (1) of this paragraph.

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 other 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 clause set forth in subparagraph (2) of this paragraph.

4. Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in subparagraph (1) through (4) of this paragraph and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in subparagraphs (1) through (4) of this paragraph.

C. The Contractor will be required to execute FHA Form No. 2403-A, Contractor's Prevailing Wage Certificate, as a condition precedent to insurance by the Federal Housing Administration of that certain mortgage loan, or an advance thereof, made or to be made by the mortgagee in connection with the construction of the project.

Article 2 – Equal Employment Opportunity

The applicant hereby agrees that it will incorporate or cause to be

incorporated into any contract for construction work, or modification thereof, as defined in the regulations of the Secretary of Labor at 41 CFR Chapter 60, which is paid for in whole or in part with funds obtained from the Federal Government or borrowed on the credit of the Federal Government pursuant to a grant, contract, loan insurance, or guarantee, or undertaken pursuant to any Federal program involving such grant, contract, loan, insurance, or guarantee, the following equal opportunity clause:

During the performance of this contract, the Contractor agrees as follows:

A. The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training including apprenticeship. The Contractor agrees to post in conspicuous places available to employees and applicants for employment notices to be provided setting forth the provisions of this nondiscrimination clause.

B. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

C. The Contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding a notice to be provided advising the said labor union or workers representatives of the Contractor's commitments hereunder, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

D. The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965 and of the rules, regulations, and relevant orders of the Secretary of Labor.

E. The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to its books, records, and accounts by the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

F. In the event of the Contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further government contracts or federally assisted construction 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, regulations or order of the Secretary of Labor, or as otherwise provided by law.

G. The Contractor will include the portion of the sentence immediately preceding paragraph A and the provisions of paragraphs A through G 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 subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the Secretary of Housing and Urban Development or the Secretary of Labor may direct as a means of enforcing such provisions, including sanctions for noncompliance. *Provided, however,* that in the event the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the Secretary of Housing and Urban Development or the Secretary of Labor, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

H. The applicant further agrees that it will be bound by the above equal opportunity clause with respect to its own employment practices when it participates in federally assisted construction work:

Provided, That if the applicant so participating is a State or local government, the above equal opportunity clause is not applicable to any agency, instrumentality or subdivision of such government which does not participate in work on or under the contract.

I. The applicant agrees that it will assist and cooperate actively with the administering agency and the Secretary of Labor in obtaining the compliance of contractors and subcontractors with the equal opportunity clause and the rules, regulations, and relevant orders of the Secretary of Labor, that it will furnish the administering agency and the Secretary of Labor such information as they may require for the supervision of such compliance, and that it will otherwise assist the administering agency in the discharge of the agency's primary responsibility for securing compliance.

J. The applicant further agrees that it will refrain from entering into any contract or contract modification subject to Executive Order 11246 of September 24, 1965, with a contractor debarred from, or who has not demonstrated eligibility for, Government contracts and federally assisted construction contracts pursuant to the Executive order and will carry out such sanctions and penalties for violation of the equal opportunity clause as may be imposed upon contractors and subcontractors by the administering agency or the Secretary of Labor pursuant to Part II, Subpart D of the Executive order. In addition, the applicant agrees that if it fails or refuses to comply with these undertakings, the administering agency may take any or all of the following actions: Cancel, terminate, or suspend in whole or in part this grant (contract, loan, insurance, guarantee); refrain from extending any further assistance to the applicant under the program with respect to which the failure or refund occurred until satisfactory assurance of future compliance has been received from such applicant; and refer the case to the Department of Justice for appropriate legal proceedings.

Article 3 – Equal Opportunity for Businesses and Lower Income Persons Located Within the Project Area

(Applicable to Section 236 projects, where the estimated replacement cost of the project as determined by the Secretary of Housing and Urban Development exceeds \$500,000, and to all projects, including Section 236 regardless of estimated replacement cost, receiving rent supplement assistance under Title I, Section 101 of the Housing and Urban Development Act of 1965.)

A. The work to be performed under this contract is on a project assisted under a program providing direct Federal financial assistance from the Department of Housing and Urban Development and 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 requires that to the greatest extent feasible opportunities for training and employment be given lower income residents of the unit of local government or the metropolitan area (or nonmetropolitan county) as determined by the Secretary of Housing and Urban Development in which the projects located and contracts for work in connection with the project be awarded to business concerns which are located in, or owned in substantial part by persons residing in the same metropolitan area (or nonmetropolitan county) as the project.

Article 4 – Health and Safety

A. No laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health and safety as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation.

B. The Contractor shall comply with all regulations issued by the Secretary of Labor pursuant to Title 29 Part 1926 (formerly part 1518) and 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).

C. The Contractor shall include the provisions of this Article in every subcontract so that such provisions will be binding on each subcontractor. The Contractor shall take such action with respect to any subcontract as the Secretary of Housing and Urban Development of the Secretary of Labor shall direct as a means of enforcing such provisions.

**SECTION 00800
WAGE DETERMINATION**

PART I - GENERAL

DESCRIPTION OF WORK

General Decision #FL20200222 dated July 3, 2020, of six (6) pages, follows this Section and is hereby included in the Project Manual and are incorporated into the Contract Documents.

Only Davis-Bacon Wage Rate issued by the U. S. Department of Housing & Urban Development are applicable. No State rates are applicable.

END OF SECTION

**WAGE DETERMINATION
SECTION 00800-1**

05/15/2020

"General Decision Number: FL20200222 07/03/2020

Superseded General Decision Number: FL20190222

State: Florida

Construction Type: Building

County: Pinellas County in Florida.

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

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.80 for calendar year 2020 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, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.80 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 calendar year 2020. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/03/2020
1	02/21/2020
2	03/27/2020
3	07/03/2020

ASBE0067-003 03/01/2020

	Rates	Fringes
ASBESTOS WORKER/HEAT & FROST INSULATOR.....	\$ 28.93	16.68

ELEC0915-001 12/01/2019

	Rates	Fringes
ELECTRICIAN (Includes Low Voltage Wiring).....	\$ 27.41	39%+.35

ELEV0074-001 01/01/2020

	Rates	Fringes
ELEVATOR MECHANIC.....	\$ 42.52	34.765

FOOTNOTE:

A. Employer contributions 8% of regular hourly rate to vacation pay credit for employee who has worked in business more than 5 years; Employer contributions 6% of regular hourly rate to vacation pay credit for employee who has worked in business less than 5 years.

Paid Holidays: New Year's Day; Memorial Day; Independence Day; Labor Day; Thanksgiving Day; The Friday after Thanksgiving Day; and Christmas Day.

 ENGI0487-021 07/01/2016

	Rates	Fringes
OPERATOR: Crane		
All Cranes 160 Ton		
Capacity and Over.....	\$ 33.05	9.20
All Cranes Over 15 Ton		
Capacity.....	\$ 32.05	9.20
OPERATOR: Forklift.....	\$ 23.25	9.20
OPERATOR: Mechanic.....	\$ 32.05	9.20
OPERATOR: Oiler.....	\$ 23.50	9.20

 IRON0397-007 07/01/2019

	Rates	Fringes
IRONWORKER, STRUCTURAL.....	\$ 30.85	16.47

 IRON0397-008 07/01/2019

	Rates	Fringes
IRONWORKER, REINFORCING.....	\$ 30.85	16.47

 IRON0402-001 01/01/2019

	Rates	Fringes
IRONWORKER, ORNAMENTAL.....	\$ 23.69	12.70

 PLUM0123-001 05/01/2018

	Rates	Fringes
PIPEFITTER (Includes HVAC		
Pipe and Unit Installation).....	\$ 24.90	14.14

 PLUM0123-004 05/01/2018

	Rates	Fringes
PLUMBER.....	\$ 24.90	14.14

 * SHEE0015-005 07/01/2020

	Rates	Fringes
SHEET METAL WORKER (Excludes		
HVAC Duct Installation).....	\$ 22.48	7.51

 SUFL2014-031 08/16/2016

	Rates	Fringes
CARPENTER, Includes Drywall Hanging, Form Work, and Metal Stud Installation (Excludes Carpet and Vinyl Floor Laying)...	\$ 16.36	0.70
CEMENT MASON/CONCRETE FINISHER...	\$ 13.00	1.30
FLOOR LAYER: Carpet and Vinyl....	\$ 17.64	0.00
HVAC MECHANIC (HVAC Duct Installation Only).....	\$ 18.00	2.18
LABORER: Pipelayer.....	\$ 14.00	1.40
LABORER: Common or General, Includes Carpenter Tending and Cement Mason Tending.....	\$ 11.31	0.85
OPERATOR: Backhoe/Excavator/Trackhoe.....	\$ 22.07	8.80
OPERATOR: Bulldozer.....	\$ 15.40	1.90
OPERATOR: Grader/Blade.....	\$ 18.97	0.00
OPERATOR: Loader.....	\$ 14.00	1.40
OPERATOR: Roller.....	\$ 14.43	4.78
PAINTER: Brush, Roller and Spray.....	\$ 14.72	2.13
ROOFER.....	\$ 19.00	1.17
SPRINKLER FITTER (Fire Sprinklers).....	\$ 20.11	6.74
TILE SETTER.....	\$ 18.01	0.00
TRUCK DRIVER: Dump Truck.....	\$ 13.22	2.12
TRUCK DRIVER: Lowboy Truck.....	\$ 14.24	0.00

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

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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 www.dol.gov/whd/govcontracts.

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 Regional Office for the area in which the survey was conducted because those Regional Offices have 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.

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END OF GENERAL DECISION"

SECTION 01010
SUMMARY OF WORK

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications, apply to this section.

1.02 DESCRIPTION OF WORK

- A. The project consists of Clearwater Housing Authority – Barbee Towers
1. Project Location: 1100 E. Druid Road, Clearwater, FL 33756.
- B. Remove existing storefront entry and install new impact resistant storefront entry with automatic sliding doors.
- C. New sunshade ~~pre-manufactured metal~~ structure.
- D. ~~Furnish and install new exterior decorative block wall to~~ Replace existing railing system
- E. Renovate interior first floor consisting of mailroom, toilets ADA unisex toilet, community room with kitchen, maintenance office, janitor's closet, coffee bar, offices and reception.

1.03 COORDINATION OF WORK

- A. Work of the contractor and subcontractors: provide in the following manner for interrelated portions of the project, unless specifically indicated otherwise on the drawings or elsewhere in these specifications.

1.04 COMMENCEMENT OF WORK

- A. Preparation: Properly prepare work to receive subsequent work or finish. Notify Architect if any work is unsatisfactory to receive subsequent work or finish and receive instruction before proceeding.

1.05 LAYOUT OF WORK

- A. Execution: The Contractor shall employ, or have in his employ, a competent Engineer who shall establish a permanent bench mark and general reference points, to which easy access may be had by all the Contractors and Subcontractors, for use in determining all levels, lines and grades and for verification from time to time during the progress of the work. It is the duty of each Contractor or Subcontractors to lay out his own work, take his own measurements, grades and levels, and be responsible for their proper correlation to the entire project, except that the Contractor shall lay out the partitions on the forms or rough floors as a guide to the Trades.
- B. Coordination: Report inconsistencies between the Drawings and the actual size to the Architect and receive instructions before commencing work.

SUMMARY OF WORK
SECTION 01010-1

05/15/2020

1.06 USE OF SITE

- A. Contractor may utilize the portion of the site designated by the Owner at the time of the pre-construction meeting.

1.07 WORK SEQUENCE

- A. The various phases of the work shall be executed in the following sequence, unless the Architect receives express permission of the Owner to permit specific variations requested by the Contractor.

1.08 OWNER FURNISHED ITEMS

- A. The following is a list of the items which shall be furnished by the Owner and installed by the Contractor:

- B. The following is a list of the items, which shall be furnished and installed by the Owner. Rough-ins and all final connections are by the General Contractor.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used

END OF SECTION

**SECTION 01020
ALLOWANCES****PART 1 - GENERAL****1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes administrative and procedural requirements governing allowances.
 - 1. Selected materials and equipment are specified in the Contract Documents by allowances. In some cases, these allowances include installation. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when additional information is available for evaluation. If necessary, additional requirements will be issued by Change Order.
- B. Types of allowances include the following:
 - 1. Lump-sum allowances.
 - 2. Unit-cost allowances.
 - 3. Contingency allowances.
 - 4. Inspection and testing allowances.
- C. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 1 Section "Modification Procedures" specifies procedures for submitting and handling Change Orders.
 - 2. Division 1 Section "Quality Control Services" specifies procedures governing the use of allowances for inspection and testing.

1.03 SELECTION AND PURCHASE

- A. At the earliest practical date after award of the Contract, advise the Architect of the date when the final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.
- B. At the 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 the Architect from the designated supplier.

1.04 SUBMITTALS

- A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.
- B. Submit invoices or delivery slips to show the actual quantities of materials delivered to the site for use in fulfillment of each allowance.

1.05 CONTINGENCY ALLOWANCES

- A. Use the contingency allowance only as directed for the Owner's purposes and only by Change Orders that indicate amounts to be charged to the allowance.
- B. The Contractor's related costs for products and equipment ordered by the Owner under the contingency allowance are not part of the Contract Sum. These costs include delivery, installation, taxes, insurance, equipment rental, and similar costs.
- C. Change Orders authorizing use of funds from the contingency allowance will include Contractor's related costs and reasonable overhead and profit margins.
- D. At Project closeout, credit unused amounts remaining in the contingency allowance to the Owner by Change Order.

1.06 INSPECTION AND TESTING ALLOWANCES

- A. Inspection and testing allowances include the cost of engaging the inspection or testing agencies, the actual inspections and tests, and reporting the results.
- B. The allowance does not include incidental labor required to assist the testing agency or costs for retesting upon failure of previous tests and inspections.
- C. Costs of services not required by the Contract Documents are not included in the allowance.
- D. At Project closeout, credit unused amounts remaining in the inspection and testing allowance to Owner by Change Order.

1.07 UNUSED MATERIALS

- A. Return unused materials to the manufacturer or supplier for credit to the Owner, after installation has been completed and accepted.
 - 1. When requested by the Architect, prepare unused material for storage by Owner where it is not economically practical to return the material for credit. When directed by the Architect, deliver unused material to the Owner's storage space. Otherwise, disposal of unused material is the Contractor's responsibility.

PART 2 - PRODUCTS - Not Used**PART 3 - EXECUTION****3.01 EXAMINATION**

- A. Examine products covered by an allowance promptly upon delivery for damage or defects.

3.02 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.

3.03 SCHEDULE OF ALLOWANCES

A. Allowance No. 1:

END OF SECTION

**SECTION 01026
UNIT PRICES****PART 1 – GENERAL****1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes administrative and procedural requirements for unit prices.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
1. Division 1 Section "Modification Procedures" for procedures for submitting and handling Change Orders.
 2. Division 1 Section "Quality Control Services" for general inspection requirements.
 3. Division 2 Section "Earthwork" for procedures for measurement and payment for rock excavation.
 4. Division 2 Section "Driven Piles" for procedures for measurement for payment for driven piles.

1.03 DEFINITIONS

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

1.04 PROCEDURES

- A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, overhead, profit, and applicable taxes.
- B. Measurement and Payment: Refer to individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.
- C. The Owner reserves the right to reject the Contractor's measurement of work-in-place that involves use of established unit prices, and to have this work measured, at the Owner's expense, by an independent surveyor acceptable to the Contractor.
- D. Schedule: A "Unit Price Schedule" is included at the end of this Section. Specification Sections referenced in the Schedule contain requirements for materials described under each unit price.

PART 2 – PRODUCTS

Not Used

PART 3 - EXECUTION

3.01 UNIT PRICE SCHEDULE

- A. Unit Price No. 1 -
 - 1. Description:
 - 2. Unit of Measurement:

- B. Unit Price No. 2 -
 - 1. Description:
 - 2. Unit of Measurement:

- C. Unit Price No. 3 -
 - 1. Description:
 - 2. Unit of Measurement:

- D. Unit Price No. 4 -
 - 1. Description:
 - 2. Unit of Measurement:

- E. Unit Price No. 5 -
 - 1. Description:
 - 2. Unit of Measurement:

END OF SECTION

**SECTION 01030
ALTERNATES**

PART I - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and all other parts of this Specification Project Manual apply to the Work of this section.

1.02 DESCRIPTION OF REQUIREMENTS

- A. Definition: An alternate is an amount proposed by the Bidders and stated on the Bid Form that will add to or deduct from the Base Bid amount if the Owner decides to accept a corresponding change in either scope of work or in products, materials, equipment, systems or installations methods described in Contract Documents.
- B. Included as part of each alternate, all costs relative to the alternate including but not limited to overhead, insurances, permits, fees, labor, material, equipment, miscellaneous devices, appurtenances and all items incidental to or required for a complete alternate whether or not mentioned as part of the alternate.
- C. Coordination: Coordinate related work and modify or adjust adjacent work as required to ensure that work affected by each accepted alternate is complete and fully integrated into the project.
- D. Schedule: A "Schedule of Alternates" is included at the end of this section. Specification sections referenced in the schedule contain requirements for materials and methods necessary to achieve the work described under each alternate.
- E. The Description herein for each alternate is recognized to be incomplete and abbreviated, but implies that each change must be complete for the scope of work affected. Refer to applicable specification sections (Division 1 through 16), and to applicable drawings for specific requirements of work, regardless of whether references are so noted in description of each alternate. Coordinate relative work and modify surrounding work as required to properly integrate the work of each alternate. It is recognized that descriptions of alternates are primarily scope definitions, and do not necessarily detail full range of materials and processes needed to complete the work as required.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

3.01 SCHEDULE OF ALTERNATES:

- A. ALTERNATE NO. 1: (Price Required)
The additional cost to provide a 100% Performance Bond, and a 100% Labor and Material Payment Bond as per Article 7 of the General Conditions. The cost for the bonds is not to be included in the Base Bid Price.

B. ALTERNATE NO. 2: (Price Required)

Cost to provide Builder's Risk Insurance per Article 11 of the General Conditions. The cost for the Builder's Risk Insurance is not to be included in the Base Bid.

END OF SECTION

**SECTION 01035
MODIFICATION PROCEDURES**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section specifies administrative and procedural requirements for handling and processing contract modifications.
1. Multiple Prime Contracts: Provisions of this Section apply to the work of each prime contractor.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
1. Division 1 Section "Allowances" for procedural requirements governing the handling and processing of allowances.
 2. Division 1 Section "Unit Prices" for administrative requirements governing use of unit prices.
 3. Division 1 Section "Submittals" for requirements for the Contractor's Construction Schedule.
 4. Division 1 Section "Applications for Payment" for administrative procedures governing Applications for Payment.
 5. Division 1 Section "Product Substitutions" for administrative procedures for handling requests for substitutions made after award of the Contract.

1.03 MINOR CHANGES IN THE WORK

- A. The Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or Contract Time, on AIA Form G710, Architect's Supplemental Instructions.

1.04 CHANGE ORDER PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: The Architect will issue a detailed description of proposed changes in the Work that will require adjustment to the Contract Sum or Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
1. Proposal requests issued by the Architect are for information only. Do not consider them as an instruction either to stop work in progress or to execute the proposed change.
 2. Within 20 days of receipt of a proposal request, submit an estimate of cost necessary to execute the change to the Architect for the Owner's review.
 - a. Include a list of quantities of products required and unit costs, with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.

- c. Include a statement indicating the effect the proposed change in the Work will have on the Contract Time.
- B. Contractor-Initiated Proposals: When latent or unforeseen conditions require modifications to the Contract, the Contractor may propose changes by submitting a request for a change to the Architect.
1. Include a statement outlining the 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 Contract Time.
 2. Include a list of quantities of products required and unit costs, with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.
 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 4. Comply with requirements in Section "Product Substitutions" if the proposed change requires substitution of one product or system for a product or system specified.
- C. Proposal Request Form: Use AIA Document G709 for Change Order Proposal Requests.

1.05 ALLOWANCES

- A. Allowance Adjustment: For allowance-cost adjustment, base each Change Order Proposal on the difference between the actual purchase amount and the allowance, multiplied by the final measurement of work-in-place. Where applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.
1. Include installation costs in the purchase amount only where indicated as part of the allowance.
 2. When requested, prepare explanations and documentation to substantiate the margins claimed.
 3. Submit substantiation of a change in scope of work claimed in the Change Orders related to unit-cost allowances.
 4. The Owner reserves the right to establish the actual 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 the Contractor's handling, labor, installation, overhead, and profit. Submit claims within 21 days of receipt of the Change Order or Construction Change Directive authorizing work to proceed. The Owner will reject claims submitted later than 21 days.
1. Do not include the 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 Contract Documents.
 2. No change to the 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.

1.06 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: When the Owner and the Contractor disagree on the terms of a Proposal Request, the Architect may issue a Construction Change Directive on AIA Form G714. The Construction Change Directive instructs the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 - 1. The Construction Change Directive contains a complete description of the change in the Work. It also designates the method to be followed to determine change in the Contract Sum or Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
 - 1. After completion of the change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

1.07 CHANGE ORDER PROCEDURES

- A. Upon the Owner's approval of a Proposal Request, the Architect will issue a Change Order for signatures of the Owner and the Contractor on AIA Form G701.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

**SECTION 01039
COORDINATION AND MEETINGS**

PART I - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications, apply to this section.

1.02 DESCRIPTION OF WORK

- A. Coordination
- B. Field Engineering
- C. Pre-Construction Conference
- D. Progress Meetings

1.03 COORDINATION

- A. Coordinate scheduling, submittals, and Work of the various Sections of Specifications to assure efficient and orderly sequence of installation of interdependent construction elements.
- B. Verify that utility requirement characteristics of operating equipment are compatible with building utilities. Coordinate work of various Sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- C. Coordinate space requirements and installation of mechanical and electrical work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with line of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance and for repairs. A meeting amongst all trades, specifically fire, plumbing and mechanical contractors for the purpose of determining sequencing of tasks so as to not conflict with other installations is suggested and the sole responsibility of the General Contractor. See Mechanical specifications for further direction.
- D. In finished areas, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- E. Coordinate completion and clean-up of Work of separate sections in preparation for Substantial Completion.

1.04 FIELD ENGINEERING

- A. Contractor to employ a Land Surveyor registered in the State of Florida.
- B. Contractor to locate and protect survey control and reference points.
- C. Control datum for survey that is established by Owner provided survey.

- D. Contractor to provide field engineering services. Establish elevations, lines and levels, utilizing recognized engineering survey practices.
- E. Submit a copy of registered site drawing and certificate signed by the Land Surveyor that the elevations and locations of the work are in conformance with the Contract Documents.

1.05 CUTTING AND PATCHING (WHERE REQUIRED)

- A. Employ skilled and experienced installer to perform cutting and patching.
- B. Submit written report in advance of cutting or altering elements which affects:
 - 1. Structural integrity of element.
 - 2. Integrity of weather-exposed or moisture-resistant elements.
 - 3. Efficiency, maintenance or safety of element.
 - 4. Visual qualities of sight exposed elements.
- C. Execute cutting, fitting and patching, including excavation and fill, to complete Work and to:
 - 1. Fit the several parts together, to integrate with other Work.
 - 2. Uncover Work to install or correct ill-timed Work.
 - 3. Remove and replace defective and non-conforming Work.
 - 4. Remove samples of installed Work for testing.
 - 5. Provide openings in elements of Work for penetrations of mechanical and electrical Work.
- D. Execute work by methods which will avoid damage to other Work, and provide surfaces to receive patching and finishing.
- E. Cut rigid materials using masonry saw or core drill.
- F. Restore Work with new products in accordance with requirements of Contract Documents.
- G. Fit Work tight to pipes, sleeves, ducts, conduit and other penetrations through surfaces.
- H. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.
- I. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for an assembly, refinish entire unit.
- J. Identify any hazardous substance or condition exposed during the Work to the Architect/Engineer for decision of remedy.

1.06 PRECONSTRUCTION CONFERENCE

- A. Architect/Engineer will schedule a conference after Contract Negotiation is complete.
- B. Attendance Required: Owner, Architect/Engineer and General Contractor.
- C. Agenda:
 - 1. Submission of executed bonds and insurance certificates.
 - 2. Distribution of Contract Documents.
 - 3. Submission of list of Subcontractors, schedule of shop drawings, list of Products, schedule of values and progress schedule.

4. Designation of personnel representing the parties in Contract, Threshold Inspector and the Architect/Engineer.
5. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders and Contract closeout procedures.
6. RFI procedure/process
7. Scheduling
8. Project Clean-up.
9. Project Coordination.

1.07 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the Work at bi-weekly intervals or as determined during the pre-construction meeting.
- B. Make arrangements for meetings, prepare agenda with copies of participants, preside at meetings, record minutes, and distribute copies to Architect/ Engineer, Owner, participants, and those affected by decisions made.
- C. Attendance Required: General contractor's job superintendent and project manager, Owner or owner's representative, Architect/Engineer, as appropriate to agenda topics for each meeting.
- D. Agenda:
 1. Review minutes of previous meetings.
 2. Review of Work progress.
 3. Field observations.
 4. Identification of problems which impede planned progress.
 5. Review of submittals schedule and status of submittals.
 6. Review of off-site fabrication and delivery schedules.
 7. Maintenance of progress schedule.
 8. Corrective measures to regain projected schedules.
 9. Planned progress during succeeding work period.
 10. Coordination of projected progress.
 11. Maintenance of quality and work standards.
 12. Effect of proposed changes on progress schedule and coordination.
 13. Other business relating to Work.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

**SECTION 01040
COORDINATION****PART 1 - GENERAL****1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes administrative and supervisory requirements necessary for coordinating construction operations including, but not necessarily limited to, the following:
 1. General project coordination procedures.
 2. Conservation.
 3. Coordination Drawings.
 4. Administrative and supervisory personnel.
 5. Cleaning and protection.

1.03 RELATED SECTIONS

- A. Division 1 Section "Field Engineering" specifies procedures for field engineering services, including establishment of benchmarks and control points.
- B. Division 1 Section "Project Meetings" for progress meetings, coordination meetings, and preinstallation conferences.
- C. Division 1 Section "Submittals" for preparing and submitting the Contractor's Construction Schedule.
- D. Division 1 Section "Materials and Equipment" for coordinating general installation.
- E. Division 1 Section "Contract Closeout" for coordinating contract closeout.

1.04 COORDINATION

- A. Coordinate construction operations included in various Sections of these Specifications to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections that depend on each other for proper installation, connection, and operation.
 1. Schedule construction operations in the 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 assure maximum accessibility for required maintenance, service, and repair.
 3. Make provisions to accommodate items scheduled for later installation.
- B. Where necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.

1. Prepare similar memoranda for the Owner and separate contractors where coordination of their work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and assure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
1. Preparation of schedules.
 2. Installation and removal of temporary facilities.
 3. Delivery and processing of submittals.
 4. Progress meetings.
 5. Project closeout activities.
- D. Conservation: Coordinate construction operations to assure that operations are carried out with consideration given to conservation of energy, water, and materials.
1. Salvage materials and equipment involved in performance of, but not actually incorporated in, the Work.

1.05 SUBMITTALS

- A. Coordination Drawings: Prepare coordination drawings where careful coordination is needed for installation of products and materials fabricated by separate entities. Prepare coordination drawings where limited space availability necessitates maximum utilization of space for efficient installation of different components.
1. Show the relationship of components shown on separate Shop Drawings.
 2. Indicate required installation sequences.
 3. Comply with requirements contained in Section "Submittals."
- B. Staff Names: Within 15 days of commencement of construction operations, submit a list of the Contractor's principal staff assignments, including the superintendent and other personnel in attendance at the Project Site. Identify individuals and their duties and responsibilities. List their addresses and telephone numbers.
1. Post copies of the list in the Project meeting room, the temporary field office, and each temporary telephone.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

3.01 GENERAL COORDINATION PROVISIONS

- A. Inspection of Conditions: Require the Installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.
- B. Coordinate temporary enclosures with required inspections and tests to minimize the necessity of uncovering completed construction for that purpose.

3.02 CLEANING AND PROTECTION

- A. Clean and protect construction in progress and adjoining materials in place, during handling and installation. Apply protective covering where required to assure protection from damage or deterioration at Substantial Completion.
- B. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to assure operability without damaging effects.
- C. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period. Where applicable, such exposures include, but are not limited to, the following:
 - 1. Excessive static or dynamic loading.
 - 2. Excessive internal or external pressures.
 - 3. Excessively high or low temperatures.
 - 4. Thermal shock.
 - 5. Excessively high or low humidity.
 - 6. Air contamination or pollution.
 - 7. Water or ice.
 - 8. Solvents.
 - 9. Chemicals.
 - 10. Light.
 - 11. Radiation.
 - 12. Puncture.
 - 13. Abrasion.
 - 14. Heavy traffic.
 - 15. Soiling, staining, and corrosion.
 - 16. Bacteria.
 - 17. Rodent and insect infestation.
 - 18. Combustion.
 - 19. Electrical current.
 - 20. High-speed operation.
 - 21. Improper lubrication.
 - 22. Unusual wear or other misuse.
 - 23. Contact between incompatible materials.
 - 24. Destructive testing.
 - 25. Misalignment.
 - 26. Excessive weathering.
 - 27. Unprotected storage.
 - 28. Improper shipping or handling.
 - 29. Theft.
 - 30. Vandalism.

END OF SECTION

**SECTION 01045
CUTTING AND PATCHING**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications, apply to this section.

1.02 DESCRIPTION OF WORK

- A. This Section includes administrative and procedural requirements for cutting and patching.

1.03 RELATED SECTIONS

- A. Division 1 Section "Coordination" for procedures for coordinating cutting and patching with other construction activities.
- B. Refer to other Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.
 - 1. Requirements of this Section apply to mechanical and electrical installations. Refer to Division 15 Sections for other requirements and limitations applicable to cutting and patching mechanical and electrical installations.

1.04 SUBMITTALS

- A. Cutting and Patching Proposal: Submit a proposal describing procedures well in advance of the time cutting and patching will be performed if the Owner requires approval of these procedures before proceeding. Request approval to proceed. Include the following information, as applicable, in the proposal:
 - 1. Describe the extent of cutting and patching required. Show how it will be performed and indicate why it cannot be avoided.
 - 2. Describe anticipated results in terms of changes to existing construction. Include changes to structural elements and operating components as well as changes in the building's appearance and other significant visual elements.
 - 3. List products to be used and firms or entities that will perform Work.
 - 4. Indicate dates when cutting and patching will be performed.
 - 5. Utilities: List utilities that cutting and patching procedures will disturb or affect. List utilities that will be relocated and those that will be temporarily out-of-service. Indicate how long service will be disrupted.
 - 6. Where cutting and patching involves adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with the original structure.
 - 7. Approval by the Architect to proceed with cutting and patching does not waive the Architect's right to later require complete removal and replacement of unsatisfactory work.

1.05 QUALITY ASSURANCE

- A. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would change their load-carrying capacity or load-deflection ratio.
1. Obtain approval of the cutting and patching proposal before cutting and patching the following structural elements:
 - a. Foundation construction.
 - b. Bearing and retaining walls.
 - c. Structural concrete.
 - d. Structural steel.
 - e. Lintels.
 - f. Timber and primary wood framing.
 - g. Structural decking.
 - h. Stair systems.
 - i. Miscellaneous structural metals.
 - j. Exterior curtain-wall construction.
 - k. Equipment supports.
 - l. Piping, ductwork, vessels, and equipment.
 - m. Structural systems of special construction in Division 13 Sections.
- B. Operational Limitations: Do not cut and patch operating elements or related components in a manner that would result in reducing their capacity to perform as intended. Do not cut and patch operating elements or related components in a manner that would result in increased maintenance or decreased operational life or safety.
1. Obtain approval of the cutting and patching proposal before cutting and patching the following operating elements or safety related systems:
 - a. Primary operational systems and equipment.
 - b. Air or smoke barriers.
 - c. Water, moisture, or vapor barriers.
 - d. Membranes and flashings.
 - e. Fire protection systems.
 - f. Noise and vibration control elements and systems.
 - g. Control systems.
 - h. Communication systems.
 - i. Conveying systems.
 - j. Electrical wiring systems.
 - k. Operating systems of special construction in Division 13 Sections.
- C. Visual Requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in the Architect's opinion, reduce the building's aesthetic qualities. Do not cut and patch construction in a manner that would result in visual evidence of cutting and patching. Remove and replace construction cut and patched in a visually unsatisfactory manner.
1. If possible retain the original Installer or fabricator to cut and patch the exposed Work listed below. If it is impossible to engage the original Installer or fabricator, engage another recognized experienced and specialized firm.
 - a. Processed concrete finishes.
 - b. Stonework and stone masonry.
 - c. Ornamental metal.
 - d. Matched-veneer woodwork.
 - e. Preformed metal panels.
 - f. Firestopping.
 - g. Window wall system.

- h. Stucco and ornamental plaster.
- i. Acoustical ceilings.
- j. Terrazzo.
- k. Finished wood flooring.
- l. Fluid-applied flooring.
- m. Carpeting.
- n. Aggregate wall coating.
- o. Wall covering.
- p. Swimming pool finishes.
- q. HVAC enclosures, cabinets, or covers.

1.06 WARRANTY

- A. Existing Warranties: Replace, patch, and repair material and surfaces cut or damaged by methods and with materials in such a manner as not to void any warranties required or existing.

PART 2 - PRODUCTS

2.01 MATERIALS, GENERAL

- A. Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible if identical materials are unavailable or cannot be used. Use materials whose installed performance will equal or surpass that of existing materials.
- B. Plaster: Comply with ASTM C 842.
 - 1. Base Coat: Ready-mixed, sand aggregate gypsum plaster base.
 - 2. Finish Coat: Ready-mixed gypsum finish plaster.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed before cutting. If unsafe or unsatisfactory conditions are encountered, take corrective action before proceeding.
 - 1. Before proceeding, meet at the Project Site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

3.02 PREPARATION

- A. Temporary Support: Provide temporary support of work to be cut.
- B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.
- C. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

- D. Avoid cutting existing pipe, conduit, or ductwork serving the building but scheduled to be removed or relocated until provisions have been made to bypass them.

3.03 PERFORMANCE

- A. General: Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.
 - 1. Cut existing construction to provide for installation of other components or performance of other construction activities and the subsequent fitting and patching required to restore surfaces to their original condition.
- B. Cutting: Cut existing construction using methods least likely to damage elements retained or adjoining construction. Where possible, review proposed procedures with the original Installer; comply with the original Installer's recommendations.
 - 1. In general, where cutting, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.
 - 3. Cut through concrete and masonry using a cutting machine, such as a Carborundum saw or a diamond-core drill.
 - 4. Comply with requirements of applicable Division 2 Sections where cutting and patching requires excavating and backfilling.
 - 5. Where services are required to be removed, relocated, or abandoned, by-pass utility services, such as pipe or conduit, before cutting. Cut-off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after by-passing and cutting.
- C. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.
 - 1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
 - 2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
 - 3. Where removing walls or partitions extends one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform color and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - a. Where patching occurs in a smooth painted surface, extend final paint coat over entire unbroken surface containing the patch after the area has received primer and second coat.
 - 4. Patch, repair, or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.
- D. Plaster Installation: Comply with manufacturer's instructions and install thickness and coats as indicated.

1. Unless otherwise indicated, provide 3-coat work.
2. Finish gypsum plaster to match existing adjacent surfaces. Sand lightly to remove trowel marks and arrises.
3. Cut, patch, point-up, and repair plaster to accommodate other construction.

3.04 CLEANING

- A. Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar items. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.

END OF SECTION

**SECTION 01050
FIELD ENGINEERING**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. General: This Section specifies administrative and procedural requirements for field-engineering services including, but not limited to, the following:
 - 1. Land survey work.
 - 2. Civil-engineering services.
 - 3. Damage surveys.
 - 4. Geotechnical monitoring.

1.03 RELATED SECTIONS

- A. Division 1 Section "Coordination" for procedures for coordinating field engineering with other construction activities.
- B. Division 1 Section "Submittals" for submitting Project record surveys.
- C. Division 1 Section "Project Closeout" for submitting final property survey with Project Record Documents and recording of Owner-accepted deviations from indicated lines and levels.

1.04 SUBMITTALS

- A. Certificates: Submit a certificate signed by the land surveyor or professional engineer certifying the location and elevation of improvements.
- B. Final Property Survey: Submit 10 copies of the final property survey.
- C. Project Record Documents: Submit a record of Work performed and record survey data as required under provisions of "Submittals" and "Project Closeout" Sections.

1.05 QUALITY ASSURANCE

- A. Surveyor Qualifications: Engage a land surveyor registered in the state where the Project is located, to perform required land-surveying services.
- B. Engineer Qualifications: Engage an engineer of the discipline required, licensed in the state where the Project is located, to perform required engineering services.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION**3.01 EXAMINATION**

- A. Identification: The Owner will identify existing control points and property line corner stakes.
- B. Verify layout information shown on the Drawings, in relation to the property survey and existing benchmarks, before proceeding to lay out the Work. Locate and protect existing benchmarks and control points. Preserve permanent reference points during construction.
 - 1. Do not change or relocate benchmarks or control points without prior written approval. Promptly report lost or destroyed reference points or requirements to relocate reference points because of necessary changes in grades or locations.
 - 2. Promptly replace lost or destroyed Project control points. Base replacements on the original survey control points.
- C. Establish and maintain a minimum of 2 permanent benchmarks on the site, referenced to data established by survey control points.
 - 1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
- D. Existing Utilities and Equipment: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction.
 - 1. Prior to construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping.

3.02 PERFORMANCE

- A. Work from lines and levels established by the property survey. Establish benchmarks and markers to set lines and levels at each story of construction and elsewhere as needed to locate each element of the Project. Calculate and measure required dimensions within indicated or recognized tolerances. Do not scale Drawings to determine dimensions.
 - 1. Advise entities engaged in construction activities of marked lines and levels provided for their use.
 - 2. As construction proceeds, check every major element for line, level, and plumb.
- B. Surveyor's Log: Maintain a surveyor's log of control and other survey work. Make this log available for reference.
 - 1. Record deviations from required lines and levels, and advise the Architect when deviations that exceed indicated or recognized tolerances are detected. On Project Record Drawings, record deviations that are accepted and not corrected.
 - 2. On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.
- C. Site Improvements: Locate and lay out site improvements, including pavements, stakes for grading, fill and topsoil placement, utility slopes, and invert elevations.

- D. Building Lines and Levels: Locate and lay out batter boards for structures, building foundations, column grids and locations, floor levels, and control lines and levels required for mechanical and electrical work.
- E. Existing Utilities: Furnish information necessary to adjust, move, or relocate existing structures, utility poles, lines, services, or other appurtenances located in or affected by construction. Coordinate with local authorities having jurisdiction.
- F. Final Property Survey: Prepare a final property survey showing significant features (real property) for the Project. Include on the survey a certification, signed by the surveyor, that principal metes, bounds, lines, and levels of the Project are accurately positioned as shown on the survey.
 - 1. Recording: At Substantial Completion, have the final property survey recorded by or with local governing authorities as the official "property survey."

END OF SECTION

**SECTION 01105
RODENT CONTROL**

PART 1 - GENERAL

1.01 SUMMARY

- A. This section specifies rodent control and general pest control requirements within project areas, and bordering areas as designated by the Owner and Architect. This work is to be performed prior to demolition, excavation, and site preparation and throughout the Contract, so that rodents and other pests do not disperse from or infest the project area.
- B. The Contractor shall develop and implement an Integrated Pest Management (IPM) approach. As part of that approach, the Contractor shall maintain a cooperative dialogue with appropriate agencies and management/representatives of neighboring properties.
- C. The Contractor shall perform the rodent control tasks described in this Scope of Work and also respond to other pest control needs when directed by the Owner.

1.02 SUBMITTALS

- A. Submit to the Engineer copies of pesticide applicator certifications and licenses within ten (10) days of the start of Rodent Control activities and ten (10) days prior to their issuance or renewal for the duration of this Contract.
- B. After performing the survey described in Paragraph 3.2 below and before initiating baiting, submit to the Architect a written description of proposed pest control procedures, indicating materials, quantities, methods and time schedule. For all pesticides to be used, submit a copy of the pesticide manufacturer's EPA-approved pesticide label with application directions.
- C. Submit to the Architect documentation of pest control activities and results as followed:
 - 1. Weekly – Submit data sheets with locations of sites treated, amounts and types of pesticide used, number and types of traps set, survey and inspection results, sanitation conditions, complaint calls investigated, and any problem that occurred.
 - 2. Monthly – Submit a written summary that includes determinable results of the IPM program and recommendations.
 - 3. Quarterly – Submit a map that shows bait stations, manholes, and catch basins where rodent baits are being maintained.

1.03 QUALIFICATIONS

- A. The Contractor shall perform this work at all times in accordance with the following minimum standards and as acceptable to the Owner and Architect.
 - 1. The Contractor and key personnel shall have experience with commercial and residential accounts and construction projects; have experience and technical training in vertebrate pest management and integrated pest management; have experience with various rodent control techniques, equipment and strategies;

have training and experience with insect control; and have knowledge of an experience with techniques to reduce non-target hazards.

2. The supervisor shall be licensed and certified in General Pest Control and Vertebrate Pest Control. The supervisor shall have specific training and experience in vertebrate post management, commercial rodent control, general pest control, and integrated pest management.
3. Applicators shall be licensed by the Florida Pesticide Bureau and certified in General Pest Control. Applicators shall have specific training and experience in commercial rodent control and integrated pest management.

1.04 COORDINATION

- A. Perform this Work in cooperation with the other Work performed under the Contract.
- B. Initiate the work on or before field mobilization begins for the Contract and with adequate timing to achieve control before environmental disruptions. Provide a maintenance program until Contract is completed and all equipment and materials are removed.
- C. Perform the Work according to the preliminary schedule described in this section and as accepted or revised by the Owner and Architect. Estimated durations and start dates may be changed by the Owner or Architect to suit changes in construction schedules and field conditions. The Work could potentially require performance any day of the week and any hour of the day or night, regardless of weather.
- D. Perform this work in such a manner that toxicant or other control tools do not pose a hazard to persons, domestic animals, or non-target wildlife.

1.05 PERMITS

- A. Obtain and maintain in coordination with the Contractor appropriate permit(s) from city or state agencies for pest control activities associated with this Work.
- B. Obtain and maintain in coordination with the Contractor all right of entry permits required for the performance of this Work. This includes all utilities and private properties to which entrance is required.

PART 2 – PRODUCTS

2.01 PRODUCTS

- A. Furnish and use only pesticide formulations registered by the U.S. Environmental Protection Agency (EPA) and the Florida Department of Food and Agriculture, where appropriate according to label directions and as acceptable to the Architect.
- B. Furnish and use devices and supplies (e.g., traps and bait stations) to facilitate the management and effectiveness of the pest control program, where appropriate and as acceptable to the Architect.

PART 3 - EXECUTION**3.01 MEETINGS**

- A. Before proceeding with the Work, all pest control personnel shall attend a Work Shop held by the Contractor and Architect to discuss planned pest control methods and coordination.
- B. The supervisor shall meet with the Contractor weekly to discuss pest control activities.

3.02 SURVEY

- A. Prior to baiting, survey the proposed construction area and accessible or observable bordering areas and record signs of rodent activity and sanitation conditions. Closely inspect all embankments, edge areas, and properties within and abutting the construction area. Maintain survey records in the manner described in Paragraph 3.7 below.
- B. Thoroughly inspect construction area and accessible or observable bordering areas and any nearby areas designated by the Architect, for rodent activity and sanitation deficiencies weekly throughout the duration of this Contract and in accordance with the work schedule. Maintain inspection records in the manner described in Paragraph 3.7 below.
- C. Plan the control program and allocate resources based on survey and inspection data and as acceptable to the Owner.

3.03 APPLICATION FOR RODENT CONTROL

- A. Apply rodenticide in strict accordance with EPA-approved label directions. Maintain records of all bait placements in the manner described in Paragraph 3.7 below.
- B. Where appropriate, especially for surface placements of rodent baits, use properly secured and tamper-resistant bait stations consistent with EPA regulation. Individually number and properly identify all bait stations.
- C. Surface Applications
 - 1. Initial Surface Baiting

Rid the construction area of all detectable rodents before construction begins, or as acceptable to the Owner. Bait all observable rodent burrows. Install and secure bait stations at regular and appropriate intervals and locations, and document rodent activity (burrows, droppings, bait consumed, dead rodents). Replenish bait and shift bait stations as necessary to ensure complete control of rodent populations. Bait edge and accessible bordering areas as necessary to ensure that rodents will not be dispersed by construction activities and that rodents will not infest work areas.
 - 2. Maintain Surface Baiting

Establish a maintenance baiting program prior to mobilization by the Contractor, including construction areas and accessible bordering areas, as acceptable to the Owner. Check bait placements weekly. Use survey and baiting data to determine the most effective distribution of baiting locations and bait quantities. Shift and distribute bait and bait stations as appropriate to ensure continued control.

D. Subsurface Applications

1. General

For situations involving underground construction/demolition, utility relocation, or utility construction, and for other situations when determined necessary by the Owner or Architect, initiate subsurface baiting and rid underground environments of all detectable rodents before construction begins. Assign an identifying number to each manhole and catch basin where bait is placed so that locations of bait placements can be identified and rodent activity (dropping, bait consumed, dead rats) can be documented. Conduct bait applications during off-peak traffic hours unless otherwise directed by the Architect. Access manholes according to the requirements of appropriate agencies and utility companies. Coordinate the Work with appropriate municipal agencies and utility companies.

2. Initial Subsurface Baiting

Apply appropriate baits to control rodent populations in manholes and catch basins. This will involve suspending and securing bait using noncorrosive wire (e.g., 24 gauge plastic coated). Place bait in all accessible manholes and catch basins within the construction work area. In addition, bait an appropriate set of manholes and catch basins in the blocks bordering the work area and as acceptable to the Owner. Identify all baited manholes and catch basins with a standardized paint mark on the street and a numbered tag to be attached to the suspending wire. Approximately seven days after completion of the first baiting, check all manhole and catch basin baits and record estimates on the amount of bait consumed. Replenish or increase the amount of bait applied according to the amount consumed or as acceptable to the Owner and Architect. Repeat this process again approximately fourteen days later and until there is little or no bait consumed. Check manholes and catch basins weekly when they repeatedly have 100 percent of the bait consumed.

3. Maintenance of Subsurface Baiting

Prior to mobilization by the Contractor, establish a maintenance baiting program appropriate for the rodent infestation patterns identified during initial subsurface baiting. This program shall ensure continued control and shall be performed in a manner acceptable to the Owner and Architect. Maintain bait in manholes and catch basins that have rodent activity and those that had activity during initial baitings. Check each bait according to rodent activity levels. This could range from weekly to approximately every three months, depending upon the recent history of bait consumption. Use utility maps and baiting data to determine the most effective distribution of baiting locations and bait quantities. Shift and distribute baiting locations as necessary to ensure adequate interception points for controlling immigrating rodents.

E. Cleanup

1. Remove visible rodent carcasses and dispose of them daily consistent with the pesticide label directions and applicable codes, laws and regulations.
2. Upon completion of any pest control operations at the site, remove remaining bait and dispose of it according to the pesticide label and applicable codes, laws and regulations. Also remove all wires used for subsurface baiting and any bait stations or traps.

3.04 SANITATION

- A. Prior to construction and throughout the duration of this Contract, identify and document harborage and food sources available to rodents on the construction site and in observable bordering areas. This includes any littering or improper or insufficient use of trash receptacles in construction areas. It also includes any bordering areas with sanitation conditions or structural deficiencies that violate City or State sanitation codes.
- B. Maintain records of sanitation conditions in the manner described in Paragraph 3.7 below.

3.05 COMPLAINT CALLS

- A. During construction, respond to pest-related complaints from the "adjacent" neighborhood (i.e. within 200 feet of the project limits) within 12 hours when directed by the Owner or Architect. Inspect the particular premises and adjacent areas for sanitation and structural deficiencies and also signs of historic and recent pest activity. Provide sanitation and structural maintenance information to the property owner. Use pesticides or traps as necessary and appropriate to resolve the complaint when there is a relationship between the pest infestation and construction activities, or when directed by the Owner or Architect.
- B. Maintain records of all complaints investigated, including location, contact person, inspection results, and actions taken. Document the relatedness of the pest infestation to construction activities.

3.06 GENERAL PEST CONTROL

- A. When directed by the Owner or Architect, the Contractor shall determine appropriate methods for any pest control task not specifically identified above and shall submit them in writing to the Owner and Architect for approval in advance. Such pest control tasks would relate to unanticipated pest control needs within construction areas or adjacent areas. This could include control of insects or vertebrates other than rats and mice.
- B. Maintain records of general pest control activities and results in the manner described in Paragraph 3.7 below.

3.07 RECORD KEEPING

- A. Use standardized data sheets acceptable to the Owner and Architect to maintain accurate records of date, placement, type and amount of pesticides or other control tools (e.g., traps) applied. Similarly, maintain records of surveys, inspections, changes in pest activity, sanitation conditions, and complaint calls. Submit data in a format acceptable to the Owner and Architect and as required under Paragraph 1.3 (C) above.

END OF SECTION

**SECTION 01200
GENERAL PROVISIONS**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications, apply to this section.

1.02 SECTION INCLUDES

- A. Examination of Site.
- B. Drawings and Specifications.
- C. Data and Measure.
- D. Cooperation of Trades.

1.03 EXAMINATION OF SITE:

- A. Contractor is required to visit the site, compare the drawings and specifications with any work in place, and inform himself as to all conditions, including other work, if any, being performed. Failure to visit the site will in no way relieve the Contractor from necessity of furnishing any materials or performing any work that may be required to complete work in accordance with drawings and specifications without any additional costs to the Owner.

1.04 DRAWINGS AND SPECIFICATIONS

- A. These specifications are intended to supplement the drawings and it will not be the province of the specifications to mention any part of the work which the drawings are competent to fully explain in every particular and such omission is not to relieve the Contractor from carrying out portions indicated on the drawings only. Should items be required by these specifications or applicable code requirements and not indicated on the drawings, they are to be supplied even if of such nature that they could have been indicated thereon.
- B. In cases of disagreement between drawings and specifications, or within either drawings or specifications, the better quality or greater quantity of work shall be estimated and the matter referred to the Architect for a decision. Larger scale plans take precedence over smaller. Specifications take precedence over drawings.

1.05 DATA AND MEASURE

- A. The data given herein and on the drawings is as exact as could be secured. Their absolute accuracy is not guaranteed, and the Contractor shall obtain exact locations, measurements, levels, etc., at the site and shall satisfactorily adapt to his work to the actual conditions of the building. Do not scale prints. Verify all dimensions with the Architect prior to commencing work. Only Architectural drawings may be utilized in calculation. Other drawings (Mechanical, etc.) are diagrammatic or schematic.

1.06 EQUIPMENT AND CONSTRUCTION METHODS

- A. The Contractor shall be responsible for the equipment and methods used in the erection of his work covered by the contract, but the Architect reserves the right to approve such equipment and methods.
- B. If, at any time, the Contractor's working force, in the opinion of the Architect, shall be inadequate for securing the necessary progress, as herein stipulated, the Contractor shall, if so directed, increase the work force or equipment to such extent as to give reasonable assurance of compliance with the schedule of progress, but the failure to make such demand shall not relieve the Contractor of his obligation to secure the quality, the safe conduct of the work, and the rate of progress required by the contract. The Contractor alone shall be responsible for the safety, efficiency, and adequacy of his plant, appliance and methods.
- C. Quality workmanship will be expected. The good appearance of finished work shall be of equal importance with its mechanical efficiency. No makeshifts will be permitted anywhere in the work, and all portions of the work shall be so laid out and installed that the work as a whole is of uniform quality and appearance.

1.07 COOPERATION OF TRADES

- A. It is the intention of the Contract Documents that the various trades engaged in the work shall cooperate in the execution of the work. The contractors will be expected and required at all times to require cooperation from all sub-contractors engaged in the work. The contractors shall plan the work in such a manner that all parts of the construction will fit in with other parts or sections in a proper manner and at the proper time.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

SECTION 01300
SUBMITTALS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications, apply to this section.

1.02 SECTION INCLUDES

- A. Submittal Procedures and Schedule.
- B. Construction progress schedules.
- C. Proposed products list.
- D. Shop drawings.
- E. Product Data.
- F. Samples.
- G. Manufacturers' instructions.
- H. Manufacturers' certificates.
- I. Construction photographs.

1.03 RELATED SECTIONS

- A. Section 01400 - Quality Control: Manufacturers' field services and reports.
- B. Section 01700 – Contract Closeout: Contract warranty and manufacturers' certificates Closeout certificates.

1.04 SUBMITTAL PROCEDURES

- A. Transmit each submittal with Architect/Engineer accepted form.
 - 1. Submit a schedule of submittals in accordance with Section 1.07.
- B. Sequentially number the transmittal forms. Resubmittals to have original number with Alphabetic sequence.
- C. Identify Project, Contractor, Subcontractor or supplier; pertinent Drawing sheet and Detail number(s), and specification Section number, as appropriate.
- D. Apply Contractor's stamp, signed or initialed certifying that review, verification of Products required, field dimension, adjacent construction Work, and coordination of information, is in accordance with the requirements of the Work and Contract Documents. All submittals without this stamp of approval or which have not been checked, or only superficially checked, will not be considered and will be returned to the Contractor for resubmission.

- E. Schedule submittals to expedite the Project, and deliver to Architect/Engineer at business address. Coordinate submission of related items.
- F. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed work.
- G. Provide space for Contractor and Architect/Engineer review stamps.
- H. Revise and resubmit submittals as required, identify all changes made since previous submittal.
- I. Distribute copies of reviewed submittals to concerned parties. Instruct parties to promptly report any inability to comply with provisions.
- J. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - 2. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.
 - a. The Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received.
 - 3. Processing: To avoid the need to delay installation as a result of the time required to process submittals, allow sufficient time for submittal review, including time for resubmittals.
 - a. Allow 2 weeks for initial review. Allow additional time if the Architect must delay processing to permit coordination with subsequent submittals.
 - b. If an intermediate submittal is necessary, process the same as the initial submittal.
 - c. Allow 2 weeks for reprocessing each resubmittal.
 - d. No extension of Contract Time will be authorized because of failure to transmit submittals to the Architect sufficiently in advance of the Work to permit processing.
- K. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.
 - 1. Provide a space approximately 4 by 5 inches (100 by 125 mm) on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken.
 - 2. Include the following information on the label for processing and recording action taken.
 - a. Project name.
 - b. Date.
 - c. Name and address of the Architect.
 - d. Name and address of the Contractor.
 - e. Name and address of the subcontractor.
 - f. Name and address of the supplier.

- g. Name of the manufacturer.
 - h. Number and title of appropriate Specification Section.
 - i. Drawing number and detail references, as appropriate.
- L. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from the Contractor to the Architect using a transmittal form. The Architect will not accept submittals received from sources other than the Contractor.
- 1. On the transmittal, record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including variations and limitations. Include Contractor's certification that information complies with Contract Document requirements.

1.05 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit initial progress schedule in duplicate within 15 days after date of Owner-Contractor Agreement for Architect/Engineer review. Include the anticipated amount of each monthly payment that will become due to the Contractor in accordance with the Progress Schedule/
- B. Revise and resubmit as requested by the Architect.
- C. Submit revised schedules with each Application for Payment, identifying changes since previous version. No application for payment will be approved until the initial or revised schedule has been received and approved by the architect.
- D. Submit a horizontal bar chart with separate line for each major section of Work, identifying first work day of each week.
- E. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate the early and late start, early and late finish, float dates, and duration.
- F. Indicate estimated percentage of completion for each item of Work at each submission.
- G. Indicate Submittal dates required for shop drawings, product data, samples, and product delivery dates, including those furnished by Owner.

1.06 PROPOSED PRODUCTS LIST

- A. Within 30 days after date of Owner-Contractor Agreement, submit complete list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
- B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

1.07 SUBMITTAL SCHEDULES

- A. After development and acceptance of the Contractor's Construction Schedule, prepare a complete schedule of submittals. Submit the schedule within 10 days of the date required for submittal of the Contractor's Construction Schedule.
 - 1. Coordinate Submittal Schedule with the list of subcontracts, Schedule of Values, and the list of products as well as the Contractor's Construction Schedule.

2. Prepare the schedule in chronological order. Provide the following information:
 - a. Scheduled date for the first submittal.
 - b. Related Section number.
 - c. Submittal category (Shop Drawings, Product Data, or Samples).
 - d. Name of the subcontractor.
 - e. Description of the part of the Work covered.
 - f. Scheduled date for resubmittal.
 - g. Scheduled date for the Architect's final release or approval.
- B. Distribution: Following response to the initial submittal, print and distribute copies to the Architect, Owner, subcontractors, and other parties required to comply with submittal dates indicated. Post copies in the Project meeting room and field office.
 1. When revisions are made, distribute 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 construction activities.
- C. Schedule Updating: Revise the schedule after each meeting or activity where revisions have been recognized or made. Issue the updated schedule concurrently with the report of each meeting.

1.08 SHOP DRAWINGS

- A. Contractor shall prepare and submit to the Architect 30 days after award of the Contract a schedule of Shop Drawings and Submittals as required in the Contract Documents. Schedule shall fix dates for submission, and the lead time for each submittal as related to the requirements for return receipt. No work shall be fabricated by the Contractor, save at his own risk, until approval of the shop drawings has been obtained.
- B. After review, distribute in accordance with Article on Procedures above and for Record Documents described in Section 01700 – Contract Closeout.
- C. Shop Drawings include fabrication and installation Drawings, setting diagrams, schedules, patterns, templates and similar Drawings. Include the following information:
 1. Dimensions.
 2. Identification of products and materials included by sheet and detail number.
 3. Compliance with specified standards.
 4. Notation of coordination requirements.
 5. Notation of dimensions established by field measurement.
 6. Sheet Size: Except for templates, patterns and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm) but no larger than 36 by 48 inches (890 by 1220 mm).
 7. Final Submittal: Submit 4 blue- or black-line prints and 2 additional prints where required for maintenance manuals, plus the number of prints needed by the Architect for distribution. The Architect will retain 1 print and return the remainder.
 - a. Alternately, submissions may be sent electronically except for samples for various materials and color selection.
 8. At contractor's option, electronic files may be submitted in lieu of hard copy prints. Electronic submittal shall be submitted with the same information as listed above and in Section 1.04 above.

9. Do not use Shop Drawings without an appropriate final stamp indicating action taken.

1.09 PRODUCT DATA

- A. Submit the number of copies which the Contractor requires, plus two copies which will be retained by the Architect/Engineer.
- B. Mark each copy to identify applicable products, models, options and other data. Supplement manufacturers' standard data to provide information unique to this Project.
- C. After review, distribute in accordance with Article on Procedures above and for Record Documents described in Section 01700 – Contract Closeout.

1.10 SAMPLES

- A. Submit samples to illustrate functional and aesthetic characteristics of the Product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
- B. Submit samples of finishes from the full range of manufacturers' standard colors in custom colors, textures, and patterns for Architect/Engineer.
- C. Include identification on each sample, with full Project information.
- D. Submit the number or samples specified in individual specification sections; one of which will be retained by Architect/Engineer.
- E. Reviewed samples, which may be used in the Work, are indicated in individual specification Sections.

1.11 MANUFACTURER'S INSTRUCTIONS

- A. When specified in individual specification Sections, submit manufacturers' printed instructions for delivery, storage, assembly, installation, (start-up,) adjusting, and finishing, in quantities specified for Product Data.
- B. Identify conflicts between manufacturers' instructions and Contract Documents.

1.12 MANUFACTURER'S CERTIFICATES

- A. When specified in individual specification sections, submit manufacturers' certificate to Architect/Engineer for review, in quantities specified for Product Data.
- B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or Product, but must be acceptable to Architect/Engineer.

1.13 ARCHITECT'S ACTION

- A. Except for submittals for the record or information, where action and return is required, the Architect will review each submittal, mark to indicate action taken, and return promptly.

1. Compliance with specified characteristics is the Contractor's responsibility.

- B. Action Stamp: The Architect will stamp each submittal with a uniform, action stamp. The Architect will mark the stamp appropriately to indicate the action taken, as follows:
 1. Final Unrestricted Release: When the Architect marks a submittal "No Exception Taken," the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents. Final payment depends on that compliance.
 2. Final-But-Restricted Release: When the Architect marks a submittal "Furnish as Corrected," the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents. Final payment depends on that compliance.
 3. Returned for Resubmittal: When the Architect marks a submittal "Revise and Resubmit," do not proceed with Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal according to the notations; resubmit without delay. Repeat if necessary to obtain different action mark.
 - a. Do not use, or allow others to use, submittals marked "Revise and Resubmit" at the Project Site or elsewhere where Work is in progress.
 4. Returned for Resubmittal: When the Architect marks a submittal "Rejected," do not proceed with any work covered by this submittal, including purchasing, fabrication, delivery or any other activity. This submittal does not comply with the Contract Documents or Specifications.
 5. Restricted Release: When the Architect marks a submittal "Submit Specified items," work covered by the submittal may proceed provided it complies with the Contract Documents and the Specifications are submitted for Architect review.
 6. Other Action: Where a submittal is for information or record purposes or special processing or other activity, the Architect will return the submittal marked "Action Not Required."

- C. Unscheduled Submittals: The Architect will return unscheduled submittals to the sender without action.

1.14 CONSTRUCTION PHOTOGRAPHS

- A. Each month submit photographs to Architect/Engineer with Application for Payment.
- B. Photograph: Prints; color; 8 x 10 inch; mounted on 8-1/2 x 11 inch soft card stock, with left edge binding margin for three hole punch.
- C. Take two (2) aerial site photographs from differing directions indicating the relative progress of the Work, ten (10) days maximum prior to submitting Application for Payment.
- D. Identify photographs with date, time orientation and project identification.

PART 2 – PRODUCTS - Not Used

PART 3 – EXECUTION - Not Used

END OF SECTION

**SUBMITTALS
SECTION 01300 – 6**

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SECTION 01301
PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.01 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.

1.02 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. Requests for Information (RFIs).
 4. Project Web site.
 5. Project meetings.
 6. Project photographs.
- B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.

1.03 DEFINITIONS

- A. RFI: Request from Owner, Construction Manager, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

1.04 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, and telephone number of entity performing subcontract or supplying products.
 2. Number and title of related Specification Section(s) covered by subcontract.
 3. Drawing number and detail references, as appropriate, covered by subcontract.
- B. Key Personnel Names: Within seven days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.
1. Post copies of list in project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.

1.05 GENERAL COORDINATION PROCEDURES

- A. Coordination: Coordinate construction operations included in different Sections of the

Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Coordination: Each contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its operations with operations, included in different Sections that depend on each other for proper installation, connection, and operation.
1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 2. Coordinate installation of different components with other contractors to ensure maximum performance and accessibility for required maintenance, service, and repair.
 3. Make adequate provisions to accommodate items scheduled for later installation.
- C. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
1. Preparation of Contractor's construction schedule.
 2. Preparation of the schedule of values.
 3. Installation and removal of temporary facilities and controls.
 4. Delivery and processing of submittals.
 5. Progress meetings.
 6. Pre-installation conferences.
 7. Project closeout activities.
 8. Startup and adjustment of systems.
- E. Conservation: Coordinate construction activities to ensure that operations are carried out 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.

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1.06 COORDINATION DRAWINGS

- A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely shown on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.
1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
 - a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
 - b. Coordinate the addition of trade-specific information to the coordination drawings by multiple contractors in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
 - c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
 - d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
 - e. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
 - f. Indicate required installation sequences.
 - g. Indicate dimensions shown on the Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.
- B. Coordination Drawing Organization: Organize coordination drawings as follows:
1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.
 2. Plenum Space: Indicate sub-framing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within ceiling plenum to accommodate layout of light fixtures indicated on Drawings. Indicate areas of conflict between light fixtures and other components.
 3. Mechanical Rooms: Provide coordination drawings for mechanical rooms showing plans and elevations of mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment.
 4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.
 5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
 6. Mechanical and Plumbing Work: Show the following:
 - a. Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
 - b. Dimensions of major components, such as dampers, valves, diffusers,

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- access doors, cleanouts and electrical distribution equipment.
 - c. Fire-rated enclosures around ductwork.
 - d. Plan piping sizes and floor penetration arrays within wall assemblies.
 - 7. Electrical Work: Show the following:
 - a. Runs of vertical and horizontal conduit 1-1/4 inches (32 mm) in diameter and larger.
 - b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire-alarm locations.
 - c. Panel board, switch board, switchgear, transformer, busway, generator, and motor control center locations.
 - d. Location of pull boxes and junction boxes, dimensioned from column center lines.
 - 8. Fire-Protection System: Show the following:
 - a. Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads.
 - 9. Review: Architect will review coordination drawings to confirm that the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If Architect determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Architect will so inform Contractor, who shall make changes as directed and resubmit.
 - 10. Coordination Drawing Prints: Prepare coordination drawing prints according to requirements in Division 01 Section "Submittal Procedures."
 - 11. Information Technology Rooms: The selected GC is to coordinate with the owner's IT personnel in creating coordination documents and installation of all IT related equipment and infrastructure.
- C. Coordination Digital Data Files: Prepare coordination digital data files according to the following requirements:
 - 1. File Preparation Format: Same digital data software program, version, and operating system as original Drawings.
 - 2. File Preparation Format: DWG, Version, operating in AutoCAD Architecture 2016 operating system.
 - 3. File Submittal Format: Submit or post coordination drawing files using format same as file preparation format.
 - 4. Architect will furnish Contractor one set of digital data files of Drawings for use in preparing coordination digital data files upon receipt of completed Cad Request Release form.
 - a. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Drawings.
 - b. Digital Data Software Program: Drawings are available in AutoCAD Architecture 2016.
 - c. Contractor shall execute a data licensing agreement in the form of Agreement form acceptable to Owner and Architect.

1.07 REQUESTS FOR INFORMATION (RFIs)

- A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
 - 1. Architect will return RFIs submitted to Architect by other entities controlled by Contractor with no response.

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2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
 3. Construction Progress Meetings: If during the course of a scheduled construction progress meeting, a question is raised and resolved at the meeting, the resolution of the issue will be recorded in the meeting minutes and shall be considered formal direction to proceed under that course of action. The Architect will not issue a separate document echoing that direction, nor shall the Contractor issue a confirming RFI. If the Contractor believes that the direction results in a change in the contract sum or schedule, he shall submit a proposal for consideration by the Owner as stipulated elsewhere in this Section.
 4. Reference Division 1 section "Progress Management and Coordination".
- 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.
 4. Name of Contractor.
 5. Name of Architect and Construction Manager.
 6. RFI number, numbered sequentially.
 7. RFI subject.
 8. Specification Section number and title and related paragraphs, as appropriate.
 9. Drawing number, date of drawings, revision number, and detail references, as appropriate. The drawing shall be the latest dated drawing issued.
 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.
 - a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.
- C. RFI Forms: Software-generated form with substantially the same content as indicated above, acceptable to Architect.
1. Attachments shall be electronic files in Adobe Acrobat PDF format.
- D. Architect's and Construction Manager's Action: Architect and Construction Manager 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. EST will be considered as received the following working day.
1. 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.

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- 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 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 Division 01 Section "Contract Modification Procedures."
 - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect and Construction Manager in writing within 7 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 monthly. The project website shall generate and update of the RFI log and immediately notify via e-mail the Architect and Owner when an RFI has been posted and the Contractor and/or subcontractors when the RFI has been responded to. The Contractor will be required to distribute the RFI response to affected parties. Review the Owner's or Architect's response and post on the project's website for the Architect's notification within seven days if Contractor disagrees with Architect's response.
Include the following:
 - 1. Project name.
 - 2. Name and address of Contractor.
 - 3. Name and address of Architect and Construction Manager.
 - 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 and Construction Manager's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect and Construction Manager within seven days if Contractor disagrees with response.
- G. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
- H. Identification of related Field Order, Work Change Directive, Proposal Request, as appropriate.
- I. Forms to be used for all RFI are attached to the end of this section.

1.08 PROJECT WEB SITE

- A. The Contractor shall provide in its bid the cost to provide an interactive project website for the purpose of providing electronic access to project documents generated during the course of construction for all parties involved in the project. The purpose of establishing this website is to cut down on the amount of paper used on the project, to substantially reduce the costs associated with sending documents between parties via postal or delivery services, and to provide time efficiencies in the project for all parties involved. It is up to the Contractor to select the provider of this service. The provider of the interactive website shall be capable of providing training free of charge to the Owner, Architect, the Architect's sub-consultants, Contractor, all subcontractors, sub-subcontractors, and suppliers on a scheduled

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basis once the Owner has issued the Notice to Proceed.

1. All fees for this service are to be paid by the Contractor.
- B. The types of documents to be hosted on the website include, but may not be limited to, the following:
- Architects Supplemental Instructions (ASIs)
 - Contractor's Schedule of Values
 - Contractor's List of Key Personnel and Contact Information
 - Contractor's Construction Schedule
 - Meeting Minutes
 - Requests for Information (RFIs) and Responses
 - Product Submittals (except for product samples)
 - Proposal Requests (PRs)
 - Change Order Proposals (COPs)
 - Change Orders
 - Construction Change Directives (CCDs)
 - Certificate(s) of Substantial Completion
 - Progress Photographs
 - Any close-out documents not listed above
- C. All documents to be posted to the project website will be required to be in PDF file format. Photos to be in JPEG file format.
- D. The provider of the interactive website, as part of their services, shall provide a free downloadable document editing software program to be used for providing review comments directly on the posted documents as applicable.

1.09 PROJECT MEETINGS

- A. General: Construction Manager will schedule and conduct meetings and conferences at Project site unless otherwise indicated.
1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees two days prior to meeting date.
 3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner, Construction Manager, and Architect, within three days of the meeting.
 4. Changes to prior minutes shall be noted at the beginning of each meeting and recorded as the first item of business.
- B. Preconstruction Conference: Construction Manager 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. Conduct the conference to review responsibilities and personnel assignments.
 2. Attendees: Authorized representatives of Owner, Owner's Commissioning Authority, Construction Manager, 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.
 3. Agenda: Discuss items of significance that could affect progress, including the

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following:

- a. Tentative construction schedule.
- b. Phasing.
- c. Critical work sequencing and long-lead items.
- d. Designation of key personnel and their duties.
- e. Lines of communications.
- f. Procedures for processing field decisions and Change Orders.
- g. Procedures for RFIs.
- h. Procedures for testing and inspecting.
- i. Procedures for processing Applications for Payment.
- j. Distribution of the Contract Documents.
- k. Submittal procedures.
- l. LEED requirements.
- m. Preparation of record documents.
- n. Use of the premises and existing building.
- o. Work restrictions.
- p. Working hours.
- q. Owner's occupancy requirements.
- r. Responsibility for temporary facilities and controls.
- s. Procedures for moisture and mold control.
- t. Procedures for disruptions and shutdowns.
- u. Construction waste management and recycling.
- v. Parking availability.
- w. Office, work, and storage areas.
- x. Equipment deliveries and priorities.
- y. First aid.
- z. Security.
- aa. Progress cleaning.

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

C. Pre-installation Conferences: Conduct a pre-installation conference at Project site before each construction activity that requires 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, Construction Manager, and Owner's Commissioning Authority 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. Review of mockups.
 - i. Possible conflicts.
 - j. Compatibility requirements.
 - k. Time schedules.
 - l. Weather limitations.
 - m. Manufacturer's written instructions.
 - n. Warranty requirements.
 - o. Compatibility of materials.

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- p. Acceptability of substrates.
 - q. Temporary facilities and controls.
 - r. Space and access limitations.
 - s. Regulations of authorities having jurisdiction.
 - t. Testing and inspecting requirements.
 - u. Installation procedures.
 - v. Coordination with other work.
 - w. Required performance results.
 - x. Protection of adjacent work.
 - y. 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.
- D. Project Closeout Conference: Construction Manager will schedule and conduct a project closeout conference, at a time convenient to Owner and Architect, but no later than 90 days prior to the scheduled date of Substantial Completion.
- 1. Conduct the conference to review requirements and responsibilities related to Project closeout.
 - 2. Attendees: Authorized representatives of Owner, Owner's Commissioning Authority, Construction Manager, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
 - a. Preparation of record documents.
 - b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
 - c. Submittal of written warranties.
 - d. Requirements for completing LEED documentation.
 - e. Requirements for preparing operations and maintenance data.
 - f. Requirements for delivery of material samples, attic stock, and spare parts.
 - g. Requirements for demonstration and training.
 - h. Preparation of Contractor's punch list.
 - i. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
 - j. Submittal procedures.
 - k. Coordination of separate contracts.
 - l. Owner's partial occupancy requirements.
 - m. Installation of Owner's furniture, fixtures, and equipment.
 - n. Responsibility for removing temporary facilities and controls.
 - 4. Minutes: Entity conducting meeting will record and distribute meeting minutes.
- E. Progress Meetings: Construction Manager will conduct progress meetings at biweekly intervals.
- 1. Coordinate dates of meetings with preparation of payment requests.
 - 2. Attendees: In addition to representatives of Owner, Owner's Commissioning

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- Authority, Construction Manager, and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - 1) Review schedule for next period.
 - b. Review present and future needs of each entity present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Resolution of BIM component conflicts.
 - 4) Status of submittals.
 - 5) Deliveries.
 - 6) Off-site fabrication.
 - 7) Access.
 - 8) Site utilization.
 - 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 within three days 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.
- F. Coordination Meetings: Construction Manager will conduct Project coordination meetings at biweekly intervals. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and pre-installation conferences.
1. Attendees: In addition to representatives of Owner, Owner's Commissioning Authority, Construction Manager, and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meetings shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Review and correct or approve minutes of the previous coordination meeting.

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Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

- a. Combined Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to combined Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - b. Schedule Updating: Revise combined Contractor's construction schedule after each coordination meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.
 - c. Review present and future needs of each contractor present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Resolution of BIM component conflicts.
 - 4) Status of submittals.
 - 5) Deliveries.
 - 6) Off-site fabrication.
 - 7) Access.
 - 8) Site utilization.
 - 9) Temporary facilities and controls.
 - 10) Work hours.
 - 11) Hazards and risks.
 - 12) Progress cleaning.
 - 13) Quality and work standards.
 - 14) Change Orders.
3. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.
- G. Project Photography
1. General Contractor to provide 5 monthly aerial photos to Owner in hard copy and electronic media.
 2. General Contractor to provide weekly photo update to Owner with at least 8 captioned progress photos on PowerPoint format.
- H. Forms: Used as part of the requirements of this section are attached at the end of this section and are as follows:
1. AIA Document AIA G716 2004
 2. RFI Evaluation Form

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

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AIA[®] Document G716[™] – 2004

Request for Information (RFI)

TO:

FROM:

PROJECT:

ISSUE DATE:

RFI No.:

REQUESTED REPLY DATE:

PROJECT NUMBERS:

COPIES TO:

RFI DESCRIPTION: *(Fully describe the question or type of information requested.)*

REFERENCES/ATTACHMENTS: *(List specific documents researched when seeking the information requested.)*

SPECIFICATIONS

DRAWINGS

OTHER

SENDER'S RECOMMENDATION: *(If RFI concerns a site or construction condition, the sender may provide a recommended solution, including cost and/or schedule considerations.)*

RECEIVER'S REPLY: *(Provide answer to RFI, including cost and/or schedule considerations.)*

By: _____ Date: _____ Copies to: _____

NOTE: This reply is not an authorization to proceed with work involving additional cost, time or both. If any reply requires a change to the Contract Documents, a Change Order, Construction Change Directive or a Minor Change in the work must be executed in accordance with the Contract Documents.



REQUEST FOR INFORMATION EVALUATION



Bessolo Design Group, 7901 4th St. N., Suite 200, St. Petersburg, Florida 33702

Project Name: _____ BDG Project No. _____ RFI No. _____

Date Received: _____ Date of Review: _____ Reviewed by: _____

In accordance with BDG's policy and procedures for evaluating potential Requests for Information (RFI's), a review of the document is conducted to determine if the document is a justifiable and complete request.

The attached document is considered a justifiable Request for information (RFI) within the definition of the Contract Documents and has been classified as one of the following categories:

- | | |
|---|--|
| <input type="checkbox"/> Interpretation of Contract Documents | <input type="checkbox"/> Clarification of Contract Documents |
| <input type="checkbox"/> Drawing/Plan Clarifications | <input type="checkbox"/> Constructability Issue |
| <input type="checkbox"/> Site Condition Issue | <input type="checkbox"/> Additional Drawings/Specifications |

The attached RFI is determined to be a justifiable and complete Request for information (RFI), response is noted on the attached document:

This reply is not an authorization to proceed with work involving additional cost, time or both. If any reply requires a change to the Contract Documents, a Change Order, Construction Change Directive or a Minor Change in the work, it must be approved and executed by the Owner in accordance with the Contract Documents.

The attached RFI is REJECTED due to insufficient required information. The following information is missing and must be included in the RFI:

- | | |
|--|---|
| <input type="checkbox"/> Specification/Drawing/and detail reference no. | <input type="checkbox"/> Clearly state why a response is needed |
| <input type="checkbox"/> Clear and concise issue requiring clarification | <input type="checkbox"/> GC's own interpretation of the issue |
| <input type="checkbox"/> GC's proposed response/solution | <input type="checkbox"/> Priority of the Request |
| <input type="checkbox"/> Confirm no Change Order Required | <input type="checkbox"/> Confirm no time extension required |

The attached document is NOT a Request for information (RFI) within the definition of the Contract Documents and therefore has not been reviewed and is being returned to you without a response. The attached document has NOT been entered into the project's RFI Log.

The attached document is considered one or more of the following:

- | | |
|--|---|
| <input type="checkbox"/> Project Communication | <input type="checkbox"/> Response to Non-Conformance Notice |
| <input type="checkbox"/> Request for Substitution/Or Equal Submittal | <input type="checkbox"/> Submittal and/or Shop Drawing |
| <input type="checkbox"/> Schedule Submittal/Change/Update | <input type="checkbox"/> Value Engineering Change Proposal |
| <input type="checkbox"/> Construction Deficiency | <input type="checkbox"/> Addresses Means and Methods |
| <input type="checkbox"/> Change in Design/Project Scope | <input type="checkbox"/> Other: _____ |

For evaluation and response in a timely manner, please resubmit the attached document in the proper format as stipulated in the Contract Documents.

SECTION 01302
CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.01 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.

1.02 SUMMARY

- A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
1. Startup construction schedule.
 2. Contractor's construction schedule.
 3. Construction schedule updating reports.
 4. Daily construction reports.
 5. Material location reports.
 6. Site condition reports.
 7. Special reports.
- B. Related Requirements:
1. Division 01 Section "Submittal Procedures" for submitting schedules and reports.
 2. Division 01 Section "Quality Requirements" for submitting a schedule of tests and inspections.

1.03 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. Cost Loading: The allocation of the schedule of values for the completion of an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum unless otherwise approved by Architect.
- C. 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.
- D. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

- E. Event: The starting or ending point of an activity.
- F. 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.
- G. Resource Loading: The allocation of manpower and equipment necessary for the completion of an activity as scheduled.

1.04 INFORMATIONAL SUBMITTALS

- A. Format for Submittals: Submit required submittals in the following format:
 - 1. Working electronic copy of schedule file, where indicated.
 - 2. PDF electronic file.
- B. Startup construction schedule.
 - 1. Approval of cost-loaded, startup construction schedule will not constitute approval of schedule of values for cost-loaded activities.
- C. Startup Network Diagram: Of size required to display entire network for entire construction period. Show logic ties for activities.
- D. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.
 - 1. Submit a working electronic copy of schedule, using software indicated, and labeled to comply with requirements for submittals. Include type of schedule (initial or updated) and date on label.
- E. CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports shall contain activity number, activity description, cost and resource loading, 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 all 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 all activities, sorted in ascending order by activity number and then early start date, or actual start date if known.
 - 3. Total Float Report: List of all activities sorted in ascending order of total float.
- F. Construction Schedule Updating Reports: Submit with Applications for Payment.
- G. Daily Construction Reports: Submit with Applications for Payment.
- H. Material Location Reports: Submit with Applications for Payment.

- I. Site Condition Reports: Submit at time of discovery of differing conditions.
- J. Special Reports: Submit at time of unusual event.

1.05 QUALITY ASSURANCE

- A. Scheduling Consultant Qualifications: An experienced specialist in CPM scheduling and reporting, with capability of producing CPM reports and diagrams within 24 hours of Architect's request.
- B. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to the preliminary construction schedule and Contractor's construction schedule, including, but not limited to, the following:
 - 1. Review software limitations and content and format for reports.
 - 2. Verify availability of qualified personnel needed to develop and update schedule.
 - 3. Discuss constraints, including phasing, work stages, area separations, interim milestones and partial Owner occupancy.
 - 4. Review delivery dates for Owner-furnished products.
 - 5. Review schedule for work of Owner's separate contracts.
 - 6. Review submittal requirements and procedures.
 - 7. Review time required for review of submittals and resubmittals.
 - 8. Review requirements for tests and inspections by independent testing and inspecting agencies.
 - 9. Review time required for Project closeout and Owner startup procedures.
 - 10. Review and finalize list of construction activities to be included in schedule.
 - 11. Review procedures for updating schedule.

1.06 COORDINATION

- A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.
- B. 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.

PART 2 - PRODUCTS

2.01 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Time Frame: Extend schedule from date established for commencement of the Work 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.

- B. Activities: Treat each story or separate area as a separate numbered activity for each main element of the Work. Comply with the following:
1. 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.
 2. Submittal Review Time: Include review and resubmittal times indicated in Division 01 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.
 3. 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.
 4. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and final completion.
- C. 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. Work under More Than One Contract: Include a separate activity for each contract.
 3. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
 4. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Division 01 Section "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
 5. Owner-Furnished Products: Include a separate activity for each product. Include delivery date indicated in Division 01 Section "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
 6. 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.
 7. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
 - a. Subcontract awards.
 - b. Submittals.
 - c. Purchases.
 - d. Mockups.
 - e. Fabrication.
 - f. Sample testing.
 - g. Deliveries.
 - h. Installation.
 - i. Tests and inspections.
 - j. Adjusting.
 - k. Curing.

- I. Building flush-out.
 - m. Startup and placement into final use and operation.
 8. Construction Areas: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
 - a. Structural completion.
 - b. Temporary enclosure and space conditioning.
 - c. Permanent space enclosure.
 - d. Completion of mechanical installation.
 - e. Completion of electrical installation.
 - f. Substantial Completion.
- D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and final completion.
- E. Cost Correlation: Superimpose a cost correlation timeline, indicating planned and actual costs. On the line, show planned and actual dollar volume of the Work performed as of planned and actual dates used for preparation of payment requests.
 1. See Division 01 Section "Payment Procedures" for cost reporting and payment procedures.
- 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 Contract Time.
- G. 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, and equipment required to achieve compliance, and date by which recovery will be accomplished.
- H. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE (CPM SCHEDULE)

- A. General: Prepare network diagrams using AON (activity-on-node) format.
- B. Startup Network Diagram: Submit diagram within 7 days of date established for the Notice to Proceed. Outline significant construction activities for the first 90 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.
- C. CPM Schedule: Prepare Contractor's construction schedule using a time-scaled CPM network analysis diagram for the Work.

1. Develop network diagram in sufficient time to submit CPM schedule so it can be accepted for use no later than 20 days after date established for the notice to Proceed.
 - a. Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates, regardless of Architect's approval of the schedule.
 2. Conduct educational workshops to train and inform key Project personnel, including subcontractors' personnel, in proper methods of providing data and using CPM schedule information.
 3. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
 4. Use "one workday" as the unit of time for individual activities. Indicate nonworking days and holidays incorporated into the schedule in order to coordinate with the Contract Time.
- D. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the startup network diagram, prepare a skeleton network to identify probable critical paths.
1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:
 - a. Preparation and processing of submittals.
 - b. Mobilization and demobilization.
 - c. Purchase of materials.
 - d. Delivery.
 - e. Fabrication.
 - f. Utility interruptions.
 - g. Installation.
 - h. Work by Owner that may affect or be affected by Contractor's activities.
 - i. Testing.
 - j. Punch list and final completion.
 - k. Activities occurring following final completion.
 2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.
 3. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
 4. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.
 - a. Subnetworks on separate sheets are permissible for activities clearly off the critical path.
 5. Cost- and Resource-Loading of CPM Schedule: Assign cost to construction activities on the CPM schedule. Do not assign costs to submittal activities. Obtain Architect's approval prior to assigning costs to fabrication and delivery activities. Assign costs under main subcontracts for testing and commissioning activities, operation and maintenance manuals, punch list activities, Project record documents, and demonstration and training (if applicable), in the

- amount of 5 percent of the Contract Sum.
- a. Each activity cost shall reflect an appropriate value subject to approval by Architect.
 - b. Total cost assigned to activities shall equal the total Contract Sum.
- E. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using a network fragment to demonstrate the effect of the proposed change on the overall project schedule.
- F. Initial Issue of Schedule: Prepare initial network diagram from a sorted activity list indicating straight "early start-total float." Identify critical activities. Prepare tabulated reports showing the following:
1. Contractor or subcontractor and the Work or activity.
 2. Description of activity.
 3. Main events of activity.
 4. Immediate preceding and succeeding activities.
 5. Early and late start dates.
 6. Early and late finish dates.
 7. Activity duration in workdays.
 8. Total float or slack time.
 9. Average size of workforce.
 10. Dollar value of activity (coordinated with the schedule of values).
- G. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:
1. Identification of activities that have changed.
 2. Changes in early and late start dates.
 3. Changes in early and late finish dates.
 4. Changes in activity durations in workdays.
 5. Changes in the critical path.
 6. Changes in total float or slack time.
 7. Changes in the Contract Time.
- H. Value Summaries: Prepare two cumulative value lists, sorted by finish dates.
1. In first list, tabulate activity number, early finish date, dollar value, and cumulative dollar value.
 2. In second list, tabulate activity number, late finish date, dollar value, and cumulative dollar value.
 3. In subsequent issues of both lists, substitute actual finish dates for activities completed as of list date.
 4. Prepare list for ease of comparison with payment requests; coordinate timing with progress meetings.
 - a. In both value summary lists, tabulate "actual percent complete" and "cumulative value completed" with total at bottom.
 - b. Submit value summary printouts one week before each regularly scheduled progress meeting.

2.3 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. Accidents.
 8. Meetings and significant decisions.
 9. Unusual events (see special reports).
 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. Material Location Reports: At monthly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site. Indicate the following categories for stored materials:
1. Material stored prior to previous report and remaining in storage.
 2. Material stored prior to previous report and since removed from storage and installed.
 3. Material stored following previous report and remaining in storage.
- C. 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.

2.4 SPECIAL REPORTS

- A. General: Submit special reports directly to Architect within 1 day(s) of an occurrence. Distribute copies of report to parties affected by the occurrence.
- B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

PART 3 - EXECUTION**3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE**

- A. 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.
- B. 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.

END OF SECTION

SECTION 01303
PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.01 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. Division 01 Section "Closeout Procedures" for submitting photographic documentation as Project Record Documents at Project closeout.
 - 2. Division 01 Section "Submittal Procedures" for submitting photographic documentation as project record documents at project closeout.
 - 3. Division 01 section "Demonstration and Training" for submitting video recording of demonstration of equipment and training of Owners personnel.

1.02 INFORMATIONAL SUBMITTALS

- A. Key Plan: Submit key plan of Project site 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 unaltered, original, full-size image files within 5 days of taking photographs.
 - 1. Identification: Provide the following information with each image description in file metadata tag:
 - a. Name of Project.
 - b. Date photograph was taken.
 - c. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.

- C. Construction Photographs: Submit file of each photographic view within 5 days of taking photographs.
 - 1. Identification: On back of each print, provide an applied label or rubber-stamped impression with the following information:
 - a. Name of Project.
 - b. Date photograph was taken if not date stamped by camera.
 - c. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
 - d. Unique sequential identifier keyed to accompanying key plan.

- D. Weekly submission of photographs can be in a report form and be a PDF file. Include the Owner and Architect in the distribution.

1.03 USAGE RIGHTS

- A. Obtain and transfer copyright usage rights from photographer to Owner for unlimited reproduction of photographic documentation.

1.04 ADDITIONAL PHOTOGRAPHS

- A. If the Contractor for their own use, shoots additional photos or videos (i.e. aerial or satellite) those also are to be made available to the Owner and Architect.

PART 2 - PRODUCTS**2.01 PHOTOGRAPHIC MEDIA**

- A. Digital Images: Provide images in JPG or PDF format produced by a digital camera.

PART 3 - EXECUTION**3.01 CONSTRUCTION PHOTOGRAPHS**

- A. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.
 - 1. Maintain key plan with each set of construction photographs that identifies each photographic location.
- B. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
 - 1. Date and Time: Include date and time in file name for each image.
 - 2. Field Office Images: Maintain one set of images accessible in the field office at Project site, available at all times for reference. Identify images in the same manner as those submitted to Architect.
- C. Preconstruction Photographs: Before commencement of excavation, or starting construction, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points.
 - 1. Take a minimum of 20 photographs to show existing conditions adjacent to property before starting the Work.
- D. Periodic Construction Photographs: Take a minimum of 20 photographs, not including time lapse, weekly. Select vantage points to show status of construction and progress since last photographs were taken.
- E. Time Lapse Sequence Construction Photographs: Take a minimum of 10 photographs as indicated, to show status of construction and progress since last photographs were taken.
 - 1. Frequency: Take photographs weekly.
- F. Final Completion Construction Photographs: Take a minimum of 100 color photographs after date of Substantial Completion for submission as Project Record Documents.

- G. Additional Photographs: Architect or Owner may request photographs in addition to periodic photographs specified.
1. In emergency situations, take additional photographs within 24 hours of request.
 2. Circumstances that could require additional photographs include, but are not limited to, the following:
 - a. Special events planned at Project site.
 - b. Immediate follow-up when on-site events result in construction damage or losses.
 - c. Photographs to be taken at fabrication locations away from Project site.
 - d. Substantial Completion of a major phase or component of the Work.
 - e. Extra record photographs at time of final acceptance.

END OF SECTION

SECTION 01304
PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.01 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.

1.02 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. Division 01 Section "Allowances" for products selected under an allowance.
 2. Division 01 Section "Alternates" for products selected under an alternate.
 3. Division 01 Section "Substitution Procedures" for requests for substitutions.
 4. Division 01 Section "References" for applicable industry standards for products specified.

1.03 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 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 specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.04 ACTION SUBMITTALS

- A. Comparable Product Requests: Submit request for consideration of each comparable product. Identify 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 one week of receipt of a comparable product request. Architect will notify Contractor of approval or rejection of proposed comparable product request within a reasonable number of days of receipt of request, or of receipt of additional information or documentation, whichever is later.
 - a. Form of Approval: As specified in Division 01 Section "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 Division 01 Section "Submittal Procedures." Show compliance with requirements.

1.05 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. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
 2. If a dispute arises between contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.

1.06 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.
7. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.07 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 Divisions 02 through 33 Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Division 01 Section "Closeout Procedures."

PART 2 - PRODUCTS

2.01 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 not in conflict with 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.
 6. Or Equal: For products specified by name and accompanied by the term "or equal," or "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.
- B. Product Selection Procedures:
1. 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 be considered. Subject to review and approval of Architect.
 2. 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 be considered. Subject to review and approval of Architect.
 3. Products:
 - a. Restricted List: 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 be considered.
 - b. Non-restricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.
 4. Manufacturers:
 - a. Restricted List: 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 be considered.
 - b. Non-restricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.
 5. 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.
- 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 Division 01 Section "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.

2.02 COMPARABLE PRODUCTS

- A. Conditions for Consideration: 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 the proposed product does not require revisions to the Contract Documents that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
 2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 3. Evidence that proposed product provides specified warranty.
 4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
 5. Samples, if requested.
 6. Indicate any cost advantage to the Owner and / or no cost change for the using of the comparable product. Contractor is to absorb any associated cost (including but not limited to) Architects/ Engineers redesign, permit fees, work under separate contracts and current work under contract.
 7. Evidence that proposed product does not affect the current schedule.

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01400
QUALITY CONTROL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications, apply to this section.

1.02 SECTION INCLUDES

- A. Quality assurance and control of installation.
- B. References.
- C. Field samples.
- D. Mock-ups.
- E. Inspection and testing laboratory services.
- F. Manufacturers' field services and reports.

1.03 RELATED SECTIONS

- A. Section 01300 – Submittals: Submission of Manufacturers' Instructions and Certificates.
- B. Section 01401 – Structural Threshold Inspection, if applicable.

1.04 QUALITY ASSURANCE/CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply fully with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- D. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform work by persons qualified to produce workmanship of specified quality
- F. Secure Products in place with positive anchorage devices, designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

1.05 REFERENCES

- A. Conform to reference standard by date of issue current on date of Owner—Contractor Agreement.
- B. Obtain copies of standards when required by Contract Documents.

- C. Should specified reference standards conflict with Contract Documents, request clarification for Architect/Engineer before proceeding.
- D. The contractual relationship of the parties to the Contract shall not be altered from the Contract documents by mention or inference otherwise in any reference document.

1.06 FIELD SAMPLES

- A. Install field samples at the site as required by individual specifications Sections for review.
- B. Acceptable samples represent a quality level for the Work.
- C. Where field sample is specified in individual Sections to be removed, clear area after field sample has been accepted by Architect/Engineer.

1.07 MOCK-UPS

- A. Tests will be performed under provisions identified in this section.
- B. Assemble and erect specified items, with specified attachment and anchorage devices, flashings, seals and finishes, where specified in other sections of this project manual.
- C. Where mock-up is specified in individual Sections to be removed, clear area after mock-up has been accepted by Architect/Engineer/ Owner.
- D. In addition to mock-ups specified in other sections of this project manual, the general contractor shall mock up one apartment unit of each unit type shown on the drawings. These unit mock-ups shall be completed in a two (2) step process as follows:
 - 1. Step 1;
 - a. All partitions, soffits and ceilings completely framed.
 - b. All electrical devices roughed-in for Owner/ Architect review and approval prior to proceeding to step 2.
 - 2. Step 2;
 - a. All wall and ceiling finishes installed.
 - b. Windows and doors complete with all hardware and screens.
 - c. Framed openings, soffits and access doors.
 - d. Millwork trim, casing, moldings, wall base.
 - e. Tile work with all joints completely grouted and sealed.
 - f. All floor transitions/ thresholds between materials
 - g. Kitchen and bathroom cabinets, countertops, and appliances.
 - h. Bathroom accessories including grab bars, towel bars, soap dishes, shower curtain rod, mirrors, medicine cabinets, handicap shower seats.
 - i. All finishes including carpet, vinyl flooring, tile and painting.
 - j. All electrical receptacles and switches, electrical panels, fire alarm devices, smoke and heat detectors, CO detectors, speakers, disconnect switches, light fixtures, low voltage outlets.
 - k. Mechanical and plumbing systems including ductwork, grilles, access doors, heating/air conditioning unit, condensate lines, plumbing fixtures and trim.

Each unit shall be reviewed by the owner, architect, engineer and interior decorator for compliance with the contract documents. The mock up unit shall serve as the standard by which all other apartment units are to be built. Mock ups may serve as a sales unit

for marketing purposes if desired and directed by the owner. The above list may not include all items that are required for each project, refer to the construction drawings for all work required in each resident unit.

1.08 INSPECTION AND TESTING LABORATORY SERVICES

- A. Owner will appoint, employ, and pay for service of an independent firm to perform inspection and testing.
- B. The independent firm will perform inspections, tests and other services specified in individual specification Sections and as required by the Architect/Engineer.
- C. Reports will be submitted by the independent firm to the Architect/Engineer, in triplicate, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.
- D. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools , storage and assistance as requested.
 - 1. Notify Architect/Engineer and independent firm 24 hours prior to expected time for operations requiring services.
 - 2. Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.
- E. Re-testing required because of non-conformance to specified requirements shall be performed by the same independent firm on instructions by the Architect/Engineer. Payment for re-testing will be charged to the Contractor by deducting inspection or testing charges from the Contract Sum/Price.

1.09 MANUFACTURERS' FIELD SERVICES AND REPORTS

- A. When specified in individual specification Sections, or required by material or Product suppliers or manufacturers, that qualified staff personnel observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust, and balance of equipment as applicable, or to initiate instructions when necessary, this service shall be provided at no cost to the Owner.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

3.01 REPAIR AND PROTECTION

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

END OF SECTION

**QUALITY CONTROL
SECTION 01400-3**

05/15/2020

**SECTION 01401
THRESHOLD INSPECTION PLAN**

1.01 GENERAL

A. QUALIFICATIONS OF THE THRESHOLD INSPECTOR

1. The Threshold Inspector shall be certified to act as a special inspector according to the Florida Building Code, Standards and Laws and Statutes.
2. The Threshold Inspector shall have a minimum of seven (7) years of experience in special inspection and design of similar structures.
3. The Threshold Inspector authorized representative shall have a minimum of five (5) years' of experience in inspection of similar structures.
4. Resumes for both the Threshold Inspector and its authorized representative shall be submitted to the Owner, the Enforcing Agency having jurisdiction, and the Design Professional for review .
5. The Threshold Inspector shall provide Insurance Certificates to the Owner for all applicable coverage, i.e., professional liability specifically covering special inspection assignments, general liability, automobile coverage, workers' compensation, and any other appropriate coverage.

B. DESCRIPTION OF WORK

1. The Threshold Inspector shall furnish all special inspection services for the above referenced Threshold Building including personnel, labor, materials, equipment and tools necessary for the implementation of the services to assure and verify compliance with requirements specified or indicated herein.
2. All special inspection services shall conform in all respects to the requirements of the Contract Documents including all approved amendments and addenda, and the State of Florida Threshold Law - Chapter 553 of the Florida Statutes.
3. The special inspection services shall consist primarily of observation and inspection of all structural members, frames, systems, and other building components that are required to resist and transmit vertical and lateral loads from the superstructure to the ground while maintaining structural integrity and life safety of the entire structure in parts and as a whole.

C. SPECIAL INSPECTOR'S REPONSIBILITIES

1. The Special Inspector is responsible for observing that the construction of the structural system complies with the official contract documents and that the shoring and re-shoring of the construction is in accordance with the shoring and re-shoring drawings provided by the Contractor to the enforcing agency. Official contract documents are defined as the permitted plans, addenda, the specifications with all amendments thereto, the threshold plan, and approved shop drawings. The interpretations of the permitted documents will be provided by the A & E of record.

The Special Inspector is responsible to the enforcing agency and the Owner. The Special Inspector is also required to meet the Owner's guidelines.

2. The Special Inspector will meet with the representatives of the enforcing agency, Owner, Contractor, Subcontractors, testing laboratories and other interested parties to review specific threshold inspection requirements and procedures. This orientation will be accomplished at a pre-construction conference.
3. The Special Inspector or his or her authorized representative will visit the project site as demanded by the construction activity to inspect the various structural elements during the progress of the work. Further, it is required that the Special Inspector visit the project site on a regular periodic basis not less than once a week, or as required by the enforcing agency.
4. The Special Inspector will report observations of materials, workmanship or other features of construction deviating from the requirements of the official contract documents. Guidelines for observations covering specific areas of construction are listed in this plan.
5. Quality control inspections and testing by an independent testing laboratory are required by the specifications for some structural elements and will be available to the Special Inspector to supplement his or her own inspections.
6. The Special Inspector shall immediately notify the Contractor, enforcing agency, and A/E of record and the Owner when any non-conforming item is found. The Special Inspector shall complete inspection reports after each inspection, sign and seal each report and forward them to the architect of record, structural engineer of record, contractor, Owner and enforcing agency. Individual reports may include any or all of the following:
 - a. General report on construction progress.
 - b. Weather conditions.
 - c. Other personnel present during the inspections.
 - d. Detailed check-off reports on specific areas.
 - e. Reports of the corrections of deficiencies previously noted.
 - f. Special test reports, welder's certificates, sketches or other supplemental data.
 - g. Photographs.
7. At the completion of all structural work and after the correction of all deficiencies, the Special Inspector shall submit a signed and sealed statement to the building official conforming to Section 553.79 Subsection 7(a) Florida Statutes. Copies will be sent to the building official, owner, architect of record, structural engineer of record and contractor.

D. SPECIAL INSPECTOR'S OBSERVATIONS

The Special Inspector is cautioned that the contract requirements for this project are contained in the official contract documents. The following guidelines should be used in conjunction with a careful study of the official documents.

1. Review the official contract documents to be sure that the necessary documents are approved and available before the start of any phase of the structural work.
2. Review with the Contractor the construction procedure before the start of any phase of the structural work to make sure that it accommodates the design.
3. Review the independent testing laboratory and Contractor with the type of inspection and testing that is required by the specifications before the start of any phase of the structural work. Establish a clear method for marking all tested and inspected items. Confirm that the testing agency is using qualified personnel and completing all tests and inspections in a timely and professional manner.

4. After delivery to the job, inspect structural members for compliance with the office contract documents, damage and flaws. Confirm that the structural members are being protected and stored properly.
5. Verify that all tests, sampling or reports have been completed before finished work is covered and no longer capable of being inspected or tested.
6. Confirm the repair and treatment of areas containing defective work.

E. INSPECTOR OBLIGATIONS

The Special Inspector will notify the Contractor, Building Official, Architect/Engineer of Record, and Owner of the following:

1. The use of materials of workmanship which does not conform to the Official Contract Documents or which will cause improper construction, which is not acceptable. This will be done in writing.
2. Work which is not being done in accordance with the approved Official Contract Documents and revisions issued by the Architect/Engineer of Record.
3. The recommended removal or repair of faulty construction or of construction performed without inspection and not capable of being inspected or tested in place.
4. Approval for covering structural items that will not be capable of being inspected at a later date.
5. Placing of Concrete: Weather; temperature; kinds of concrete placed; parts of structure completed.
6. Test of Concrete: Review Independent Testing Agencies Test Reports.
7. Curing and Form Removal: Curing data and age (in hours) at beginning; date of completion; forms removed and condition of formed surfaces; defective areas repaired; defective sections replaced.
8. Structural Steel Placement.

2.01 PREPARATION CHECK LIST

- A. Licensed contractor's representative and contact person.
- B. Adequate supervision
- C. Approval Official Construction Documents/Shop Drawings
- D. Review pre-construction minutes and attend meetings where applicable to threshold inspections.

3.01 FIELD INSPECTION

The Special Inspector shall inspect the following items in accordance with the Construction Documents. Inspector shall inspect items on this list and other items as necessary to fill his or her responsibility.

- A. FOUNDATIONS AND SOIL PREPARATION
 1. Inspect excavation/subsurface preparation.
 2. Review density test results as required.
 3. Review soil reports/boring logs.

B. FOOTINGS

1. Inspect rebar before placement of concrete for:
 - a. Quality
 - b. Size
 - c. Grade
 - d. Placement
 - e. Concrete cover
 - f. Verify reinforcing is clean before concrete placement
2. Visually inspect dowels and/or anchor bolts for columns and walls above before concrete placement for:
 - a. Quantity
 - b. Size
 - c. Length
 - d. Location
 - e. Lap length/embedment length
3. Inspect provisions for utilities/conduit/sleeves, etc. before concrete placement. Verify additional reinforcing around such items as required.

C. COLUMNS AND WALLS

1. Visually inspect rebar before concrete placement:
 - a. Proper configuration and orientation
 - b. Anchorage to dowels
 - c. Quantity
 - d. Size
 - e. Lap lengths
 - f. Concrete cover
 - g. Embedded items (plates, bolts, inserts, etc.) properly placed and located.
2. Inspect dowels, columns and walls above before concrete placement:
 - a. Quantity
 - b. Anchorage to dowels
 - c. Size
 - d. Lap length/embedment length
3. Inspect provisions for utilities/conduit/sleeves, etc. before concrete placement. Verify additional reinforcing around such items as required.
4. Inspects joints before concrete placement (expansion, control, construction joints):
 - a. Approved location
 - b. Keyed and doweled as required
 - c. Waterstops as required

F. MASONRY

1. Inspect during construction:
 - a. Placement of full mortar coverage and joint widths on horizontal and vertical face shells per project documents and ACI 530.
 - b. Check clean-outs and preparation for grouting
 - c. Horizontal and vertical reinforcement placement, dovetails, inserts, embedments
 - d. Horizontal and vertical reinforcement lap lengths
 - e. Grouting of cells – confirm after grouting that cells are grouted solid full height
 - f. Workmanship

- g. Review test results and periodically inspect testing of mortar, grout wall tie backs, properly anchored and spaced
- h. Wall tie backs, properly anchored and spaced
- i. Check tie beam size, location, vertical spacing, reinforcing steel, corner bars, and end condition
- j. Check tie columns for spacing, size, reinforcing steel, corner bars and end conditions
- k. Control joints and expansion joints

G. CONCRETE – GENERAL

- 1. Inspect rebar before concrete placement:
 - a. Quantity
 - b. Size
 - c. Spacing/location/height of chairs
 - d. Check that reinforcement is tied and supported securely so that displacement will not occur during concrete placement
 - e. Lap lengths
 - f. Hooked or bent bars
 - g. Embedded items (plates, bolts, inserts, etc.) properly placed and located
 - h. Concrete cover per project specifications
 - i. Location of all splices
- 2. Inspect dowels:
 - a. Quantity
 - b. Size
 - c. Length
 - d. Location
 - e. Lap length/embedment length
- 3. Inspect provisions for utilities/sleeves, etc. and embedded fixtures before concrete placement. Verify additional reinforcing around such items as required.
 - a. Unless otherwise provided or approved, anchor bolts, inserts, pipe sleeves, pipes, conduits, wiring, flashing, instruments, other embedded fixtures and mechanical equipment should be fixed firmly in correct position before concrete is placed.
 - b. If embedded items are in conflict with each other or with reinforcing steel bars, or with other architectural/structural components, the location of these items shall not be changed, and/or cutting, bending, displacement or omission of bars shall not be allowed except as approved by Architect/Engineer of the project.
 - c. Check embedded items to insure proper placement as shown on approved construction drawings.
- 4. Inspect joints before concrete placement:
 - a. Approved location
 - b. Layed and doweled as required
- 5. Curing of Concrete:
 - a. Check the details of specified methods and the number of days required for curing
- 6. Repairs:
 - a. check the cleaning of areas to be patched
 - b. check for honeycomb and rock pockets and see if they have been cut back to solid material and also if loose material has been removed

- c. check the requirements for the treatment of areas containing defective concrete
 - d. check for complete curing of patched areas
 - 7. Quality Control of Concrete at Job Site:
 - a. Quality control shall be done by the testing lab personnel. The threshold inspector shall comply with Section 3.01 H.
 - 8. Conveying and Placing:
 - a. Check method of placement in handling of concrete, to prevent segregation, height concrete is allowed to drop freely, and method used to guide concrete into place.
 - b. Check that concrete is placed rapidly enough to avoid formation of cold joints.
 - c. Check that each layer of concrete is vibrated until fully consolidated. Do not allow vibration to be overdone to the extent of promoting segregation.
- H. CONCRETE TESTING (ALL POURS)
 - 1. Review test results and periodically inspect testing for proper slump, compression tests, etc. as required.
 - 2. Inspect placement procedures, verify conformance to project specifications and ACI 301.
 - 3. Instruct Contractor that no water is to be added after testing, unless approved by the Engineer of Record.
- I. FORMS AND SHORING INCLUDING RESHORING (ALL POURS)
 - 1. Visually inspect formwork and shoring before construction loads are applied:
 - 2. Inspect provisions for any special loadings during construction as shown on contract documents.
 - 3. Inspect for removal of all debris before concrete placement.
 - 4. Check that all shoring is in place per the submitted drawings. Verify sequence of shoring, concrete test reports and re-shoring after form removal.
- J. PREMANUFACTURED ROOF TRUSSES
 - 1. Verification of design by Florida registered engineer.
 - 2. Correct on-site storage prior to erection.
 - 3. Verification that components are in accordance with all requirements prior to erection.
 - 4. Verification that proper bracing, bridging, and blocking have been provided.
 - 5. Verification of all connections to include size, number, type, and galvanizing of all washers, plates, clips, nails, welds, screws, and bolts.
- K. ROOF DECK
 - 1. Proper on-site storage of roof deck material.
 - 2. Correct attachment of deck to building structure.
 - 3. Verification of roof deck properties conform to all requirements.
- L. STRUCTURAL STEEL INSPECTION
 - 1. General
 - a. Check the steel on the job with the plans and specifications.

- b. Check mill certifications.
 - c. Check grade of steel members, pipe, tubing and bolts for conformance with specifications
 - d. Inspect steel members for distortion, excessive rust, flaws and burned holes.
 - e. Call for laboratory test reports when in doubt
 - f. Check steel members for sizes, camber, sweep and dimensional tolerances.
 - g. Insert for surface finish galvanized or shop paint coat.
 - h. Check the columns for bearing surfaces, size, adequate base plates, splice plates and bearing.
 - i. Check splicing for conformance to plans
 - j. Check to see that ends of beams, joists and girders bearing on masonry or concrete conform to the details on the plan.
 - k. Inspect light steel bearing members for proper gauge, locations of splices, reinforcement and studs and plates are cut and adequate bearing on supporting members.
 - l. Inspect frames for proper fit, sizes, and conformance to plans.
 - m. Check anchor bolts for size, length, embedment and protrusion of threaded end for nut engagement.
2. Connections – Bolted Connections
- a. Check for bolt holes, number, location, spacing, edge and end distances.
 - b. Check bolts for proper size, length, washers, type and grade of bolts and nuts.
 - c. Verify that unfinished bolts are used only in location noted on the plans and specifications.
 - d. Note any pen holes to check for omission of required bolts.
 - e. Check that Independent Testing Laboratory has checked bolt tightening for methods used applying the required minimum torque, calibration of the wrenches used and damage to bolt threads, contact surfaces and proper tightening of the bolts.
3. Welding
- a. Inspect for size, spacing, type and location as per approved plans.
 - b. Check to see that all welders are certified.
 - c. Check to see that the base metal conforms to the specifications.
 - d. Verify that testing of welds is specified by a testing lab, and coordinated with erector for weld testing at adequate stage of construction.
 - e. Review the reports by testing labs.
 - f. Check to see that welds are clean and free from slag.
 - g. Check for rust protection of welds as per specifications.
 - h. Check to see that defective welds are clearly marked and have been repaired
 - i. Inspect welding rods for conformance to specifications.
- M. LIGHTGAGE STEEL CONSTRUCTION
- 1. Verification of approved shop drawings prepared under the direct supervision of a Professional Engineer currently licensed in the State of Florida.
 - 2. Verification that all light gage steel components are in accordance with the signed and sealed approved shop drawings and/or construction documents for:
 - a. Components size and thickness.
 - b. Yield strength of steel.

- c. Proper number, size and configuration of fasteners.
 - d. Proper size, type and configuration of welds and weld material.
3. Inspect components to verify minimal amounts of distortion, excessive rust and flaws.

4.01 RELATED RESPONSIBILITIES OF OTHERS

A. OWNER

1. Arrange for all necessary contact documents including geotechnical report, material test reports, and approved shop drawings to be furnished to the Threshold Inspector in a timely manner during the progress of the work.
2. Retain a qualified Geotechnical Consultant for earthwork and foundation work quality assurance and testing.
3. Retain a qualified Testing Agency for material testing and quality assurance beyond those covered by the Geotechnical Consultant.
4. Ensure that the Contractor provides the Threshold Inspector signed and sealed documents of all work under the Contractor's responsibility but not limited to the shoring and reshoring plans and the precast erection sequencing and procedures.

B. CONTRACTOR

1. Cooperate, assist, and provide free access to the Threshold Inspector at all times in performing the special inspection services as specified herein.
2. Advise the Threshold Inspector in a timely fashion of construction schedules and planned operations to assure proper and timely observation and inspection of items specified herein.
3. Submit a request to and obtain formal approval from the Design Professional for any deviations to the contract documents prior to commencing such work. The Contractor shall be solely responsible for correcting any installed unauthorized deviations.
4. Provide the Threshold Inspector with appropriate office facilities at the construction site including the following minimum items: desk, chair, desk lamp, plan table, plan rack, filing cabinet, telephone, utilities, air conditioning, and janitorial services.
5. Provide signed and sealed drawings for documents under the Contractor's responsibility but not limited to the shoring and re-shoring plans and the precast erection sequencing and procedures.

END OF SECTION

SECTION 01421
REFERENCE STANDARDS AND DEFINITIONS

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 DEFINITIONS

- A. General: Basic contract definitions are included in the Conditions of the Contract.
- B. "Indicated": The term "indicated" refers to graphic representations, notes, or schedules on the Drawings; or to other paragraphs or schedules in the Specifications and similar requirements in the Contract Documents. Terms such as "shown," "noted," "scheduled," and "specified" are used to help the user locate the reference. Location is not limited.
- C. "Directed": Terms such as "directed," "requested," "authorized," "selected," "approved," "required," and "permitted" mean directed by the Architect, requested by the Architect, and similar phrases.
- D. "Approved": The term "approved," when used in conjunction with the Architect's action on the Contractor's submittals, applications, and requests, is limited to the Architect's duties and responsibilities as stated in the Conditions of the Contract.
- E. "Regulations": The term "regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": The term "furnish" means to supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": The term "install" describes operations at the Project site including the actual unloading, temporary storage, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- H. "Provide": The term "provide" means to furnish and install, complete and ready for the intended use.
- I. "Installer": An installer is the Contractor or another entity engaged by the Contractor, either as an employee, subcontractor, or contractor of lower tier, to perform a particular construction activity, including installation, erection, application, or similar operations. Installers are required to be experienced in the operations they are engaged to perform.
1. The term "experienced," when used with the term "installer," means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with the special requirements indicated; and having complied with requirements of authorities having jurisdiction.
 2. Trades: Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does

not imply that requirements specified apply exclusively to tradespersons of the corresponding generic name.

3. Assigning Specialists: Certain Sections of the Specifications require that specific construction activities shall be performed by specialists who are recognized experts in those operations. The specialists must be engaged for those activities, and their assignments are requirements over which the Contractor has no option. However, the ultimate responsibility for fulfilling contract requirements remains with the Contractor.
 - a. This requirement shall not be interpreted to conflict with enforcing building codes and similar regulations governing the Work. It is also not intended to interfere with local trade-union jurisdictional settlements and similar conventions.
- J. "Project site" is the space available to the Contractor for performing construction activities, either exclusively or in conjunction with others performing other work as part of the Project. The extent of the Project site is shown on the Drawings and may or may not be identical with the description of the land on which the Project is to be built.
- K. "Testing Agencies": A testing agency is an independent entity engaged to perform specific inspections or tests, either at the Project site or elsewhere, to report on and, if required, to interpret results of those inspections or tests.

1.03 SPECIFICATION FORMAT AND CONTENT EXPLANATION

- A. Specification Format: These Specifications are organized into Divisions and Sections based on the 16-division format and CSI/CSC's "MasterFormat" numbering system.
- B. Specification Content: These Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
 1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be interpolated as the sense requires. Singular words shall be interpreted as plural and plural words interpreted as singular where applicable as the context of the Contract Documents indicates.
 2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the Section Text, subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Contractor or by others when so noted.
 - a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

1.04 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 the date of the Contract Documents.

- C. **Conflicting Requirements:** Where compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement.
Refer uncertainties and requirements that are different, but apparently equal, to the Architect for a decision before proceeding.
 - 1. **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 the requirements. Refer uncertainties to the Architect for a decision before proceeding.

- D. **Copies of Standards:** Each entity engaged in construction on the Project must 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, the Contractor shall obtain copies directly from the publication source and make them available on request.

- E. **Abbreviations and Names:** Trade association names and titles of general standards are frequently abbreviated. Where abbreviations and acronyms are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standards-producing organization, authorities having jurisdiction, or other entity applicable to the context of the text provision. Refer to Gale Research's "Encyclopedia of Associations" or Columbia Books' "National Trade & Professional Associations of the U.S.," which are available in most libraries.

- F. **Abbreviations and Names:** Trade association names and titles of general standards are frequently abbreviated. The following abbreviations and acronyms, as referenced in the Contract Documents, mean the associated names. Names and addresses are subject to change and are believed, but are not assured, to be accurate and up-to-date as of the date of the Contract Documents.

AA	Aluminum Association 900 19th St., NW, Suite 300 Washington, DC 20006 www.aluminum.org	(202) 862-5100
AABC	Associated Air Balance Council 1518 K St., NW, Suite 503 Washington, DC 20005 www.aabchq.com	(202) 737-0202
AAMA	American Architectural Manufacturers Association 1827 Walden Office Sq., Suite 104 Schaumburg, IL 60173-4268 www.aamanet.org	(847) 303-5664
AAN	American Association of Nurserymen (See ANLA)	
AASHTO	American Association of State Highway & Transportation Officials 444 North Capitol St., NW, Suite 249 Washington, DC 20001 www.aashto.org	(202) 624-5800

AATCC	American Association of Textile Chemists and Colorists P.O. Box 12215 Research Triangle Park, NC 27709-2215 www.aatcc.org	(919) 549-8141
ABMA	American Bearing Manufacturers Association 1200 19th St., NW, Suite 300 Washington, DC 20036-2401 www.abma-dc.org	(202) 429-5155
ABMA	American Boiler Manufacturers Association 950 North Glebe Rd., Suite 160 Arlington, VA 22203-1824 www.abma.com	(703) 522-7350
ACI	American Concrete Institute P.O. Box 9094 Farmington Hills, MI 48333-9094 www.aci-int.org	(248) 848-3700
ACIL	American Council of Independent Laboratories 1875 I St., NW, Suite 500 Washington, DC 20006 www.acil.org	(202) 887-5872
ACPA	American Concrete Pipe Association 222 West Las Colinas Blvd., Suite 641 Irving, TX 75039-5423 www.concrete-pipe.org	(972) 506-7216
ADC	Air Diffusion Council 11 South LaSalle St., Suite 1400 Chicago, IL 60603 www.airdiffusercouncil.org	(312) 201-0101
AEIC	Association of Edison Illuminating Companies 600 N. 18th St./P.O. Box 2641 Birmingham, AL 35291-0992 www.aeic.org	(205) 250-2530
AFBMA	Anti-Friction Bearing Manufacturers Association (See ABMA)	
AFPA	American Forest and Paper Association 1111 19th St., NW, Suite 800 Washington, DC 20036 www.afandpa.org	(800) 878-8878
AGA	American Gas Association 1515 Wilson Blvd. Arlington, VA 22209 www.aga.com	(703) 841-8400
AHA	American Hardboard Association 1210 W. Northwest Hwy Palatine, IL 60067-1897 www.ahec.org	(847) 934-8800
AHAM	Association of Home Appliance Manufacturers 20 N. Wacker Dr., Suite 1500 Chicago, IL 60606 www.aham.org	(312) 984-5800

AI	Asphalt Institute Research Park Dr./P.O. Box 14052 Lexington, KY 40512-4052 www.asphaltinstitute.org	(606) 288-4960
AIA	The American Institute of Architects 1735 New York Ave., NW Washington, DC 20006-5292 www.aia.org	(202) 626-7300
AIA	American Insurance Association 1130 Connecticut Ave., NW, Suite 1000 Washington, DC 20036 www.aiadc.org	(202) 828-7100
AIHA	American Industrial Hygiene Association 2700 Prosperity Ave., Suite 250 Fairfax, VA 22031 www.aiha.org	(703) 849-888
AISC	American Institute of Steel Construction One East Wacker Dr., Suite 3100 Chicago, IL 60601-2001	(800) 644-2400 (312) 670-2400
AISI	American Iron and Steel Institute 1101 17th St., NW Washington, DC 20036-4700 www.steel.org	(202) 452-7100
AITC	American Institute of Timber Construction 7012 S. Revere Pkwy, Suite 140 Englewood, CO 80112 www.aitc-glulam.org	(303) 792-9559
ALA	American Laminators Association (See LMA)	
ALCA	Associated Landscape Contractors of America 12200 Sunrise Valley Dr., Suite 150 Reston, VA 20191 www.alca.org	(703) 620-6363
ALI	Associated Laboratories, Inc. P.O. Box 152837/1323 Wall St. Dallas, TX 75315 www.associatedlab.com	(214) 565-0593
ALSC	American Lumber Standards Committee P.O. Box 210 Germantown, MD 20875 www.alsc.org	(301) 972-1700
AMCA	Air Movement and Control Association International, Inc. 30 W. University Dr. Arlington Heights, IL 60004-1893 www.amca.org	(847) 394-0150
ANLA	American Nursery and Landscape Association 1250 Eye St., NW, Suite 500 Washington, DC 20005 www.anla.org	(202) 789-2900

ANSI	American National Standards Institute 11 West 42nd St., 13th Floor New York, NY 10036-8002 www.ansi.org	(212) 642-4900
AOAC	AOAC International 481 N. Frederick Ave., Suite 500 Gaithersburg, MD 20877 www.aiac.org	(301) 924-7077
AOSA	Association of Official Seed Analysts 201 N. 8th St., Suite 400 P.O. Box 81152 Lincoln, NE 68501-1152 www.aosaseed.org	(402) 476-3852
APA	APA-The Engineered Wood Association P.O. Box 11700 Tacoma, WA 98411-0700 www.apawood.org	(206) 565-6600
APA	Architectural Precast Association P.O. Box 08669 Fort Myers, FL 33908-0669 www.archprecast.org	(941) 454-6989
API	American Petroleum Institute 1220 L St., NW, Suite 900 Washington, DC 20005-8029 www.api.org	(202) 682-8000
ARI	Air-Conditioning and Refrigeration Institute 4301 Fairfax Dr., Suite 425 Arlington, VA 22203 www.ari.org	(703) 524-8800
ARMA	Asphalt Roofing Manufacturers Association Center Park, 4041 Powder Mill Rd., Suite 404 Calverton, MD 20705 www.asphaltroofing.org	(301) 231-9050
ASA	Acoustical Society of America 500 Sunnyside Blvd. Woodbury, NY 11797 www.acousticsociety.org	(516) 576-2360
ASC	Adhesive and Sealant Council 1627 K St., NW, Suite 1000 Washington, DC 20006-1707 www.ascouncil.org	(202) 452-1500
ASCA	Architectural Spray Coaters Association 230 W. Wells St., Suite 311 Milwaukee, WI 53203 www.asca.org	(414) 273-3430
ASCE	American Society of Civil Engineers-World Headquarters 1801 Alexander Bell Dr. Reston, VA 20191-4400 www.asce.org	(800) 548-2723 (703) 295-6000

ASHES	American Society for Healthcare Environmental Services - Division of the American Hospital Assoc. One North Franklin, Suite 2700 Chicago, IL 60606 www.ahe.org	(800) 424-2626 (312) 422-3860
ASHRAE	American Society of Heating, Refrigerating and Air- Conditioning Engineers 1791 Tullie Circle, NE Atlanta, GA 30329-2305 www.ashrae.org	(800) 527-4723 (404) 636-8400
ASLA	American Society of Landscape Architects 4401 Connecticut Ave., NW, 5th Floor Washington, DC 20008-2369 www.asla.org	(202) 686-2752
ASME	American Society of Mechanical Engineers 345 East 47th St. New York, NY 10017-2392 www.asme.org	(800) 434-2763 (212) 705-7722
ASPA	American Sod Producers Association (See TPI)	
ASPE	American Society of Plumbing Engineers 3617 Thousand Oaks Blvd., Suite 210 Westlake Village, CA 91362-3649 www.aspe.org	(805) 495-7120
ASQC	American Society for Quality Control 611 East Wisconsin, Ave. Milwaukee, WI 53201-3005 www.asqc.org	(800) 248-1946 (414) 272-8575
ASSE	American Society of Sanitary Engineering 28901 Clemens Rd. Westlake, OH 44145 www.asse-plumbing.org	(216) 835-3040
ASTM	American Society for Testing and Materials 100 Barr Harbor Dr. West Conshohocken, PA 19428-2959 www.astm.org	(610) 832-9500
ATIS	Alliance for Telecommunications Industry Solutions 1200 G St., NW, Suite 500 Washington, DC 20005	(202) 628-6380
AWCI	Association of the Wall and Ceiling Industries--International 307 E. Annandale Rd., Suite 200 Falls Church, VA 22042-2433 www.awci.org	(703) 534-8300
AWCMA	American Window Covering Manufacturers Association (See WCMA)	
AWI	Architectural Woodwork Institute 1952 Isaac Newton Sq. Reston, VA 20190 www.awinet.org	(703) 733-0600

AWPA	American Wood Preservers' Association 3246 Fall Creek Hwy, Suite 1900 Granbury, TX 76049-7979 www.awpa.com	(817) 326-6300
AWS	American Welding Society 550 NW LeJeune Rd. Miami, FL 33126 www.amweld.org	(800) 443-9353 (305) 443-9353
AWWA	American Water Works Association 6666 W. Quincy Ave. Denver, CO 80235 www.awwa.org	(800) 926-7337 (303) 794-7711
BHMA	Builders Hardware Manufacturers Association 355 Lexington Ave., 17th Floor New York, NY 10017-6603 www.buildershardware.com	(212) 661-4261
BIA	Brick Institute of America 11490 Commerce Park Dr. Reston, VA 22091-1525 www.bia.org	(703) 620-0010
BIFMA	The Business & Institutional Furniture Manufacturer's Association 2680 Horizon Dr., SE, Suite A1 Grand Rapids, MI 49546-7500 www.bifma.com	(616) 285-3963
CAGI	Compressed Air and Gas Institute c/o Thomas Associates, Inc. 1300 Sumner Ave. Cleveland, OH 44115-2851 www.taol.com/cagi	(216) 241-7333
CAUS	Color Association of the United States 409 W. 44th St. New York, NY 10036-4402 www.colorassociation.com	(212) 582-6884
CBM	Certified Ballast Manufacturers Association 1422 Euclid Ave., Suite 402 Cleveland, OH 44115-2094	(216) 241-0711
CCC	Carpet Cushion Council P.O. Box 546 Riverside, CT 06878-0546 www.carpetcushion.org	(203) 637-1312
CDA	Copper Development Association Inc. 260 Madison Ave., 16th Floor New York, NY 10016-2401 www.copper.org	(800) 232-3282 (212) 251-7200
CFFA	Chemical Fabrics & Film Association, Inc. c/o Thomas Associates, Inc. 1300 Sumner Ave. Cleveland, OH 44115-2851 www.taol.com/cffa	(216) 241-7333
CGA	Compressed Gas Association 1725 Jefferson Davis Hwy, Suite 1004 Arlington, VA 22202-4102 www.cganet.com	(703) 412-0900

CISCA	Ceilings and Interior Systems Construction Association 1500 Lincoln Hwy, Suite 202 St. Charles, IL 60174 www.cisca.org	(630) 584-1919
CISPI	Cast Iron Soil Pipe Institute 5959 Shallowford Rd., Suite 419 Chattanooga, TN 37421 www.cispi.org	(423) 892-0137
CLFMI	Chain Link Fence Manufacturers Institute 9891 Broken Land Pkwy, Suite 300 Columbia, MD 21046 www.chainlinkinfo.org	(301) 596-2584
CPPA	Corrugated Polyethylene Pipe Association 432 N. Superior St. Toledo, OH 43604 www.plasticpipe.org	(800) 510-2772 (419) 241-2221
CRI	Carpet and Rug Institute 310 S. Holiday, Ave. Dalton, GA 30722-2048 www.carpet-rug.com	(800) 882-8846 (706) 278-3176
CRSI	Concrete Reinforcing Steel Institute 933 N. Plum Grove Rd. Schaumburg, IL 60173-4758 www.crsi.org	(847) 517-1200
CSSB	Cedar Shake and Shingle Bureau 515 116th Ave., NE, Suite 275 Bellevue, WA 98004-5294 www.cedarbureau.org	(206) 453-1323
CTI	Ceramic Tile Institute of America 12061 West Jefferson Blvd. Culver City, CA 90230-6219 www.ctioa.org	(310) 574-7800
CTI	Cooling Tower Institute P.O. Box 73383 Houston, TX 77273 www.cti.org	(281) 583-4087
DASMA	Door & Access Systems Manufacturers Association, Intl c/o Thomas Associates, Inc. 1300 Sumner Ave. Cleveland, OH 44115-2851 www.taol.com/dasma	(216) 241-7333
DHI	Door and Hardware Institute 14170 Newbrook Dr. Chantilly, VA 20151-2223 www.dhi.org	(703) 222-2010
DIPRA	Ductile Iron Pipe Research Association 245 Riverchase Pkwy East, Suite O Birmingham, AL 35244	(205) 988-9870
ECSA	Exchange Carriers Standards Association (See ATIS)	

EIA	Electronic Industries Association 2500 Wilson Blvd. Arlington, VA 22201 www.eciaonline.org	(703) 907-7500
EIMA	EIFS Industry Members Association 402 N. Fourth St., Suite 102 Yakima, WA 98901-2470 www.eifsfacts.com	(800) 294-3462 (509) 457-3500
EJMA	Expansion Joint Manufacturers Association 25 N. Broadway Tarrytown, NY 10591-3201 www.ejma.org	(914) 332-0040
FCI	Fluid Controls Institute c/o Thomas Associates, Inc 1300 Sumner Ave. Cleveland, OH 44115-2851 www.taol.com/fci	(216) 241-7333
FCICA	Floor Covering Installation Contractors Association P.O. Box 948 Dalton, GA 30722-0948 www.fcica.com	(706) 226-5488
FGMA	Flat Glass Marketing Association (See GANA)	
FM	Factory Mutual System P.O. Box 9102 Norwood, MA 02062-9102 www.factorymutual.com	(781) 762-4300
FTI	Facing Tile Institute c/o Stark Ceramics P.O. Box 8880 Canton, OH 44711 www.ctioa.org	(330) 488-1211
GA	Gypsum Association 810 First St., NE, Suite 510 Washington, DC 20002 www.usg.com	(202) 289-5440
GANA	Glass Association of North America 3310 SW Harrison St. Topeka, KS 66611-2279 www.glasswebsite.com/gana	(913) 266-7013
GRI	Geosynthetic Research Institute 33rd and Lancaster Walk, Rush Building, West Wing Philadelphia, PA 19104 www.gri-server.coe.drexel.edu	(215) 895-2343
HEI	Heat Exchange Institute c/o Thomas Associates, Inc. 1300 Sumner Ave. Cleveland, OH 44115-2851 www.taol.com/hei	(216) 241-7333
HI	Hydraulic Institute 9 Sylvan Way Parsippany, NJ 07054-3802 www.pumps.org	(201) 267-9700

HI	Hydronics Institute P.O. Box 218/35 Russo Pl. Berkeley Heights, NJ 07922 www.gamanet.org	(908) 464-8200
HMA	Hardwood Manufacturers Association 400 Penn Center Blvd., Suite 530 Pittsburgh, PA 15235-5605 www.hardwood.org	(412) 829-0770
HPVA	Hardwood Plywood and Veneer Association 1825 Michael Farraday Dr./P.O. Box 2789 Reston, VA 22195-0789 www.hpva.org	(703) 435-2900
IAS	International Approval Services 8504 East Pleasant Valley Rd. Cleveland, OH 44131 www.iasapprovals.org	(216) 524-4990
ICEA	Insulated Cable Engineers Association, Inc. P.O. Box 440 South Yarmouth, MA 02664	(508) 394-4424
IEC	International Electrotechnical Commission (Available from ANSI) 11 West 42nd St., 13th Floor New York, NY 10036-8002	(212) 642-4900
IEEE	Institute of Electrical and Electronics Engineers 345 E. 47th St. New York, NY 10017-2394 www.ieee.org	(800) 678-4333 (212) 705-7900
IESNA	Illuminating Engineering Society of North America 120 Wall St., 17th Floor New York, NY 10005-4001 www.iesna.org	(212) 248-5000
IGCC	Insulating Glass Certification Council (Now part of ITS)	
IIDA	International Interior Design Association	(312) 467-1950
ILI	Indiana Limestone Institute of America Stone City Bank Building, Suite 400 Bedford, IN 47421 www.iliai.org	(812) 275-4426
IMSA	International Municipal Signal Association P.O. Box 539/165 E. Union St. Newark, NY 14513 www.imsasafety.org	(800) 723-4672 315) 331-2182
INCE	Institute of Noise Control Engineering P.O. Box 3206, Arlington Branch Poughkeepsie, NY 12603 www.inceusa.org	(914) 462-4006
IRI	Industrial Risk Insurers P.O. Box 5010/85 Woodland St. Hartford, CT 06102-5010 www.insuranceproviders.org	(860) 520-7300

ISA	ISA - International Society for Measurement and Control P.O. Box 12277/67 Alexander Dr. Research Triangle Park, NC 27709 www.isa.org	(919) 549-8411
ISS	Iron and Steel Society 410 Commonwealth Dr. Warrendale, PA 15086-7512 www.issource.org	(412) 776-1535
ISWA	Insect Screening Weavers Association P.O. Box 1018 Ossining, NY 10562	(914) 962-9052
ITS	Intertek Testing Services P.O. Box 2040 Cortland, NY 13045-7902 www.itsglobal.com	(800) 345-3851 (607) 753-6711
KCMA	Kitchen Cabinet Manufacturers Association 1899 Preston White Dr. Reston, VA 22091-4326 www.kema.org	(703) 264-1690
LGSI	Light Gage Structural Institute c/o Loseke Technologies, Inc. P.O. Box 560746 The Colony, TX 75056 www.cfsei.org	(972) 625-4560
LIA	Lead Industries Association, Inc. 295 Madison Ave. New York, NY 10017 www.leadinfo.com	(800) 422-5323 (212) 578-4750
LMA	Laminating Materials Association 116 Lawrence St. Hillsdale, NJ 07642-2730 www.lma.org	(201) 664-2700
LPI	Lightning Protection Institute 3335 N. Arlington Heights Rd., Suite E Arlington Heights, IL 60004-7700 www.lightning.org	(800) 488-6864 (847) 577-7200
MBMA	Metal Building Manufacturer's Association c/o Thomas Associates, Inc. 1300 Sumner Ave. Cleveland, OH 44115-2851 www.taol.com/mbma	(216) 241-7333
MCAA	Mechanical Contractors Association of America 1385 Piccard Dr. Rockville, MD 20850-4329 www.mcaa.org	(301) 869-5800
MFMA	Maple Flooring Manufacturers Association 60 Revere Dr., Suite 500 Northbrook, IL 60062 www.maplefloor.com	(847) 480-9138
MFMA	Metal Framing Manufacturers Association 401 N. Michigan Ave. Chicago, IL 60611	(312) 644-6610

	www.metalframingmfg.org	
MHI	Material Handling Institute 8720 Red Oak Blvd., Suite 201 Charlotte, NC 28217-3992 www.mhi.org	(800) 345-1815 (704) 522-8644
MIA	Marble Institute of America 30 Eden Alley, Suite 301 Columbus, OH 43215 www.marble-institute.com	(614) 228-6194
MIA	Masonry Institute of America 2550 Beverly Blvd. Los Angeles, CA 90057 www.masonryinstitute.org	(213) 388-0472
ML/SFA	Metal Lath/Steel Framing Association 8 South Michigan Ave., Suite 1000 Chicago, IL 60603	(312) 456-5590
MRCA	Midwest Roofing Contractors Association 4840 W. 15th St., Suite 1000 Lawrence, KS 66049 www.mrca.org	(800) 879-4448 (913) 843-4888
MSS	Manufacturers Standardization Society of the Valve & Fittings Industry 127 Park St., NE Vienna, VA 22180-4602	(703) 281-6613
NAA	National Arborist Association P.O. Box 1094 Amherst, NH 03031-1094 www.natlarb.com	(800) 733-2622 (603) 673-3311
NAAMM	National Association of Architectural Metal Manufacturers 8 South Michigan Ave., Suite 1000 Chicago, IL 60603 www.gss.net/naamm	(312) 456-5590
NAGDM	National Association of Garage Door Manufacturers (See DASMA)	
NAIMA	North American Insulation Manufacturers Association 44 Canal Center Plaza, Suite 310 Alexandria, VA 22314 www.naima.org	(703) 684-0084
NAMI	National Accreditation & Management Institute, Inc. P.O. Box 366/207 S. Washington St. Berkeley Springs, WV 25411	(304) 258-5100
NAPA	National Asphalt Pavement Association NAPA Building 5100 Forbes Blvd. Lanham, MD 20706-4413 www.asphaltpavement.org	(301) 731-4748
NAPM	National Association of Photographic Manufacturers 550 Mamaroneck Ave. Harrison, NY 10528	(914) 698-7603
NBHA	National Builders Hardware Association (See DHI)	

NCAC	National Council of Acoustical Consultants P.O. Box 359/66 Morris Ave., Suite 1A Springfield, NJ 07081 www.ncac.com	(201) 564-5859
NCCA	National Coil Coaters Association 401 N. Michigan Ave. Chicago, IL 60611 www.coilcoating.org	(312) 321-6894
NCMA	National Concrete Masonry Association 2302 Horse Pen Rd. Herndon, VA 20171-3499 www.ncma.org	(703) 713-1900
NCPI	National Clay Pipe Institute P.O. Box 759/253-80 Center St. Lake Geneva, WI 53147 www.ncpi.org	(414) 248-9094
NCRPM	National Council on Radiation Protection & Measurements 7910 Woodmont Ave., Suite 800 Bethesda, MD 20814-3095 www.ncrp.com	(800) 229-2652 (301) 657-2652
NCSPA	National Corrugated Steel Pipe Association 1255 23rd St., NW, Suite 850 Washington, DC 20037 www.ncspa.org	(202) 452-1700
NEBB	Natural Environmental Balancing Bureau 8575 Grovemont Circle Gaithersburg, MD 20877-4121 www.nebb.org	(301) 977-3698
NECA	National Electrical Contractors Association 3 Bethesda Metro Center, Suite 1100 Bethesda, MD 20814-5372 www.necanet.org	(301) 657-3110
NEI	National Elevator Industry 185 Bridge Plaza North, Suite 310 Fort Lee, NJ 07024 www.neii.org	(201) 944-3211
NELMA	Northeastern Lumber Manufacturers Association 272 Tuttle Rd./P.O. Box 87A Cumberland Center, ME 04021 www.nelma.org	(207) 829-6901
NEMA	National Electrical Manufacturers Association 1300 N 17th St., Suite 1847 Rosslyn, VA 22209 www.nema.org	(703) 841-3200
NETA	InterNational Electrical Testing Association P.O. Box 687/106 Stone St. Morrison, CO 80465-1526 www.electricnet.com/neta	(303) 697-8441
NFPA	National Fire Protection Association One Batterymarch Park/ P.O. Box 9101 Quincy, MA 02269-9101 www.nfpa.org	(800) 344-3555 (617) 770-3000

NFPA	National Forest Products Association (See AFPA)	
NFRC	National Fenestration Rating Council Incorporated 1300 Spring St., Suite 120 Silver Spring, MD 20910 www.nfrc.org	(301) 589-NFRC
NHLA	National Hardwood Lumber Association P.O. Box 34518 Memphis, TN 38184-0518 www.natlhardwood.org	(901) 377-1818
NIA	National Insulation Association 99 Canal Center Plaza, Suite 222 Alexandria, VA 22314 www.insulation.org	(703) 683-6422
NIAC	National Insulation and Abatement Contractors Association (See NIA)	
NKCA	National Kitchen Cabinet Association (See KCMA)	
NLGA	National Lumber Grades Authority #406-First Capital Pl., 960 Quayside Dr. New Westminster, BC V3M 6G2	(604) 524-2393
NOFMA	National Oak Flooring Manufacturers Association P.O. Box 3009 Memphis, TN 38173-0009 www.nwfa.org	(901) 526-5016
NPA	National Particleboard Association 18928 Premiere Ct. Gaithersburg, MD 20879-1569 www.pbmdf.com	(301) 670-0604
NPCA	National Paint and Coatings Association 1500 Rhode Island Ave., NW Washington, DC 20005-5597 www.paint.org	(202) 462-6272
NRCA	National Roofing Contractors Association O'Hare International Center 10255 W. Higgins Rd., Suite 600 Rosemont, IL 60018-5607 www.roofonline.org	(800) 323-9545 (847) 299-9070
NRMCA	National Ready Mixed Concrete Association 900 Spring St. Silver Spring, MD 20910 www.nrmca.org	(301) 587-1400
NSA	National Stone Association 1415 Elliot Pl., NW Washington, DC 20007 www.aggregates.org	(202) 342-1100
NSF	NSF International(Formerly: National Sanitation Foundation) P.O. Box 130140 Ann Arbor, MI 48113-0140 www.nsf.org	(313) 769-8010
NSSEA	National School Supply and Equipment Association 8300 Colesville Rd., Suite 250	(800) 395-5550 (301) 495-0240

	Silver Spring, MD 20910 www.nssea.org	
NTMA	National Terrazzo and Mosaic Association 3166 Des Plaines Ave., Suite 121 Des Plaines, IL 60018 www.ntma.com	(800) 323-9736 (847) 635-7744
NUSIG	National Uniform Seismic Installation Guidelines 12 Lahoma Ct. Alamo, CA 94526 www.nbug.org	(510) 946-0135
NWMA	National Woodwork Manufacturers Association (See NWWDA)	
NWWDA	National Wood Window and Door Association 1400 E. Touhy Ave., G-54 Des Plaines, IL 60018 www.nwwda.org	(800) 223-2301 (847) 299-5200
PATMI	Power Actuated Tool Manufacturers' Institute, Inc. 1603 Boonslick Rd. St. Charles, MO 63301-2244	(314) 947-6610
PCA	Portland Cement Association 5420 Old Orchard Rd. Skokie, IL 60077-1083 www.portcement.org	(847) 966-6200
PCI	Precast/Prestressed Concrete Institute 175 W. Jackson Blvd. Chicago, IL 60604 www.pci.org	(312) 786-0300
PDCA	Painting and Decorating Contractors of America 3913 Old Lee Hwy, Suite 33-B Fairfax, VA 22030 www.pdca.com	(800) 332-7322 (703) 359-0826
PDI	Plumbing and Drainage Institute 45 Bristol Dr., Suite 101 South Easton, MA 02375	(800) 589-8956 (508) 230-3516
PEI	Porcelain Enamel Institute 4004 Hillsboro Pike, Suite 224-B Nashville, TN 37215 www.porcelainenamel.com	(615) 385-5357
PGI	PVC Geomembrane Institute P.O. Box 4226 Traverse City, MI 49685 users.aol.com/forPVC1	(616) 933-6373
PPFA	Plastic Pipe and Fittings Association 800 Roosevelt Rd., Building C, Suite 20 Glen Ellyn, IL 60137-5833	(630) 858-6540
PPI	Plastic Pipe Institute 1801 K St., NW, Suite 600L Washington, DC 20006 www.plasticpipe.org	(202) 974-5306
RCMA	Roof Coatings Manufacturers Association Center Park 4041 Powder Mill Rd., Suite 404	(301) 230-2501

	Calverton, MD 20705	
RCSC	Research Council on Structural Connections Sargent & Lundy 55 E. Monroe St. Chicago, IL 60603	(312) 269-2424
RFCI	Resilient Floor Covering Institute 966 Hungerford Dr., Suite 12-B Rockville, MD 20850-1714 www.rfci.com	(301) 340-8580
RMA	Rubber Manufacturers Association 1400 K St., NW, Suite 900 Washington, DC 20005 www.rma.org	(800) 220-7620 (202) 682-4800
SAE	SAE International 400 Commonwealth Dr. Warrendale, PA 15096-0001 For publications: Call (412) 776-4970 www.sae.org	(412) 776-4841
SDI	Steel Deck Institute P.O. Box 25 Fox River Grove, IL 60021 www.sdi.org	(847) 462-1930
SDI	Steel Door Institute 30200 Detroit Rd. Cleveland, OH 44145-1967 www.steeldoor.org	(216) 889-0010
SEFA	Scientific Equipment and Furniture Association 1028 Duchess Dr. McLean, VA 22102-2010 www.sefalabfurn.com	(703) 790-8661
SEGD	Society for Environmental Graphic Design 401 F St., NW, Suite 333 Washington, DC 20001-2728	(202) 638-5555
SHLMA	Southern Hardwood Lumber Manufacturers Association (See HMA)	
SIGMA	Sealed Insulating Glass Manufacturers Association 401 N. Michigan Ave. Chicago, IL 60611-4267 www.igmaonline.org	(312) 644-6610
SJI	Steel Joist Institute 3127 10th Ave., North Ext. Myrtle Beach, SC 29577-6760 www.steeljoist.org	(803) 626-1995
SMA	Screen Manufacturers Association 2850 S. Ocean Blvd., Suite 114 Palm Beach, FL 33480-5535	(561) 533-0991
SMACNA	Sheet Metal & Air Conditioning Contractors' National Assoc. 4201 Lafayette Center Dr./P.O. Box 221230 Chantilly, VA 20151-1209 www.smacna.org	(703) 803-2980

SPI	Society of the Plastics Industry, Inc. .Spray Polyurethane Division 1801 K St., NW, Suite 600K Washington, DC 20006 www.socplas.org	(800) 951-2001 (202) 974-5200
SPIB	Southern Pine Inspection Bureau 4709 Scenic Hwy Pensacola, FL 32504-9094 www.spib.org	(904) 434-2611
SPRI	SPRI (Formerly: Single Ply Roofing Institute) 175 Highland Ave. Needham Heights, MA 02194-3034 www.spri.org	(617) 444-0242
SSINA	Specialty Steel Industry of North America c/o Collier, Shannon Rill & Scott 3050 K St., NW, Suite 400 Washington, DC 20007 www.ssina.com	(800) 982-0355 (202) 342-8630
SSPC	Steel Structures Painting Council 40 24th St., 6th Floor Pittsburgh, PA 15222-4643 www.sspc.org	(412) 281-2331
SSPMA	Sump and Sewage Pump Manufacturers Association P.O. Box 647 Northbrook, IL 60065-0647	(847) 559-9233
STI	Steel Tank Institute 570 Oakwood Rd. Lake Zurich, IL 60047-1559 www.steel.org	(847) 438-8265
SWI	Steel Window Institute c/o Thomas Associates, Inc. 1300 Sumner Ave. Cleveland, OH 44115-2851 www.taol.com/swi	(216) 241-7333
SWPA	Submersible Wastewater Pump Association 1806 Johns Dr. Glenview, IL 60025-1657	(847) 729-7972
SWRI	Sealant, Waterproofing and Restoration Institute 2841 Main Kansas City, MO 64108 www.swrionline.org	(816) 472-7974
TCA	Tile Council of America 100 Clemson Research Blvd. Anderson, SC 29625 www.tcnatile.com	(864) 646-8453
TIMA	Thermal Insulation Manufacturers Association (See NAIMA)	
TMS	The Masonry Society 105 South Sunset St., Suite Q Longmont, CO 80501-6172 www.masonrysociety.org	(303) 939-9700

TPI	Truss Plate Institute 583 D'Onofrio Dr., Suite 200 Madison, WI 53719 www.tpinsf.org	(608) 833-5900
TPI	Turfgrass Producers International 1855-A Hicks Rd. Rolling Meadows, IL 60008	(800) 405-8873 (847) 705-9898
UL	Underwriters Laboratories Inc. 333 Pfingsten Rd. Northbrook, IL 60062 www.ul.com	(800) 704-4050 (847) 272-8800
UNI	Uni-Bell PVC Pipe Association 2655 Villa Creek Dr., Suite 155 Dallas, TX 75234 www.members.aol.com/unibell1	(972) 243-3902
USITT	USITT: The American Association of Design and Production Professionals in the Performing Arts 6443 Ridings Rd. Syracuse, NY 13206-1111	(800) 938-7488 (315) 463-6463
USP	U.S. Pharmacopeia 12601 Twinbrook Pkwy Rockville, MD 20852-1790	(800) 227-8772 (301) 881-0666
WA	Wallcoverings Association 401 N. Michigan Ave. Chicago, IL 60611-4267 www.wallcoverings.org	(312) 644-6610
WCLIB	West Coast Lumber Inspection Bureau P.O. Box 23145 Portland, OR 97281-3145 www.wclib.org	(503) 639-0651
WCMA	Window Covering Manufacturers Association 355 Lexington Ave., 17th Floor New York, NY 10017-6603 www.wcmanet.org	(212) 661-4261
WEF	Water Environment Federation 601 Wythe St. Alexandria, VA 22314-1994	(703) 684-2400
WMMPA	Wood Moulding & Millwork Producers Association 507 First St. Woodland, CA 95695 www.wmmpa.com	(800) 550-7889 (916) 661-9591
WRI	Wire Reinforcement Institute 203 Loudoun St., SW Leesburg, VA 20175-2718 www.wirereinforcementinstitute.org	(703) 779-2339
WSC	Water Systems Council Building C, Suite 20, 800 Roosevelt Rd. Glen Ellyn, IL 60137 www.watersystemscouncil.org	(630) 545-1762

WWPA	Western Wood Products Association Yeon Building/522 SW 5th Ave. Portland, OR 97204-2122 www.wwpa.org	(503) 224-3930
G.	Federal Government Agencies: Names and titles of Federal Government standards- or specification-producing agencies are often abbreviated. The following abbreviations and acronyms referenced in the Contract Documents indicate names of standards- or specification-producing agencies of the Federal Government. Names and addresses are subject to change and are believed, but are not assured, to be accurate and up-to-date as of the date of the Contract Documents.	
CE	Corps of Engineers (U.S. Department of the Army) 20 Massachusetts Ave., NW Washington, DC 20314	(202) 761-0660
	CRD standards are available from: U.S. Army Corps of Engineers Waterways Experiment Station Technical Report Distribution Section Services Branch, TIC 3909 Halls Ferry Rd. Vicksburg, MS 39180-6199	(601) 634-2696
CFR	Code of Federal Regulations (Available from the Government Printing Office) Washington, DC 20401 www.access.gpo.gov	(202) 512-0000
CPSC	Consumer Product Safety Commission East West Towers/4330 East-West Hwy Bethesda, MD 20814 www.cpsc.gov	(800) 638-2772
CS	Commercial Standard (U.S. Department of Commerce)Government Printing Office Washington, DC 20402	(202) 512-1800
DOC	Department of Commerce 14th St. and Constitution Ave., NW Washington, DC 20230 www.commerce.gov	(202) 482-2000
DOT	Department of Transportation 400 Seventh St., SW Washington, DC 20590 www.dot.gov	(202) 366-4000
EPA	Environmental Protection Agency 401 M St., SW Washington, DC 20460 www.epa.gov	(202) 260-2090
FAA	Federal Aviation Administration (U.S. Department of Transportation) 800 Independence Ave., SW Washington, DC 20591 www.faa.gov	(202) 366-4000
FCC	Federal Communications Commission 1919 M St., NW Washington, DC 20554 www.fcc.gov	(202) 418-0126

FDA	Food and Drug Administration 5600 Fishers Lane Rockville, MD 20857 www.fda.gov	(301) 443-1544
FHA	Federal Housing Administration (U.S. Department of Housing and Urban Development) 451 Seventh St., SW Washington, DC 20410 www.hud.gov	(202) 401-0388
FS	Federal Specification Unit (Available from GSA) 470 East L'Enfant Plaza, SW, Suite 8100 Washington, DC 20407 www.gsa.gov	(202) 619-8925
GSA	General Services Administration F St. and 18th St., NW Washington, DC 20405 www.gsa.gov	(202) 708-5082
MIL	Military Standardization Documents (U.S. Department of Defense) Defense Printing Service 700 Robbins Ave., Building 4D Philadelphia, PA 19111	(215) 697-2179
NIST	National Institute of Standards and Technology Building 101, #A1134, Rte. I-270 and Quince Orchard Rd. Gaithersburg, MD 20899 www.nist.gov	(301) 975-2000
OSHA	Occupational Safety and Health Administration 200 Constitution Ave., NW Washington, DC 20210 www.osha.gov	(202) 219-8148
PS	Product Standard of NBS (U.S. Department of Commerce) Government Printing Office Washington, DC 20402	(202) 512-1800
RUS	Rural Utilities Service (U.S. Department of Agriculture) 14th St. and Independence Ave., SW Washington, DC 20250	(202) 720-9560
TRB	Transportation Research Board, National Research Council 2101 Constitution Ave., NW Washington, DC 20418 www.tra.org	(202) 334-2934
USDA	U.S. Department of Agriculture 14th St. and Independence Ave., SW Washington, DC 20250 www.usda.gov	(202) 720-8732
USPS	U.S. Postal Service 475 L'Enfant Plaza, SW Washington, DC 20260-0010 www.uspa.gov	(202) 268-2000

1.05 GOVERNING REGULATIONS AND AUTHORITIES

- A. Copies of Regulations: Obtain copies of the following regulations and retain at the Project site to be available for reference by parties who have a reasonable need.
- B. Comply with all rules, regulations, directives, etc. pertaining to the latest edition of the Florida Building Code which includes but is not necessarily limited to the following:
 - 1. All supplements to the Building Code issued and effective.
 - 2. Guidelines for Design and Construction of Health Care Facilities.
 - 3. Florida Building Commission Building Codes and Standards
 - 4. Florida Fire Prevention Code
 - 5. International Code Council

1.06 SUBMITTALS

- A. Permits, Licenses, and Certificates: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01500
CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes requirements for construction facilities and temporary controls, including temporary utilities, support facilities, and security and protection.
- B. Temporary utilities include, but are not limited to, the following:
1. Water service and distribution.
 2. Temporary electric power and light.
 3. Ventilation.
 4. Telephone service.
 5. Sanitary facilities, including drinking water.
 6. Storm and sanitary sewer.
- C. Support facilities include, but are not limited to, the following:
1. Field offices and storage sheds.
 2. Temporary roads and paving.
 3. Dewatering facilities and drains.
 4. Temporary enclosures.
 5. Hoists and temporary elevator use.
 6. Temporary project identification signs and bulletin boards.
 7. Waste disposal services.
 8. Rodent and pest control.
 9. Construction aids and miscellaneous services and facilities.
- D. Security and protection facilities include, but are not limited to, the following:
1. Temporary fire protection.
 2. Barricades, warning signs, and lights.
 3. Sidewalk bridge or enclosure fence for the site.
 4. Environmental protection.

1.03 SUBMITTALS

- A. Temporary Utilities: Submit reports of tests, inspections, meter readings, and similar procedures performed on temporary utilities.
- B. Implementation and Termination Schedule: Within 15 days of the date established for commencement of the Work, submit a schedule indicating implementation and termination of each temporary utility.

1.04 QUALITY ASSURANCE

- A. Regulations: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction including, but not limited to, the following:
1. Building code requirements.
 2. Health and safety regulations.
 3. Utility company regulations.
 4. Police, fire department, and rescue squad rules.
 5. Environmental protection regulations.
- B. Standards: Comply with NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations," ANSI A10 Series standards for "Safety Requirements for Construction and Demolition," and NECA Electrical Design Library "Temporary Electrical Facilities."
1. Electrical Service: Comply with NEMA, NECA, and UL standards and regulations for temporary electric service. Install service in compliance with NFPA 70 "National Electric Code."
- C. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.05 PROJECT CONDITIONS

- A. Temporary Utilities: Prepare a schedule indicating dates for implementation and termination of each temporary utility. At the earliest feasible time, when acceptable to the Owner, change over from use of temporary service to use of permanent service.
- B. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Relocate temporary services and facilities as the Work progresses. Do not overload facilities or permit them to interfere with progress. Take necessary fire-prevention measures. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist on-site.

PART 2 - PRODUCTS**2.01 MATERIALS**

- A. General: Provide new materials. If acceptable to the Architect, the Contractor may use undamaged, previously used materials in serviceable condition. Provide materials suitable for use intended.
- B. Lumber and Plywood: Comply with requirements in Division 6 Section "Rough Carpentry."
1. For job-built temporary offices, shops, and sheds within the construction area, provide UL-labeled, fire-treated lumber and plywood for framing, sheathing, and siding.
 2. For signs and directory boards, provide exterior-type, Grade B-B high-density concrete form overlay plywood of sizes and thicknesses indicated.
 3. For fences and vision barriers, provide minimum 3/8-inch- (9.5-mm-) thick exterior plywood.
 4. For safety barriers, sidewalk bridges, and similar uses, provide minimum 5/8-inch- (16-mm-) thick exterior plywood.
- C. Gypsum Wallboard: Provide gypsum wallboard on interior walls of temporary offices.

- D. Roofing Materials: Provide UL Class A standard-weight asphalt shingles or UL Class C mineral-surfaced roll roofing on roofs of job-built temporary offices, shops, and sheds.
- E. Paint: Comply with requirements of Division 9 Section "Painting."
 - 1. For job-built temporary offices, shops, sheds, fences, and other exposed lumber and plywood, provide exterior- grade acrylic-latex emulsion over exterior primer.
 - 2. For sign panels and applying graphics, provide exterior- grade alkyd gloss enamel over exterior primer.
 - 3. For interior walls of temporary offices, provide 2 coats interior latex-flat wall paint.
- F. Tarpaulins: Provide waterproof, fire-resistant, UL-labeled tarpaulins with flame-spread rating of 15 or less. For temporary enclosures, provide translucent, nylon-reinforced, laminated polyethylene or polyvinyl chloride, fire-retardant tarpaulins.
- G. Water: Provide potable water approved by local health authorities.
- H. Open-Mesh Fencing: Provide 0.120-inch- (3-mm-) thick, galvanized 2-inch (50-mm) chainlink fabric fencing 6 feet (2 m) high with galvanized barbed-wire top strand and galvanized steel pipe posts, 1-1/2 inches (38 mm) I.D. for line posts and 2-1/2 inches (64 mm) I.D. for corner posts.

2.02 EQUIPMENT

- A. General: Provide new equipment. If acceptable to the Architect, the Contractor may use undamaged, previously used equipment in serviceable condition. Provide equipment suitable for use intended.
- B. Water Hoses: Provide 3/4-inch (19-mm), heavy-duty, abrasion- resistant, flexible rubber hoses 100 feet (30 m) long, with pressure rating greater than the maximum pressure of the water distribution system. Provide adjustable shutoff nozzles at hose discharge.
- C. Electrical Outlets: Provide properly configured, NEMA- polarized outlets to prevent insertion of 110- to 120-Volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button, and pilot light for connection of power tools and equipment.
- D. Electrical Power Cords: Provide grounded extension cords. Use hard-service cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.
- E. Lamps and Light Fixtures: Provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered-glass enclosures where exposed to breakage. Provide exterior fixtures where exposed to moisture.
- F. Temporary Offices: Provide prefabricated or mobile units or similar job-built construction with lockable entrances, operable windows, and serviceable finishes. Provide heated and air-conditioned units on foundations adequate for normal loading.
- G. Temporary Toilet Units: Provide self-contained, single- occupant toilet units of the chemical, aerated recirculation, or combustion type. Provide units properly vented and fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.

- H. Fire Extinguishers: Provide hand-carried, portable, UL- rated, Class A fire extinguishers for temporary offices and similar spaces. In other locations, provide hand-carried, portable, UL-rated, Class ABC, dry-chemical extinguishers or a combination of extinguishers of NFPA-recommended classes for the exposures.
 - 1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.

2.03 PROJECT IDENTIFICATION

- A. Provide 8'-0" by 4'-0" project sign of MPO plywood and 4" x 4" pressure treated wood frame construction, painted, with Exhibit lettering by a professional sign painter and installed by GC.
- B. List name of project, name of Owner, Architect/Engineer and Contractor. Sign to include rendering and company logo/information as directed by Owner and Architect.

PART 3 - EXECUTION

3.01 INSTALLATION

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

3.02 TEMPORARY UTILITY INSTALLATION

- A. General: Engage the appropriate local utility company to install temporary service or connect to existing service. Where company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with company recommendations.
 - 1. Arrange with company and existing users for a time when service can be interrupted, if necessary, to make connections for temporary services.
 - 2. Provide adequate capacity at each stage of construction. Prior to temporary utility availability, provide trucked- in services.
 - 3. Obtain easements to bring temporary utilities to the site where the Owner's easements cannot be used for that purpose.
 - 4. Use Charges: Cost or use charges for temporary facilities are not chargeable to the Owner or Architect. Neither the Owner nor Architect will accept cost or use charges as a basis of claims for Change Orders.
- B. Water Service: Install water service and distribution piping of sizes and pressures adequate for construction until permanent water service is in use.
 - 1. Sterilization: Sterilize temporary water piping prior to use.
- C. Temporary Electric Power Service: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. Include meters, transformers, overload- protected disconnects, automatic ground-fault interrupters, and main distribution switch gear.

1. Install electric power service underground, except where overhead service must be used.
 2. Power Distribution System: Install wiring overhead and rise vertically where least exposed to damage. Where permitted, wiring circuits not exceeding 125 Volts, ac 20 Ampere rating, and lighting circuits may be nonmetallic sheathed cable where overhead and exposed for surveillance.
- D. Temporary Lighting: When overhead floor or roof deck has been installed, provide temporary lighting with local switching.
1. Install and operate temporary lighting that will fulfill security and protection requirements without operating the entire system. Provide temporary lighting that will provide adequate illumination for construction operations and traffic conditions.
- E. Temporary Telephones: Provide temporary telephone service throughout the construction period for all personnel engaged in construction activities. Install telephone on a separate line for each temporary office and first-aid station.
1. Separate Telephone Lines: Provide additional telephone lines for the following:
 - a. Where an office has more than 2 occupants, install a telephone for each additional occupant or pair of occupants.
 - b. Provide a dedicated telephone line for a fax machine in the field office.
 - c. Provide a separate line for the Owner's use.
 2. At each telephone, post a list of important telephone numbers.
- F. Sanitary facilities include temporary toilets, wash facilities, and drinking-water fixtures. Comply with regulations and health codes for the type, number, location, operation, and maintenance of fixtures and facilities. Install where facilities will best serve the Project's needs.
1. Provide toilet tissue, paper towels, paper cups, and similar disposable materials for each facility. Provide covered waste containers for used material.
- G. Toilets: Use of the Owner's existing toilet facilities will be permitted, so long as facilities are cleaned and maintained in a condition acceptable to the Owner. At Substantial Completion, restore these facilities to the condition prevalent at the time of initial use.
- H. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy. Use of pit-type privies will not be permitted.
1. Provide separate facilities for male and female personnel.
- I. Wash Facilities: Install wash facilities supplied with potable water at convenient locations for personnel involved in handling materials that require wash-up for a healthy and sanitary condition. Dispose of drainage properly. Supply cleaning compounds appropriate for each condition.
1. Provide safety showers, eyewash fountains, and similar facilities for convenience, safety, and sanitation of personnel.
- J. Drinking-Water Facilities: Provide containerized, tap- dispenser, bottled-water drinking-water units, including paper supply.
1. Where power is accessible, provide electric water coolers to maintain dispensed water temperature at 45 to 55 deg F (7 to 13 deg C).

- K. Sewers and Drainage: If sewers are available, provide temporary connections to remove effluent that can be discharged lawfully. If sewers are not available or cannot be used, provide drainage ditches, dry wells, stabilization ponds, and similar facilities. If neither sewers nor drainage facilities can be lawfully used for discharge of effluent, provide containers to remove and dispose of effluent off-site in a lawful manner.
 - 1. Filter out excessive amounts of soil, construction debris, chemicals, oils, and similar contaminants that might clog sewers or pollute waterways before discharge.
 - 2. Connect temporary sewers to the municipal system, as directed by sewer department officials.
 - 3. Maintain temporary sewers and drainage facilities in a clean, sanitary condition. Following heavy use, restore normal conditions promptly.
- L. Provide earthen embankments and similar barriers in and around excavations and subgrade construction, sufficient to prevent flooding by runoff of storm water from heavy rains.

3.03 SUPPORT FACILITIES INSTALLATION

- A. Locate field offices, storage sheds, and other temporary construction and support facilities for easy access.
 - 1. Maintain support facilities until near Substantial Completion. Remove prior to Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Owner.
- B. Provide incombustible construction for offices, shops, and sheds located within the construction area or within 30 feet (9 m) of building lines. Comply with requirements of NFPA 241.
- C. Field Offices: Provide insulated, weathertight temporary offices of sufficient size to accommodate required office personnel at the Project Site. Keep the office clean and orderly for use for small progress meetings. Furnish and equip offices as follows:
 - 1. Furnish with a desk and chairs, a 4-drawer file cabinet, plan table, plan rack, and a 6-shelf bookcase.
 - 2. Equip with a water cooler and private toilet complete with water closet, lavatory, and medicine cabinet unit with a mirror.
- D. Storage and Fabrication Sheds: Install storage and fabrication sheds sized, furnished, and equipped to accommodate materials and equipment involved, including temporary utility service. Sheds may be open shelters or fully enclosed spaces within the building or elsewhere on-site.
- E. Temporary Paving: Construct and maintain temporary roads and paving to support the indicated loading adequately and to withstand exposure to traffic during the construction period. Locate temporary paving for roads, storage areas, and parking where the same permanent facilities will be located. Review proposed modifications to permanent paving with the Architect.
 - 1. Paving: Comply with Division 2 Section "Hot-Mixed Asphalt Paving" for construction and maintenance of temporary paving.
 - 2. Coordinate temporary paving development with subgrade grading, compaction, installation and stabilization of subbase, and installation of base and finish courses of permanent paving.

3. Install temporary paving to minimize the need to rework the installations and to result in permanent roads and paved areas without damage or deterioration when occupied by the Owner.
 4. Delay installation of the final course of permanent asphalt concrete paving until immediately before Substantial Completion. Coordinate with weather conditions to avoid unsatisfactory results.
 5. Extend temporary paving in and around the construction area as necessary to accommodate delivery and storage of materials, equipment usage, administration, and supervision.
- F. Dewatering Facilities and Drains: For temporary drainage and dewatering facilities and operations not directly associated with construction activities included under individual Sections, comply with dewatering requirements of applicable Division 2 Sections. Where feasible, utilize the same facilities. Maintain the site, excavations, and construction free of water.
- G. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities.
1. Where heat is needed and the permanent building enclosure is not complete, provide temporary enclosures where there is no other provision for containment of heat. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
 2. Install tarpaulins securely, with incombustible wood framing and other materials. Close openings of 25 sq. ft. (2.3 sq. m) or less with plywood or similar materials.
 3. Close openings through floor or roof decks and horizontal surfaces with load-bearing, wood-framed construction.
 4. Where temporary wood or plywood enclosure exceeds 100 sq. ft. (9.2 sq. m) in area, use UL-labeled, fire-retardant-treated material for framing and main sheathing.
- H. Temporary Lifts and Hoists: Provide facilities for hoisting materials and employees. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.
- I. Temporary Elevator Use: Refer to Division 14 Sections for elevators.
- J. Project Identification and Temporary Signs: Prepare project identification and other signs of size indicated. Install signs where indicated to inform the public and persons seeking entrance to the Project. Support on posts or framing of preservative-treated wood or steel. Do not permit installation of unauthorized signs.
1. Project Identification Signs: Engage an experienced sign painter to apply graphics. Comply with details indicated.
 2. Temporary Signs: Prepare signs to provide directional information to construction personnel and visitors.
- K. Temporary Exterior Lighting: Install exterior yard and sign lights so signs are visible when Work is being performed.
- L. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 deg F (27

deg C). Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material lawfully.

- M. Rodent and Pest Control: Before deep foundation work has been completed, retain a local exterminator or pest control company to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests. Employ this service to perform extermination and control procedures at regular intervals so the Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using environmentally safe materials.
- N. Stairs: Until permanent stairs are available, provide temporary stairs where ladders are not adequate. Cover finished, permanent stairs with a protective covering of plywood or similar material so finishes will be undamaged at the time of acceptance.

3.04 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Except for use of permanent fire protection as soon as available, do not change over from use of temporary security and protection facilities to permanent facilities until Substantial Completion, or longer, as requested by the Architect.
- B. Temporary Fire Protection: Until fire-protection needs are supplied by permanent facilities, install and maintain temporary fire-protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 10 "Standard for Portable Fire Extinguishers" and NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations."
 - 1. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor at or near each usable stairwell.
 - 2. Store combustible materials in containers in fire-safe locations.
 - 3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire-protection facilities, stairways, and other access routes for fighting fires. Prohibit smoking in hazardous fire-exposure areas.
 - 4. Provide supervision of welding operations, combustion- type temporary heating units, and similar sources of fire ignition.
- C. Permanent Fire Protection: At the earliest feasible date in each area of the Project, complete installation of the permanent fire-protection facility, including connected services, and place into operation and use. Instruct key personnel on use of facilities.
- D. Barricades, Warning Signs, and Lights: Comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and the public of the hazard being protected against. Where appropriate and needed, provide lighting, including flashing red or amber lights.
- E. Enclosure Fence: Before excavation begins, install an enclosure fence with lockable entrance gates. Locate where indicated, or enclose the entire site or the portion determined sufficient to accommodate construction operations. Install in a manner that will prevent people, dogs, and other animals from easily entering the site, except by the entrance gates.
 - 1. Provide open-mesh, chainlink fencing with posts set in a compacted mixture of gravel and earth.
 - 2. Provide plywood fence, 8 feet (2.5 m) high, framed with four 2-by-4-inch (50-by-100-mm) rails, and preservative- treated wood posts spaced not more than 8 feet (2.5 m) apart.

- F. Covered Walkway: Erect a structurally adequate, protective covered walkway for passage of persons along the adjacent public street. Coordinate with entrance gates, other facilities, and obstructions. Comply with regulations of authorities having jurisdiction.
1. Construct covered walkways using scaffold or shoring framing. Provide wood plank overhead decking, protective plywood enclosure walls, handrails, barricades, warning signs, lights, safe and well-drained walkways, and similar provisions for protection and safe passage. Extend the back wall beyond the structure to complete the enclosure fence. Paint and maintain in a manner acceptable to the Owner and the Architect.
- G. Security Enclosure and Lockup: Install substantial temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.
1. Storage: Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.
- H. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways, and subsoil might be contaminated or polluted or that other undesirable effects might result. Avoid use of tools and equipment that produce harmful noise. Restrict use of noise-making tools and equipment to hours that will minimize complaints from persons or firms near the site.

3.05 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.
- B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.
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.
 2. Protection: Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.
- C. Termination and Removal: Unless the Architect requests that it be maintained longer, remove each temporary facility when the need has ended, when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
1. Materials and facilities that constitute temporary facilities are the Contractor's property. The Owner reserves the right to take possession of project identification signs.
 2. Remove temporary paving not intended for or acceptable for integration into permanent paving. Where the area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil in the area. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant

- materials or lawns. Repair or replace street paving, curbs, and sidewalks at the temporary entrances, as required by the governing authority.
3. At Substantial Completion, clean and renovate permanent facilities used during the construction period including, but not limited to, the following:
 - a. Replace air filters and clean inside of ductwork and housings.
 - b. Replace significantly worn parts and parts subject to unusual operating conditions.
 - c. Replace lamps burned out or noticeably dimmed by hours of use.

END OF SECTION

**SECTION 01503
EXECUTION**

PART 1 - GENERAL

1.01 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.

1.02 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. Coordination of Owner-installed products.
 6. Progress cleaning.
 7. Starting and adjusting.
 8. Protection of installed construction.
 9. Correction of the Work.
- B. Related Requirements:
1. Division 01 Section "Summary" for limits on use of Project site.
 2. Division 01 Section "Submittal Procedures" for submitting surveys.
 3. Division 01 Section "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.
 4. Division 07 Section "Penetration Firestopping" for patching penetrations in fire-rated construction.

1.03 DEFINITIONS

- A. Cutting: Removal of in-place construction necessary to permit installation or performance of other work.
- B. Patching: Fitting and repair work required to restore construction to original conditions after installation of other work.

1.04 INFORMATIONAL SUBMITTALS

- A. Certificates: Submit certificate signed by land surveyor certifying that location and elevation of improvements comply with requirements.
- B. Cutting and Patching Plan: Submit plan describing procedures at least 10 days prior to the time cutting and patching will be performed. Include the following information:
1. Extent: Describe reason for and extent of each occurrence of cutting and patching.

2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building appearance and other significant visual elements.
 3. Products: List products to be used for patching and firms or entities that will perform patching work.
 4. Dates: Indicate when cutting and patching will be performed.
 5. Utilities and Mechanical and Electrical Systems: List services and systems that cutting and patching procedures will disturb or affect. List services and systems that will be relocated and those that will be temporarily out of service. Indicate length of time permanent services and systems will be disrupted.
 - a. Include description of provisions for temporary services and systems during interruption of permanent services and systems.
- C. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.
- D. Certified Surveys: Submit 4 copies signed by land surveyor.
- E. Final Property Survey: Submit 10 copies showing the Work performed and record survey data.

1.05 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 result in increased maintenance or decreased operational life or safety. Operational elements include the following:
 - a. Primary operational systems and equipment.
 - b. Fire separation assemblies.
 - c. Air or smoke barriers.
 - d. Fire-suppression systems.
 - e. Mechanical systems piping and ducts.
 - f. Control systems.
 - g. Communication systems.
 - h. Fire-detection and -alarm systems.
 - i. Conveying systems.
 - j. Electrical wiring systems.
 - k. Operating systems of special construction.
 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 result in

increased maintenance or decreased operational life or safety. Other construction elements include but are not limited to the following:

- a. Water, moisture, or vapor barriers.
 - b. Membranes and flashings.
 - c. Exterior curtain-wall construction.
 - d. Sprayed fire-resistive material.
 - e. Equipment supports.
 - f. Piping, ductwork, vessels, and equipment.
 - g. Noise- and vibration-control elements and systems.
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. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.
- D. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

PART 2 - PRODUCTS

2.01 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 requirements in Division 01 sustainable design requirements Section.
- 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

3.01 EXAMINATION

- A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.
1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services, and other utilities.

2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
 2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
 3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
- C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
1. Description of the Work.
 2. List of detrimental conditions, including substrates.
 3. List of unacceptable installation tolerances.
 4. Recommended corrections.
- D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.02 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 Division 01 Section "Project Management and Coordination."

3.03 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.

3.04 FIELD ENGINEERING

- A. Identification: Contractor 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.

Do not change or relocate existing benchmarks or control points without prior written approval of Architect. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect before proceeding.

Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.
- C. Benchmarks: Establish and maintain a minimum of 2 permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.

Record benchmark locations, with horizontal and vertical data on Project Record Documents.

Where the actual location or elevation of layout points cannot be marked, provide temporary reference points to locate the Work.

Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

- D. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.
- E. Final Property Survey: Engage a land surveyor to prepare a final property survey showing significant features (real property) for Project. Include on the survey a certification, signed by land surveyor, that principal metes, bounds, lines, and levels of Project are accurately positioned as shown on the survey.
- Show boundary lines, monuments, streets, site improvements and utilities, existing improvements and significant vegetation, adjoining properties, acreage, grade contours, and the distance and bearing from a site corner to a legal point.
- Recording: At Substantial Completion, have the final property survey recorded by or with authorities having jurisdiction as the official "property survey."

3.05 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
1. Make vertical work plumb and make horizontal work level.
 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.
 4. Maintain minimum headroom clearance of 96 inches in occupied spaces and 90 inches in unoccupied spaces.
- 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: Do not use tools or equipment that produce harmful 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 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. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.06 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 Division 01 Section "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 prevent 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 Division 31 Sections where required by cutting and patching operations.
 5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
 6. Proceed with patching after construction operations requiring cutting are complete.
- 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.
 - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
 - b. Restore damaged pipe covering to its original condition.
 3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
 4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
 5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.
- I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.07 OWNER-INSTALLED PRODUCTS

- A. Site Access: Provide access to Project site for Owner's construction personnel.
- B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction personnel.
- Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.
- Preinstallation Conferences: Include Owner's construction personnel at preinstallation

conferences covering portions of the Work that are to receive Owner's work. Attend preinstallation conferences conducted by Owner's construction personnel if portions of the Work depend on Owner's construction.

3.08 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 Division 01 Section "Temporary Facilities and Controls" and as dictated by local authorities having jurisdiction whichever is most stringent.
- 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 assure that no part of the construction completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.09 STARTING AND ADJUSTING

- A. Coordinate startup and adjusting of equipment and operating components with requirements in Division 01 Section "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 Division 01 Section "Quality Requirements."

3.10 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION

**SECTION 01600
MATERIALS AND EQUIPMENT**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications, apply to this section.

1.02 SECTION INCLUDES

- A. Products.
- B. Transportation and handling.
- C. Storage and protection.
- D. Product options.
- E. Substitutions.
- F. Alternatives.

1.03 RELATED SECTIONS

- A. Section 01400 – Quality Control: Product quality monitoring.

1.04 PRODUCTS

- A. Products: Means new material, machinery components, equipment, fixtures, and systems forming the Work. Does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components required for re-use.
- B. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.
- C. Provide interchangeable components of the same manufacturer, for similar components.

1.05 TRANSPORTATION AND HANDLING

- A. Transport and handle products in accordance with manufacturer's instructions.
- B. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.
- C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement or damage.

1.06 STORAGE AND PROTECTION

- A. Store and protect products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive products in weather-tight, climate controlled enclosures.

- B. For exterior storage of fabricated products, place on sloped supports, above ground.
- C. Provide off-site storage and protection when site does not permit on-site storage or protection.
- D. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation.
- E. Store loose granular materials on solid flat surfaces in a well-drained area. Avoid mixing with foreign matter.
- F. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- G. Arrange storage of products to permit access for inspection. Periodically inspect to assure products are undamaged and are maintained under specified conditions.

1.06 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Any product meeting those standards or description.
- B. Products Specified by Naming one or more Manufacturers: Products of manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products specified by naming one or more manufacturers with a provision for Substitutions: Submit a request for substitution for any manufacturer not named.

PART 2 - PRODUCTS

2.01 PRODUCT SELECTION

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, new at the time of installation.
 - 1. Provide products complete with accessories, trim, finish, safety guards, and other devices and details needed for a complete installation and the intended use and effect.
 - 2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.
- B. Product Selection Procedures: The Contract Documents and governing regulations govern product selection. Procedures governing product selection include the following:
 - 1. Proprietary Specification Requirements: Where Specifications name only a single product or manufacturer, provide the product indicated. No substitutions will be permitted.
 - 2. Semiproprietary Specification Requirements: Where Specifications name 2 or more products or manufacturers, provide 1 of the products indicated. No substitutions will be permitted.
 - a. Where Specifications specify products or manufacturers by name, accompanied by the term "or equal" or "or approved equal," comply

- with the Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.
3. Nonproprietary Specifications: When Specifications list products or manufacturers that are available and may be incorporated in the Work, but do not restrict the Contractor to use of these products only, the Contractor may propose any available product that complies with Contract requirements. Comply with Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.
 4. Descriptive Specification Requirements: Where Specifications describe a product or assembly, listing exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirements.
 5. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements and are recommended by the manufacturer for the application indicated.
 - a. Manufacturer's recommendations may be contained in published product literature or by the manufacturer's certification of performance.
 6. Compliance with Standards, Codes, and Regulations: Where Specifications only require compliance with an imposed code, standard, or regulation, select a product that complies with the standards, codes, or regulations specified.
 7. Visual Matching: Where Specifications require matching an established Sample, the Architect's decision will be final on whether a proposed product
 - a. Where no product available within the specified category matches satisfactorily and complies with other specified requirements, comply with provisions of the Contract Documents concerning "substitutions" for selection of a matching product in another product category.
 8. Visual Selection: Where specified product requirements include the phrase "... as selected from manufacturer's standard colors, patterns, textures ..." or a similar phrase, select a product and manufacturer that complies with other specified requirements. The Architect will select the color, pattern, and texture from the product line selected.
 9. Allowances: Refer to individual Specification Sections and "Allowance" provisions in Division 1 for allowances that control product selection and for procedures required for processing such selections.

PART 3 - EXECUTION

3.01 INSTALLATION OF PRODUCTS

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

END OF SECTION

**SECTION 01631
SUBSTITUTIONS**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes administrative and procedural requirements for handling requests for substitutions made after award of the Contract.
1. Multiple Prime Contracts: Provisions of this Section apply to the construction activities of each prime contractor.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
1. Division 1 Section "Reference Standards and Definitions" specifies the applicability of industry standards to products specified.
 2. Division 1 Section "Submittals" specifies requirements for submitting the Contractor's Construction Schedule and the Submittal Schedule.
 3. Division 1 Section "Materials and Equipment" specifies requirements governing the Contractor's selection of products and product options.

1.03 DEFINITIONS

- A. Definitions in this Article do not change or modify the meaning of other terms used in the Contract Documents.
- B. Substitutions: Changes in products, materials, equipment, and methods of construction required by the Contract Documents proposed by the Contractor after award of the Contract are considered to be requests for substitutions. The following are not considered to be requests for substitutions:
1. Substitutions requested during the bidding period, and accepted by Addendum prior to award of the Contract, are included in the Contract Documents and are not subject to requirements specified in this Section for substitutions.
 2. Revisions to the Contract Documents requested by the Owner or Architect.
 3. Specified options of products and construction methods included in the Contract Documents.
 4. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.

1.04 SUBMITTALS

- A. Substitution Request Submittal: The Architect will consider requests for substitution if received within 60 days after commencement of the Work. Requests received more than 60 days after commencement of the Work may be considered or rejected at the discretion of the Architect.

1. Submit 3 copies of each request for substitution for consideration. Submit requests in the form and according to procedures required for change-order proposals.
2. Identify the product or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers.
3. Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:
 - a. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate contractors that will be necessary to accommodate the proposed substitution.
 - b. A detailed comparison of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements, such as performance, weight, size, durability, and visual effect.
 - c. Product Data, including Drawings and descriptions of products and fabrication and installation procedures.
 - d. Samples, where applicable or requested.
 - e. A statement indicating the substitution's effect on the Contractor's Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.
 - f. Cost information, including a proposal of the net change, if any in the Contract Sum.
 - g. The Contractor's certification that the proposed substitution conforms to requirements in the Contract Documents in every respect and is appropriate for the applications indicated.
 - h. The Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of the failure of the substitution to perform adequately.
4. Architect's Action: If necessary, the Architect will request additional information or documentation for evaluation within one week of receipt of a request for substitution. The Architect will notify the Contractor of acceptance or rejection of the substitution within 2 weeks of receipt of the request, or one week of receipt of additional information or documentation, whichever is later. Acceptance will be in the form of a change order.
 - a. Use the product specified if the Architect cannot make a decision on the use of a proposed substitute within the time allocated.

PART 2 - PRODUCTS

2.01 SUBSTITUTIONS

- A. Conditions: The Architect will receive and consider the Contractor's request for substitution when one or more of the following conditions are satisfied, as determined by the Architect. If the following conditions are not satisfied, the Architect will return the requests without action except to record noncompliance with these requirements.
1. Extensive revisions to the Contract Documents are not required.
 2. Proposed changes are in keeping with the general intent of the Contract Documents.
 3. The request is timely, fully documented, and properly submitted.

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4. The specified product or method of construction cannot be provided within the Contract Time. The Architect will not consider the request if the product or method cannot be provided as a result of failure to pursue the Work promptly or coordinate activities properly.
 5. The request is directly related to an "or-equal" clause or similar language in the Contract Documents.
 6. The requested substitution offers the Owner a substantial advantage, in cost, time, energy conservation, or other considerations, after deducting additional responsibilities the Owner must assume. The Owner's additional responsibilities may include compensation to the Architect for redesign and evaluation services, increased cost of other construction by the Owner, and similar considerations.
 7. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.
 8. The specified product or method of construction cannot be provided in a manner that is compatible with other materials and where the Contractor certifies that the substitution will overcome the incompatibility.
 9. The specified product or method of construction cannot be coordinated with other materials and where the Contractor certifies that the proposed substitution can be coordinated.
 10. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Contractor certifies that the proposed substitution provides the required warranty.
 11. Where a proposed substitution involves more than one prime contractor, each contractor shall cooperate with the other contractors involved to coordinate the Work, provide uniformity and consistency, and assure compatibility of products.
- B. The Contractor's submittal and the Architect's acceptance of Shop Drawings, Product Data, or Samples for construction activities not complying with the Contract Documents do not constitute an acceptable or valid request for substitution, nor do they constitute approval.
- C. Forms: Used as part of the requirements of this section are attached at the end of this section and are as follows:
1. Proposed Equal Substitution Form, (2) Pages

PART 3 - EXECUTION

Not Used

END OF SECTION**SUBSTITUTIONS
SECTION 01631 - 3****05/15/2020**

Project: _____
 Title: _____
 To: _____
 Re: _____
 From: _____
 Date: _____

Project Number:

Contract For:

Specification Title: Description:

Section: Page: Article/Paragraph:

Proposed Substitution:

Manufacturer: _____ Address: _____ Phone: _____

Trade Name: Model No.:

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified. Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: _____ Signed by: _____

Firm: _____ Address: _____ Telephone: _____

A/E's REVIEW AND ACTION

- Substitution approved - Make submittals in accordance with Specification Section 01331.
- Substitution approved as noted - Make submittals in accordance with Specification Section 01331.
- Substitution rejected - Use specified materials.
- Substitution Request received too late - Use specified materials.

Signed by: Date:

Supporting Data Attached: Drawings Product Data Samples Tests Reports

Note: Tenderers are advised that consideration will only be given to "or equal" substitution proposals which are accompanied by technical product data sufficient to facilitate an objective review by the evaluation team. Required technical data includes information described

Note: Tenderers are advised that no voluntary option for any product will be reviewed by the evaluation team unless the Tenderer submitting the voluntary option also provides a bid price on a product which is either the "basis of design", or a specified equal product, or a substitute product which in fact meets with the requirements of an "Equal Substitution".

Specification Title: Description: _____

Section: Page: Item ID: _____

Proposed Voluntary Option: _____

Manufacturer: Address: Phone: _____

Trade Name: Model No.: _____

Installer: Address: Phone: _____

History: New product 2-5 years old 5-10 years old More than 10 years old

Differences between voluntary option and specified product:

Point-by-point comparative data attached

Reason for not providing specified item:

Similar Installation:

Project: Architect: _____

Address: Owner: _____

Date Installed: _____

Proposed Voluntary Option affects other parts of Work: No Yes; explain

Savings to Owner for accepting Voluntary Option: (\$ _____).

Supporting Data Attached: Drawings Product Data Samples Tests Reports

Note: Tenderers are advised that consideration will only be given to "or equal" substitution proposals which are accompanied by technical product data sufficient to facilitate an objective review by the evaluation team. Required technical data includes information described on each item page and that which is required by section 01631. Burden to demonstrate technical compliance with the furnished specifications lies with the Tenderer.

The Undersigned certifies:

- Proposed voluntary option has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed voluntary option will have no adverse effect on other trades and will not affect or delay progress schedule.
- Cost data as stated above is complete. Claims for additional costs related to accepted voluntary option which may subsequently become apparent are to be waived.
- Proposed voluntary option does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the voluntary option.
- Coordination, installation, and changes in the Work as necessary for accepted voluntary option will be complete in all respects.

Submitted by: _____ Signed by: _____

Firm: _____ Address: _____ Telephone: _____

**SECTION 01650
STARTING OF SYSTEMS**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications, apply to this section.

1.02 SECTION INCLUDES

- A. Starting systems.
- B. Demonstration and instructions.
- C. Testing, adjusting, and balancing.

1.03 RELATED SECTIONS

- A. Section 01400 – Quality Control: Manufacturers field reports.
- B. Section 01700 – Contract Closeout: System operation and maintenance data and extra materials.

1.04 STARTING SYSTEMS

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Notify Architect/Engineer seven days prior to start-up of each item.
- C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, or other conditions which may cause damage.
- D. Verify that tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- E. Verify wiring and support components for equipment are completed and tested.
- F. Execute start-up under supervision of responsible Contractor's personnel in accordance with manufacturers' instruction.
- G. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check and approve equipment or system installation prior to start-up and to supervise placing equipment or system in operation.
- H. Submit a written report in accordance with Section 01400 that equipment or system has been properly installed and is functioning correctly.

1.05 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of Products to Owner's personnel two weeks prior to date of Substantial Completion.
- B. Demonstrate Project equipment and instruct by a qualified manufacturers' representative who is knowledgeable about the Project.
- C. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- D. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owners' personnel in detail to explain all aspects of operation and maintenance.
- E. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled times, at equipment location.
- F. Prepare and insert additional data in operations and maintenance manuals when the need for additional data becomes apparent during instruction.

1.06 TESTING, ADJUSTING, AND BALANCING

- A. Contractor will appoint, employ, and pay for services of an independent firm to perform testing, adjusting and balancing.
- B. The independent firm will perform services specified in Section 15990.
- C. Reports will be submitted by the independent firm to the Architect/Engineer indicating observations and results of tests and indicating compliance or non-compliance with specified requirements and with the requirements of the Contract Documents.
- D. The mechanical and electrical sub-contractors shall conduct 3-month, 6-month and 9-month inspections, following the Substantial Completion of Construction, for preventative maintenance purposes. These first year warranty inspection reports shall be submitted in written form to the Owner/Architect within ten (10) days of inspection.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

**SECTION 01700
CONTRACT CLOSEOUT**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications, apply to this section.

1.02 SECTION INCLUDES

- A. Closeout procedures.
- B. Final cleaning.
- C. Adjusting.
- D. Project record documents.
- E. Operation and maintenance data.

1.03 RELATED SECTIONS

- A. Section 01650 - Starting of Systems: System start-up, testing, adjusting, and balancing.
- B. Section 01730 - Operation and Maintenance Data.
- C. Section 01740 - Warranties and Bonds.

1.04 CLOSOUT PROCEDURES

- A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Architect/Engineer's inspection.
- B. Provide submittals to Architect/Engineer that shall include the following:
 - 1. Record Drawings
 - 2. Operation and Maintenance Data
 - 3. Guarantees, Warranties and Bonds
 - 4. Keys and Keying Schedule
 - 5. Spare Parts and Maintenance Materials
 - 6. Certificate of Insurance for Products and Completed Operations
 - 7. Certificate of Occupancy, if required
- C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

1.05 FINAL CLEANING

- A. Execute final cleaning prior to final inspection.
- B. Clean interior and exterior glass and surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.

- C. Clean equipment and fixtures to a sanitary condition.
- D. Replace filters of operating equipment.
- E. Clean debris from roofs, gutters, downspouts, and drainage systems.
- F. Clean site; sweep paved areas, rake clean landscaped surfaces.
- G. Remove waste and surplus materials, rubbish, and construction facilities from the site.

1.06 ADJUSTING

- A. Adjust operating Products and equipment to ensure smooth and unhindered operation.

1.07 PROJECT RECORD DOCUMENTS

- A. Maintain on-site, one set of the following record documents; record actual revisions to the Work:
 - 1. Contract Drawings
 - 2. Specifications
 - 3. Addenda
 - 4. Change Orders and other Modifications to the Contract
 - 5. Reviewed shop drawings, product data, and samples
- B. Store Record Documents separate from documents used for construction.
- C. Record information concurrent with construction progress.
- D. Specifications: Legibly mark and record at each Product section description of actual Products installed, including the following:
 - 1. Manufacturers' name and product model and number
 - 2. Product substitutions or alternates utilized
- E. Record Documents and Shop Drawings: legibly mark each item to record actual construction including:
 - 1. Measured depths of foundations in relation to finish ground floor datum.
 - 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 - 4. Field changes of dimension and detail.
 - 5. Details not on original Contract Drawings.
- F. The Contractor shall submit to the Architect/Engineer, four (4) weeks before final inspection, an electronic copy of operating and maintenance data in a single PDF file for review. All data shall be assembled and completely indexed into one volume and shall identify the size, model, and features indicated for each item.

1.08 SPARE PARTS AND MAINTENANCE MATERIALS

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

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

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

3.01 CLOSEOUT PROCEDURES

- A. Operation and Maintenance Instructions: Arrange for each Installer of equipment that requires regular maintenance to meet with the Owner's personnel to provide instruction in proper operation and maintenance. Provide instruction by manufacturer's representatives if installers are not experienced in operation and maintenance procedures. Include a detailed review of the following items:
 - 1. Maintenance manuals.
 - 2. Record documents.
 - 3. Spare parts and materials.
 - 4. Tools.
 - 5. Lubricants.
 - 6. Fuels.
 - 7. Identification systems.
 - 8. Control sequences.
 - 9. Hazards.
 - 10. Cleaning.
 - 11. Warranties and bonds.
 - 12. Maintenance agreements and similar continuing commitments.
- B. As part of instruction for operating equipment, demonstrate the following procedures:
 - 1. Startup.
 - 2. Shutdown.
 - 3. Emergency operations.
 - 4. Noise and vibration adjustments.
 - 5. Safety procedures.
 - 6. Economy and efficiency adjustments.
 - 7. Effective energy utilization.

3.02 FINAL CLEANING

- A. General: The General Conditions require general cleaning during construction. Regular site cleaning is included in Division 1 Section "Construction Facilities and Temporary Controls."
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions.
 - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion.
 - a. Remove labels that are not permanent labels.

- b. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.
 - c. Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of stains, films, and similar foreign substances. Restore reflective surfaces to their original condition. Leave concrete floors broom clean. Vacuum carpeted surfaces.
 - d. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.
 - e. Clean the site, including landscape development areas, of rubbish, litter, and other foreign substances. Sweep paved areas broom clean; remove stains, spills, and other foreign deposits. Rake grounds that are neither paved nor planted to a smooth, even-textured surface.
- C. Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid the Project of rodents, insects, and other pests.
- D. Removal of Protection: Remove temporary protection and facilities installed for protection of the Work during construction.
- E. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from the site and dispose of lawfully.
- 1. Where extra materials of value remain after completion of associated Work, they become the Owner's property. Dispose of these materials as directed by the Owner.

END OF SECTION

**SECTION 01730
OPERATION AND MAINTENANCE DATA**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications, apply to this section.

1.02 SECTION INCLUDES

- A. Format and content of manuals.
- B. Schedule of submittals.

1.03 RELATED SECTIONS

- A. Section 01300 – Submittals: Shop drawings, product data and samples.
- B. Section 01400 – Quality Control: Manufacturer’s instructions.
- C. Section 01400 – Quality Control: Test and balance reports.
- D. Section 01600 – Material and Equipment: Systems demonstration.
- E. Section 01700 – Contract Closeout: Project Record Documents.
- F. Individual Specifications Sections: Specific requirements for operation and maintenance data.

1.04 QUALITY ASSURANCE

- A. Prepare instructions and data by personnel experienced in maintenance and operation of described products.

1.05 FORMAT

- A. Prepare data in the form of an instructional manual.
- B. Binders: Commercial quality, 8-1/2 x 11 inch three-ring binders with hardback, cleanable, plastic covers. When multiple binders are used, correlate data into related consistent groupings.
- C. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; list title of Project and identify subject matter of contents.
- D. Arrange content by systems under section numbers and sequence of Table of Contents of this Project Manual.
- E. Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.

- F. Text: Manufacturer's printed data, or typewritten data on 24 pound paper.
- G. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

1.06 CONTENTS, EACH VOLUME

- A. Table of Contents: Provide title of Project; names, addresses, and telephone numbers of Architect/Engineer, sub-consultants, and Contractor with name of responsible parties; schedule of products and systems, indexed to content of volume.
- B. For Each Product or System: List names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
- C. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- D. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. (Do not use Project Record Documents as maintenance drawings.)
- E. Type Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01400.
- F. Warranties and Bonds: As specified in Section 01740.

1.07 MANUAL FOR MATERIALS AND FINISHES

- A. Building Products, Applied Materials, and Finishes: Include product data, with catalog number, size, composition, and color and texture designations. Provide information for re-ordering custom manufactured Products.
- B. Instructions for Care and Maintenance: Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods and recommended schedule for cleaning and maintenance.
- C. Moisture Protection and Weather Exposed Products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance and repair.
- D. Additional Requirements: As specified in individual Product specification sections.
- E. Provide a listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

1.08 MANUAL FOR EQUIPMENT AND SYSTEMS

- A. Each Item of Equipment and Each System: Include description of unit or system, and component parts. Identify function, normal operating characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
- B. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications.

- C. Include color coded wiring diagram as installed.
- D. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulations, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
- E. Maintenance Requirements: Include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- F. Provide servicing and lubrication schedule, and list of lubricants required.
- G. Include manufacturer's printed operation and maintenance instructions.
- H. Include sequence of operation by controls manufacturer.
- I. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- J. Provide control diagrams by controls manufacturer as installed.
- K. Provide Contractor's coordination drawings, with color coded piping diagrams as installed.
- L. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagram.
- M. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- N. Include test and balancing reports as specified in Section 01400.
- O. Additional Requirements: As specified in individual Product specification sections.
- P. Provide a listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

1.09 INSTRUCTION OF OWNER PERSONNEL

- A. Before final inspection, instruct Owner's designated personnel in operation, adjustment, and maintenance of products, equipment, and systems, at agreed upon times.
- B. For equipment requiring seasonal operation, perform instructions for other seasons within six months.
- C. Use operation and maintenance manuals as basis for instruction. Review contents of manual with personnel in detail to explain all aspects of operation and maintenance.
- D. Prepare and insert additional data in Operation and Maintenance Manual when need for such data becomes apparent during instruction.

1.10 SUBMITTALS

- A. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect/Engineer will review draft and return one copy with comments.
- B. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit documents within ten days after acceptance.
- C. Submit one copy of completed volumes in final form 15 days prior to final inspection. Copy will be returned after final inspection, with Architect/Engineer comments. Revise content of documents as required prior to final submittal.
- D. Submit two copies of revised volumes of data in final form within ten days after final inspection.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

**SECTION 01731
PROJECT RECORD DOCUMENTS**

PART 1 - GENERAL

1.01 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.

1.02 SUMMARY

- A. Section includes administrative and procedural requirements for project record documents, including the following:
1. Record Drawings.
 2. Record Specifications.
 3. Record Product Data.
 4. Miscellaneous record submittals.
- B. Related Requirements:
1. Division 01 Section "Multiple Contract Summary" for coordinating project record documents covering the Work of multiple contracts.
 2. Division 01 Section "Execution" for final property survey.
 3. Division 01 Section "Closeout Procedures" for general closeout procedures.
 4. Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
 5. Divisions 02 through 33 Sections for specific requirements for project record documents of the Work in those Sections.

1.03 CLOSEOUT SUBMITTALS

- A. Record Drawings: Comply with the following:
1. Number of Copies: Submit 1 set(s) of marked-up record drawings and specifications.
 2. Number of Electronic Copies: Submit copies of record Drawings as follows:
 - a. Final Submittal:
 - 1) Submit 1 paper-copy set(s) of marked-up record drawings.
 - 2) Submit PDF electronic files of scanned record drawings.
- B. Record Product Data: Submit 1 paper copy and 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.
- C. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit 1 paper copy and annotated PDF electronic files and directories of each submittal.

- D. Reports: Submit written report [**weekly**] indicating items incorporated into project record documents concurrent with progress of the Work, including revisions, concealed conditions, field changes, product selections, and other notations incorporated.

PART 2 - PRODUCTS

2.01 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 archive 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 below first floor.
 - 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.
 - l. 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. Identification: As follows:
 - a. Project name.
 - b. Date.
 - c. Designation "PROJECT RECORD DRAWINGS."
 - d. Name of Architect.
 - e. Name of Contractor.

2.02 RECORD PRODUCT DATA

- A. 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 and record Drawings where applicable.
- B. Format: Submit record Product Data as scanned PDF electronic file(s) of marked-up paper copy of Product Data.
 1. Include record Product Data directory organized by Specification Section number and title, electronically linked to each item of record Product Data.

2.03 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.
- B. Format: Submit miscellaneous record submittals as scanned PDF electronic file(s) of marked-up miscellaneous record submittals.
 1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

PART 3 - EXECUTION

3.01 RECORDING AND MAINTENANCE

- 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. Maintenance of Record Documents and Samples: Store record documents and Samples 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.

END OF SECTION

**SECTION 01732
DEMONSTRATION AND TRAINING**

PART 1 - GENERAL

1.01 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.

1.02 SUMMARY

- A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
1. Demonstration of operation of systems, subsystems, and equipment.
 2. Training in operation and maintenance of systems, subsystems, and equipment.
 3. Demonstration and training video recordings.
- B. Related Requirements:
1. Divisions 02 through 16 Sections for specific requirements for demonstration and training for products in those Sections.

1.03 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.
- B. Attendance Record: For each training module, submit list of participants and length of instruction time.
- C. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

1.04 CLOSEOUT SUBMITTALS

- A. Demonstration and Training Video Recordings: Submit 2 copies within 7 days of end of each training module.
1. Identification: On each copy, provide an applied label with the following information:
 - a. Name of Project.
 - b. Name and address of videographer.
 - c. Name of Architect.
 - d. Name of Construction Manager.
 - e. Name of Contractor.
 - f. Date of video recording.

2. Transcript: Prepared and bound in format matching operation and maintenance manuals. Mark appropriate identification on front and spine of each binder. Include a cover sheet with same label information as the corresponding video recording. Include name of Project and date of video recording on each page.
3. Transcript: Prepared in PDF electronic format. Include a cover sheet with same label information as the corresponding video recording and a table of contents with links to corresponding training components. Include name of Project and date of video recording on each page.
4. At completion of training, submit complete training manual(s) for Owner's use prepared and bound in format matching operation and maintenance manuals and in PDF electronic file format on compact disc.

1.05 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 Division 01 Section "Quality Requirements," experienced in operation and maintenance procedures and training.
- C. Videographer Qualifications: A professional videographer who is experienced photographing demonstration and training events similar to those required.
- D. Preinstruction Conference: Conduct conference at Project site to comply with requirements in Division 01, Section 01301 "Project Management and Coordination." Review methods and procedures related to demonstration and training including, but not limited to, the following:
 1. Inspect and discuss locations and other facilities required for instruction.
 2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
 3. Review required content of instruction.
 4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.06 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 has been reviewed and approved by Architect.

PART 2 - PRODUCTS**2.01 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. Operations manuals.
 - c. Maintenance manuals.
 - d. Project record documents.
 - e. Identification systems.
 - f. Warranties and bonds.
 - g. Maintenance service agreements and similar continuing commitments.
 - 3. 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.

- l. 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.
 - 6. Troubleshooting: Include the following:
 - a. Diagnostic instructions.
 - b. Test and inspection procedures.
 - 7. 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.

PART 3 - EXECUTION

3.01 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 Division 01 Section "Operations and Maintenance Data."
- B. Set up instructional equipment at instruction location.

3.02 INSTRUCTION

- A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.
- B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
 - 1. Architect will furnish an instructor to describe basis of system design, operational requirements, criteria, and regulatory requirements.
 - 2. Owner will furnish an instructor to describe Owner's operational philosophy.
 - 3. Owner will furnish Contractor with names and positions of participants.

- C. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
 - 1. Schedule training with Owner with at least 7 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 an oral, a written or 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.

3.03 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. Video: Provide minimum 640 x 480 video resolution converted to format file type acceptable to Owner, on electronic media.
 - 1. Electronic Media: Read-only format compact disc acceptable to Owner, with commercial-grade graphic label.
 - 2. File Hierarchy: Organize folder structure and file locations according to project manual table of contents. Provide complete screen-based menu.
 - 3. File Names: Utilize file names based upon name of equipment generally described in video segment, as identified in Project specifications.
 - 4. Contractor and Installer Contact File: Using appropriate software, create a file for inclusion on the Equipment Demonstration and Training DVD that describes the following for each Contractor involved on the Project, arranged according to Project table of contents:
 - a. Name of Contractor/Installer.
 - b. Business address.
 - c. Business phone number.
 - d. Point of contact.
 - e. E-mail address.
- C. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to adequately cover area of demonstration and training. Display continuous running time.
 - 1. Film training session(s) in segments not to exceed 15 minutes.
 - a. Produce segments to present a single significant piece of equipment per segment.
 - b. Organize segments with multiple pieces of equipment to follow order of Project Manual table of contents.
 - c. Where a training session on a particular piece of equipment exceeds 15 minutes, stop filming and pause training session. Begin training session again upon commencement of new filming segment.

- D. Light Levels: Verify light levels are adequate to properly light equipment. Verify equipment markings are clearly visible prior to recording.
 - 1. Furnish additional portable lighting as required.
- E. Narration: Describe scenes on video recording by audio narration by microphone while or dubbing audio narration off-site after video recording is recorded. Include description of items being viewed.
- F. Transcript: Provide a transcript of the narration. Display images and running time captured from videotape opposite the corresponding narration segment.
- G. Preproduced Video Recordings: Provide video recordings used as a component of training modules in same format as recordings of live training.

END OF SECTION

**SECTION 01740
WARRANTIES AND BONDS**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications, apply to this section.

1.02 SECTION INCLUDES

- A. Preparation and submittal
- B. Time and schedule of submittals

1.03 RELATED SECTIONS

- A. Document 00701 – General Conditions: Performance Bond and Labor and Material Payment Bonds, Warranty, and Correction of Work.
- B. Section 01700 – Contract Closeout
- C. Section 01730 – Operation and Maintenance Data.
- D. Individual Specifications Sections: Warranties required for specific products or Work.

1.04 FORM OF SUBMITTALS

- A. Bind in commercial quality, 8-1/2 x 11 inch three ring side binders with hardback, cleanable plastic covers.
- B. Label cover of each binder with typed or printed title, "WARRANTIES AND BONDS", with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible principal.
- C. Table of contents: Neatly typed, in the sequence of the Table of Contents of the Project manual, with each item identified with the number and title of the specification Section in which specified, and the name of the product or Work item.
- D. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address and telephone number of responsible principal.

1.05 PREPARATION OF SUBMITTALS

- A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within ten (10) days after completion of the applicable item or work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial Completion is determined.
- B. Verify that documents are in proper form, contain full information, and are notarized.

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- C. Co-execute submittals when required.
- D. Retain warranties and bonds until time specified for submittal.

1.06 TIME OF SUBMITTALS

- A. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within ten (10) days after acceptance.
- B. Make other submittals within ten (10) days after Date of Substantial Completion, prior to final Application for Payment.
- C. For items of Work when acceptance is delayed beyond Date of Substantial Completion, submit within ten (10) days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

**SECTION 01805
CLEANING UP****PART I – GENERAL****1.01 RELATED DOCUMENTS**

- A. The general provisions of the Contract, including the General, Supplementary General Conditions and special conditions shall apply to the Work specified in this section.

1.02 REQUIREMENTS OF REGULATORY AGENCIES

- A. Volatile waste shall be stored in covered metal containers, and removed from the premises daily.
- B. Clean-up and disposal operations shall be conducted to comply with local ordinances and Anti-Pollution Laws.
 - 1. Burning or burying of rubbish and waste on the site is not permitted.
 - 2. Disposal of volatile fluid waste in storm or sanitary sewer systems, or into streams or waterways is not permitted.
- C. Hazardous materials shall be stored and disposed of only as permitted by law and shall be properly and legally removed from the premises prior to the completion of the Contract.

1.03 MATERIALS

- A. Cleaning materials shall be used on materials only when recommended specifically by the materials manufacturer.

1.04 CLEANING DURING CONSTRUCTION

- A. The Contractor shall oversee cleaning by the various trades and ensure that the building and grounds are maintained free from accumulations of waste materials. The premises shall be kept free from the accumulation of waste materials or rubbish at all times, daily cleaning required.
- B. The Contractor shall provide suitable containers on the Site for collection of waste disposed of in a legal manner.
- C. The Contractor shall not, in any case, use the Owner's trash facilities.

1.05 FINAL CLEANING

- A. At completion of the Project, and just prior to Final Acceptance, the Contractor and Owner shall conduct an inspection of the entire Project. Prior to conducting this inspection the Contractor shall clean, or re-clean, entire areas exposed to view to normal level for "first class" maintenance/cleaning of building projects of a similar nature, as needed to produce a "clean" condition as judged by the Architect and Owner. The Contractor shall at minimum:

1. Remove grease, dust, dirt, stains, temporary labels, and fingerprints, non-permanent protection and other foreign materials from interior and exterior surface.
 2. Repair, patch, and touch-up marred surfaces to match adjacent finishes.
 3. Broom clean paved surfaces, clean and rake site, and clean other exposed site finishes.
- B. The Contractor shall maintain cleaning while the Project is occupied by the Owner.
- C. The Contractor shall remove all his/her waste materials and rubbish from and about the project as well as all tools, construction equipment, and machinery and surplus materials.

END OF SECTION

**SECTION 02070
SELECTIVE DEMOLITION**

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 DESCRIPTION OF WORK

- A. This Section includes the following:
 - 1. Demolition and removal of selected portions of a building.
 - 2. Demolition and removal of selected site elements.
 - 3. Patching and repairs.

1.03 RELATED SECTIONS

- A. Division 1 Section "Summary of Work" for use of the building and phasing requirements.
- B. Division 1 Section "Cutting and Patching" for cutting and patching procedures for selective demolition operations.
- C. Division 1 Section "Construction Facilities and Temporary Controls" for temporary utilities, temporary construction and support facilities, temporary security and protection facilities, and environmental protection measures for selective demolition operations.
- D. Division 1 Section "Contract Closeout" for record document requirements.
- E. Division 2 Section "Building Demolition" for demolition of buildings, structures, and site improvements.
- F. Division 2 Section "Site Clearing" for site clearing and removing above- and below-grade improvements.
- G. Division 2 Section "Earthwork" for soil materials, excavating, backfilling, and site grading.
- H. Division 6 Section "Rough Carpentry" for material and construction requirements for temporary enclosures.
- I. Division 9 Section "Gypsum Board Assemblies" for material and construction requirements for temporary enclosures.
- J. Division 15 Sections for cutting, patching, or relocating mechanical items.
- K. Division 16 Sections for cutting, patching, or relocating electrical items.

1.04 DEFINITIONS

- A. Remove: Remove and legally dispose of items except those indicated to be reinstalled, salvaged, or to remain the Owner's property.

- B. Remove and Salvage: Items indicated to be removed and salvaged remain the Owner's property. Remove, clean, and pack or crate items to protect against damage. Identify contents of containers and deliver to Owner's designated storage area.
- C. Remove and Reinstall: Remove items indicated; clean, service, and otherwise prepare them for reuse; store and protect against damage. Reinstall items in the same locations or in locations indicated.
- D. Existing to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by the Architect, items may be removed to a suitable, protected storage location during selective demolition and then cleaned and reinstalled in their original locations.

1.05 MATERIALS OWNERSHIP

- A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain the Owner's property, demolished materials shall become the Contractor's property and shall be removed from the site with further disposition at the Contractor's option.
- B. Historical items indicated remain the Owner's property. Carefully remove and salvage each item in a manner to prevent damage and deliver promptly to the Owner.
- C. Historical 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 the Owner, which may be encountered during selective demolition, remain the Owner's property. Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to the Owner.
 - 1. Cooperate with Owner's archaeologist or historical adviser.

1.06 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections, for information only, unless otherwise indicated.
- B. Proposed dust-control measures.
- C. Proposed noise-control measures.
- D. Schedule of selective demolition activities indicating the following:
 - 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity.
 - 2. Interruption of utility services.
 - 3. Coordination for shutoff, capping, and continuation of utility services.
 - 4. Use of elevator and stairs.
 - 5. Detailed sequence of selective demolition and removal work to ensure uninterrupted progress of Owner's on-site operations.
 - 6. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
 - 7. Locations of temporary partitions and means of egress.

- E. Inventory of items to be removed and salvaged.
- F. Inventory of items to be removed by Owner.
- G. Photographs or videotape, sufficiently detailed, of existing conditions of adjoining construction and site improvements that might be misconstrued as damage caused by selective demolition operations.
- H. Record drawings at Project closeout according to Division 1 Section "Contract Closeout."
 - 1. Identify and accurately locate capped utilities and other subsurface structural, electrical, or mechanical conditions.
- I. Landfill records indicating receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.07 QUALITY ASSURANCE

- A. Demolition Firm Qualifications: Engage an experienced firm that has successfully completed selective demolition Work similar to that indicated for this Project.
- B. Regulatory Requirements: Comply with governing EPA notification regulations before starting selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Predemolition Conference: Conduct conference at Project site to comply with preinstallation conference requirements of Division 1 Section "Project Meetings."

1.08 PROJECT CONDITIONS

- A. Owner will occupy portions of the building immediately adjacent to selective demolition area. Conduct selective demolition so that Owner's operations will not be disrupted. Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.
- B. Owner assumes no responsibility for actual condition of buildings to be selectively demolished.
 - 1. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. Asbestos: It is not expected that asbestos will be encountered in the Work. If any materials suspected of containing asbestos are encountered, do not disturb the materials. Immediately notify the Architect and the Owner.
 - 1. Asbestos will be removed by Owner before start of Work.
- D. Asbestos: Asbestos is present in the building to be selectively demolished. A report on the presence of asbestos is on file for review and use. Examine the report to become aware of locations where asbestos is present.
 - 1. Asbestos abatement is specified elsewhere in the Contract Documents.
 - 2. Do not disturb asbestos or any material suspected of containing asbestos except under the procedures specified elsewhere in the Contract Documents.
- E. Storage or sale of removed items or materials on-site will not be permitted.

1.09 SCHEDULING

- A. Arrange selective demolition schedule so as not to interfere with Owner's on-site operations.

1.10 WARRANTY

- A. Existing Special Warranty: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS

2.01 REPAIR MATERIALS

- A. Use repair materials identical to existing materials.
 - 1. Where identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
 - 2. Use materials whose installed performance equals or surpasses that of existing materials.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that utilities have been disconnected and capped.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with the intended function or design are encountered, investigate and measure the nature and extent of the conflict. Promptly submit a written report to the Architect.
- E. Survey the condition of the building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of the structure or adjacent structures during selective demolition.
- F. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.02 UTILITY SERVICES

- A. Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - 1. Do not interrupt existing utilities serving occupied or operating facilities, except when authorized in writing by Owner and authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and to governing authorities.
 - a. Provide not less than 72 hours' notice to Owner if shutdown of service is required during changeover.

- B. Utility Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services serving building to be selectively demolished.
 - 1. Owner will arrange to shut off indicated utilities when requested by Contractor.
 - 2. Arrange to shut off indicated utilities with utility companies.
 - 3. Where utility services are required to be removed, relocated, or abandoned, provide bypass connections to maintain continuity of service to other parts of the building before proceeding with selective demolition.
 - 4. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal the remaining portion of pipe or conduit after bypassing.

- C. Utility Requirements: Refer to Division 15 and 16 Sections for shutting off, disconnecting, removing, and sealing or capping utility services. Do not start selective demolition work until utility disconnecting and sealing have been completed and verified in writing.

3.03 PREPARATION

- A. Drain, purge, or otherwise remove, collect, and dispose of chemicals, gases, explosives, acids, flammables, or other dangerous materials before proceeding with selective demolition operations.

- B. Employ a certified, licensed exterminator to treat building and to control rodents and vermin before and during selective demolition operations.

- C. Conduct demolition operations and remove debris to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.
 - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

- D. Conduct demolition operations to prevent injury to people and damage to adjacent buildings and facilities to remain. Ensure safe passage of people around selective demolition area.
 - 1. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction.
 - 2. Protect existing site improvements, appurtenances, and landscaping to remain.
 - 3. Erect a plainly visible fence around drip line of individual trees or around perimeter drip line of groups of trees to remain.
 - 4. Provide temporary weather protection, during interval between demolition and removal of existing construction, on exterior surfaces and new construction to ensure that no water leakage or damage occurs to structure or interior areas.
 - 5. Protect walls, ceilings, floors, and other existing finish work that are to remain and are exposed during selective demolition operations.
 - 6. Cover and protect furniture, furnishings, and equipment that have not been removed.

- E. Erect and maintain dustproof partitions and temporary enclosures to limit dust and dirt migration and to separate areas from fumes and noise.

1. Construct dustproof partitions of not less than nominal 3 5/8-inch studs, 5/8-inch gypsum wallboard with joints taped on occupied side, and 1/2-inch fire-retardant plywood on the demolition side.
 2. Insulate partition to provide noise protection to occupied areas.
 3. Seal joints and perimeter. Equip partitions with dustproof doors and security locks.
 4. Protect air-handling equipment.
 5. Weatherstrip openings.
- F. Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of building to be selectively demolished.
1. Strengthen or add new supports when required during progress of selective demolition.

3.04 POLLUTION CONTROLS

- A. Use water mist, temporary enclosures, and other suitable methods to limit the spread of dust and dirt. Comply with governing environmental protection regulations.
1. Do not use water when it may damage existing construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.
- B. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
1. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level.
- C. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before start of selective demolition.

3.05 SELECTIVE DEMOLITION

- A. Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete Work within limitations of governing regulations and as follows:
1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition work above each floor or tier before disturbing supporting members on lower levels.
 2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. To minimize disturbance of adjacent surfaces, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
 5. Maintain adequate ventilation when using cutting torches.

6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 8. Locate selective demolition equipment throughout the structure and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 9. Dispose of demolished items and materials promptly. On-site storage or sale of removed items is prohibited.
 10. Return elements of construction and surfaces to remain to condition existing before start of selective demolition operations.
- B. Demolish concrete and masonry in small sections. Cut concrete and masonry at junctures with construction to remain, using power-driven masonry saw or hand tools; do not use power-driven impact tools.
- C. Break up and remove concrete slabs on grade, unless otherwise shown to remain.
- D. Remove resilient floor coverings and adhesive according to recommendations of the Resilient Floor Covering Institute's (RFCI) "Recommended Work Practices for the Removal of Resilient Floor Coverings" and Addendum.
1. Remove residual adhesive and prepare substrate for new floor coverings by one of the methods recommended by RFCI.
- E. Remove no more existing roofing than can be covered in one day by new roofing. See applicable Division 7 Section for new roofing requirements.
- F. Remove air-conditioning equipment without releasing refrigerants.

3.06 PATCHING AND REPAIRS

- A. Promptly patch and repair holes and damaged surfaces caused to adjacent construction by selective demolition operations.
- B. Patching is specified in Division 1 Section "Cutting and Patching."
- C. Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.
1. Completely fill holes and depressions in existing masonry walls to remain with an approved masonry patching material, applied according to manufacturer's printed recommendations.
- D. Restore exposed finishes of patched areas and extend finish restoration into adjoining construction to remain in a manner that eliminates evidence of patching and refinishing.
- E. Patch and repair floor and wall surfaces in the new space where demolished walls or partitions extend one finished area into another. Provide a flush and even surface of uniform color and appearance.
1. Closely match texture and finish of existing adjacent surface.
 2. Patch with durable seams that are as invisible as possible. Comply with specified tolerances.

3. Where patching smooth painted surfaces, extend final paint coat over entire unbroken surface containing the patch after the surface has received primer and second coat.
 4. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 5. Inspect and test patched areas to demonstrate integrity of the installation, where feasible.
- F. Patch, repair, or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

3.07 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
- B. Burning: Do not burn demolished materials.
- C. Burning: Burning of demolished materials will be permitted only at designated areas on Owner's property, providing required permits are obtained. Provide full-time monitoring for burning materials until fires are extinguished.
- D. Disposal: Transport demolished materials and dispose of at designated spoil areas on Owner's property.
- E. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.08 CLEANING

- A. Sweep the building broom clean on completion of selective demolition operation.
- B. Change filters on air-handling equipment on completion of selective demolition operations.

3.09 SELECTIVE DEMOLITION SCHEDULE

- A. Remove the following:
- B. Remove and salvage the following:
- C. Remove and reinstall the following:

END OF SECTION

**SECTION 03300
CAST-IN-PLACE CONCRETE**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specifications Sections, apply to this section.

1.02 DESCRIPTION OF WORK

- A. This section specifies cast-in-place concrete, complete and in place as shown on the drawings, including formwork, reinforcing, mix design, placement procedures, curing, testing and finishing.
- B. Concrete paving and walks are specified in Division 2.
- C. Pre-cast concrete is specified in other Division 3 sections.
- D. Mechanical finishes and concrete floor topping are specified in other Division 3 sections.

1.03 RELATED SECTIONS

- A. Section 03305 - Controlled Low Strength Material (CLSM).
- B. Section 03200 – Concrete Reinforcement

1.04 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. Project data for proprietary materials and items, including reinforcement and forming accessories, admixtures, patching compounds, water stops, joint systems, curing compounds, dry-shake finish materials, and others as requested by the Architect.
- C. Concrete mix design for each unique class of concrete in the project.
- D. Shop drawings for reinforcement, for fabrication, bending, and placement of concrete reinforcement. Comply with ACI Detailing Manual, showing bar schedules, stirrup spacing, diagrams of bent bars, and arrangement of concrete reinforcement. Include special reinforcement for openings through concrete structures and corner bars.
- E. Submitted shop drawings must be checked and signed by the General Contractor.
- F. Shop drawings for formwork, shoring, and reshoring prepared by a registered Professional Engineer for fabrication and erection of forms for specific finished concrete surfaces. Show form construction including jointing, special form joint or reveals, location and pattern of form tie placement, and other items that affect exposed concrete visually.

- G. Architect's review is for general architectural applications and features only. Design of formwork for structural stability and efficiency is Contractor's responsibility.
- H. Samples of materials as requested by Architect, including names, sources, and descriptions, as follows:
 - 1. Fibrous reinforcement
 - 2. Reglet's
 - 3. Waterstops
 - 4. Vapor retarder
- I. Laboratory test reports for concrete materials and mix design test.
- J. Material certificates in lieu of materials laboratory test reports when permitted by Architect. Materials certificates shall be signed by manufacturer and Contractor, certifying that each material item complies with or exceeds specified requirements. Provide certification from admixture manufacturers that chloride content complies with specification requirements.
- K. Minutes of pre-construction conference.
- L. Proposed construction joint locations for all structural components.

1.05 QUALITY ASSURANCE

- A. Codes and Standards: Comply with provisions of the following codes, specifications, and standards, except where more stringent requirements are shown or specified.
 - ACI 301-16 - Specifications for Structural Concrete
 - ACI 315-99 - Standard Practice for Detailing Reinforced Concrete Structures
 - ACI 318-14 - Building Code Requirement for Reinforced Concrete"
 - CRSI Manual of Standard Practice
- B. Concrete testing services: Owner shall engage a testing laboratory acceptable to Architect to perform material evaluation tests and to design concrete mixes. Testing laboratory shall be currently accredited by C.M.E.C, N.V.L.A.P, or other recognized authority, or the basis of compliance with ASTM C1077. Sampling and testing of concrete to be done by ACI certified field technician Grade 1 personnel or equivalent.
- C. Materials and installed work may require testing and re-testing at any time during progress of work. Tests, including re-testing or rejected materials for installed work, shall be done at Contractor's expense.

PART 2 - PRODUCTS

2.01 FORM MATERIALS

- A. Forms for exposed finished concrete: Plywood, metal, metal-framed plywood faced, or other acceptable panel type materials, to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on drawings.
- B. Forms for unexposed finish concrete: Plywood, lumber, metal, or other acceptable material. Provide lumber dressed on at least two (2) edges and one side for tight fit.

- C. Shores and struts: Provide positive means of adjustment capable of taking up formwork settlement during concreting.
- D. Form coatings: Provide commercial formulation form-coating compounds with a maximum VOC of 350 mg/1 that will not bond with, stain or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
- E. Form ties: Factory fabricated, adjustable length, removable or snap-off metal form ties designed to prevent form deflection and to prevent spilling concrete upon removal. Provide units that will leave no metal closer than 1-1/2 inches to exposed surface.
- F. Provide ties that, when removed, will leave holes no larger than one (1) inch diameter in concrete surface.

2.02 REINFORCING MATERIALS

- A. Reinforcing bars: ASTM A615, Grade 60, deformed. Deliver to job site bundled, tagged and marked. Store off ground.
- B. Steel wire: ASTM A82, plain cold-drawn steel.
- C. Welded wire fabric: ASTM A185, welded steel wire fabric. Use sheet stock only for slabs on grade.
- D. Welded deformed steel wire fabric: ASTM A497.
- E. Supports for reinforcement: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Use wire-bar type supports complying with CRSI specifications.
- F. For slabs on grade, use supports with sand plates or horizontal runners where base material will not support chair legs.
- G. For exposed-to-view concrete surfaces, where legs of supports are in contact with forms, provide supports with legs that are plastic protected (CRSI, Class 1) or stainless steel protected (CRSI, Class 2).

2.03 FIBROUS REINFORCING FOR CONCRETE SLABS

- A. Macro Synthetic Fiber: Self-fibrillating polypropylene/polyethylene color blended synthetic macro fibers engineered and designed for use in concrete, complying with ASTM C1116/C 1116M.
- B. Macro synthetic fibers with the following typical physical properties:
 - 1. Specific Gravity: 0.91 - 0.92, Density: 0.91 – 0.92 kg/liter.
 - 2. Material Properties Tensile Strength: ≤ 70 ksi (CE 480 MPa).
 - 3. Materials: Virgin Polyolefin (Polypropylene/Polyethylene).
 - 4. Macro Monofilament and/or Blended Macro/Micro Systems.
 - 5. Nominal Length: 1.5 inch or 2.25 inch (38 mm or 54 mm).
 - 6. Rigid 'Stick Fibers' not permitted. Fibers are sized to be flexible and not stiff to ensure fibers 'lay down' and are easy to finish.
- C. Products; subject to compliance with requirements, provide one of the following (or equal):

1. FRC Industries; FRC HPS-650 or FRC HPS-950 Blend.
 2. Forta Corporation; FORTA FERRO.
 3. Sika Corporation; SikaFiber® Force-950 Blend.
 4. ABC Polymer Industries, LLC – FiberForce 750
- D. Fiber Dosage; add macrosynthetic fiber reinforcement at these dosages:
1. Typical Slab on Grade – 3 pounds yd³
 2. Mechanical Rooms – 4 pounds yd³
 3. Topping Slabs – 4 pounds yd³
 4. Composite Metal Decks – 4 pounds yd³
 5. Paving – Consult Product Representative.
- E. Batching and Mixing:
1. Add macrosynthetic fiber reinforcement at the prescribed dosage with drum turning, after all or a portion of the concrete has been loaded into the truck or mixer.
 2. After fibers have been added, add water-reducing admixture (polycarboxylate superplasticizer).
 3. Follow ACI procedures to mix 5 minutes once all ingredients are in the drum.

2.04 CONCRETE MATERIALS

- A. Portland cement: ASTM C150, Type I or Type II. Use one brand of cement throughout project unless otherwise acceptable to Architect.
- B. Fly ash: ASTM C618, Class F or Class C. Do not use for exposed architectural concrete.
- C. Normal weight aggregates: ASTM C33 and herein specified. Provide aggregates from a single source for exposed concrete. Maximum aggregate size = 1-1/2" (1/2" for topping slabs). For exterior exposed surfaces, do not use fine or coarse aggregates containing spalling causing deleterious substances.
- D. Water: Potable
- E. Admixtures, general: Provide admixtures for concrete that contain no more than 0.1 percent chloride ions. Calcium chloride shall not be permitted. Admixtures may be used at the option of the Contractor.
- F. Air-entraining admixture: ASTM C260, certified by manufacturer to be compatible with other required admixtures.
- G. The following admixture may be used at the Contractor's option:
- H. Water reducing admixture: ASTM C494, Type A.
- I. High-range water reducing admixture (super plasticizer): ASTM C494, Type F or Type G.
- J. Water reducing, retarding admixture: ASTM C494, Type D.

2.05 RELATED MATERIALS

- A. Waterstops: provide flat, dumbbell-type or centerbulb-type waterstops at construction joints and other joints as indicated. Size to suit joints.
- B. Polyvinyl chloride waterstops: Corps of engineers CRD-C 572
- C. Available manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - 1. The Burke Co.
 - 2. Greenstreak Plastic Products Co.
 - 3. W.R. Meadows, Inc.
 - 4. Progress Unlimited
 - 5. Schlegal Corporation
 - 6. Vinylex Corporation
- D. Vapor retarder: Provide vapor retarder cover over prepared base material below slabs on grade. Use only materials that are resistant to deterioration when tested in accordance with ASTM E154, as follows:
 - 1. Polyethylene sheet not less than ten (10) mils thick.
- E. Absorptive cover: Burlap cloth made from jute or kenaf, weighing approximately nine (9) ounces per square yard, complying with AASHTO m 182, Class 2
- F. Moisture retaining cover: One of the following, complying with ASTM C171.
 - 1. Waterproof paper
 - 2. Polyethylene film
 - 3. Polyethylene-coated burlap
- G. Liquid membrane-forming curing compound: Liquid-type membrane-forming curing compound complying with ASTM C309, Type 1, Class A. Moisture loss not more than 0.055 gr./square centimeter when applied to 200 square feet/gallon. Do not use curing sealing or hardening solutions where fluid applied waterproof coating is to be used.
- H. Floor sealer: One of the following.
 - 1. Sikafloor WB-20 by Sika Corporation.
 - 2. GRACE Concrete Seal W by W.R. Grace.
 - 3. EVERCLEAR VOX by Euclid Chemical Co.
- I. Bonding compound: Polyvinyl acetate or acrylic base.
- J. Epoxy adhesive: ASTM C881, two component materials suitable for use on dry or damp surfaces. Provide material "Type", "Grade", and "Class" to suit project requirements.
- K. Patching Mortar: Packaged, dry mix complying with ASTM C928 that contains a non-dispersible latex additive as either a dry powder or a separate liquid that is added during mixing.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. CGM, Incorporated; Pro Trowel Mortar, Pro Gel Mortar, Pro Flowable Mortar or Pro N.B.P.
 - b. Dayton Superior Corporation; HD-50 or Thin Resurfacer.

- c. The Euclid Chemical Company; Concrete Coat, Thin Coat or Verticoat.
 - d. MBT protection and Repair, Div. Of ChemRex, Inc.; Emaco R320 C1 or Emaco R350 C1.
 - e. W.R. Meadows, Inc.; Sealtight Meadow-Patch T1 or Sealtight Meadow-Crete FNP.
 - f. Sika Corporation; SikaTop 121 Plus, Sika Top 122 Plus, Sika Top 123 Plus or Sika Top 126 Plus.
 - g. Sonneborn, Div. of ChemRex, Inc.; Screed, Sonopatch 100, Sonopatch 200, or Sonopatch 300.
 - h. Sto Corp., Concrete Restoration Division; Sto Flowable Mortar, Sto Overhead Mortar, Sto Thin Coat Mortar or Sto Trowel-Grade Mortar.
 - i. Tamms Industries, Inc.; Duraltop Fast Set or Speed Crete PM.
 - j. ThorRoc, Div. of ChemRex; Inc.; HB2 Repair Mortar or Polyset.
2. Use gels and flowable products for horizontal surfaces. Use mortars and trowelable products for vertical surfaces and bottoms of surfaces.
 3. Install products in strict conformance to the manufacturer's instructions. Special attention shall be given to surface preparation and cleaning of surface to be patched.

2.06 PROPORTIONING AND DESIGN OF MIXES

- A. Prepare design mixes for each type and strength of concrete by either laboratory trial batch or field experience methods as specified in ACI 301, Chapter 3, Method 1 of 2. If trial batch method is used, use an independent testing facility acceptable to Architect for preparing and reporting proposed mix designs. The testing facility shall not be the same as used for field control testing.
- B. Fly ash shall not exceed 25 percent of total cementitious content by weight.
- C. Submit written reports to Architect for each proposed mix for each class of concrete at least 15 days prior to start of Work. Do not begin concrete production until proposed mix designs have been reviewed by Architect.
- D. Design mixes to provide normal weight concrete with the following properties, as indicated on drawings and schedules.
 1. 4,000 psi, 28 day compressive strength; W/C ratio, 0.44 maximum (non-air-entrained), 0.35 maximum (air entrained), minimum 587 lbs. of cement per cubic yard.
 2. 3,000 psi, 28 day compressive strength; W/C ratio, 0.58 maximum (non-air-entrained), 0.46 maximum (air entrained), minimum 517 lbs. of cement per cubic yard.
- E. Adjustment to concrete mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant, as accepted by Architect. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Architect before using in work.

2.07 ADMIXTURES

- A. Contractor may use any of the following admixtures in the concrete mix designs in order to meet the specified strength and performance requirements.
- B. Contractor may use water reducing admixture or high range water reducing admixture (superplasticizer) in concrete as required for placement and workability.
- C. Use non-chloride accelerating admixture in concrete slabs placed at ambient temperatures below 50 degrees Fahrenheit (10 degrees Celsius).
- D. Use air entraining admixture in exterior exposed concrete unless otherwise indicated. Add air entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having total air content with a tolerance of plus or minus 1-1/2 percent within following limits:
 - 1. Concrete (not exposed to freezing, thawing, or hydraulic pressure) or to receive a surface hardener: 2 percent to 4 percent air.
- E. Use admixtures for water reduction and set control in strict compliance with manufacturer's directions.
- F. Water cement ratio: Provide concrete for following conditions with maximum water cement (W/C) ratios as follows:
 - 1. Subjected to brackish water, salt spray, or deicers; W/C 0.40
- G. Slump limits: Proportion and design mixes to result in concrete slump at point of placement as follows:
 - 1. Ramps, slabs, and sloping surfaces: not more than three (3) inches.
 - 2. Concrete containing HRWR admixture (superplasticizer): Not more than eight (8) inches after addition of HRWR to site verified two(2) inch to three (3) inch slump concrete.
 - 3. Other concrete: Four (4) inches plus or minus one (1) inch.

2.08 CONCRETE MIXING

- A. Ready mix concrete: comply with requirements of ASTM C94, and as specified.
- B. When air temperature is between 85 degrees Fahrenheit (30 degrees Celsius) and 90 degrees Fahrenheit (32 degrees Celsius), reduce mixing and delivery time from 1 ½ hours to 75 minutes, and when air temperature is above 90 degrees, Fahrenheit (32 degrees Celsius), reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.01 GENERAL

- A. Coordinate the installation of joint materials and vapor retarders with placement of forms and reinforcing steel.
- B. WORKMEN: Contractor to employ adequate number of skilled workmen, including superintendent and foreman to ensure installation in strict accordance with the design.

3.02 FORMS

- A. General: design, erect, support, brace and maintain formwork to support vertical and lateral, static and dynamic loads that might be applied until concrete structure can support such loads. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation, and position. Maintain formwork construction tolerances complying with ACI 347. Camber formwork to provide for anticipated deflections. Adjust shores and struts accordingly.
- B. Construct forms to size, shapes, lines and dimensions shown and to obtain accurate alignment, location, grades, openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages, and inserts, and other features required in work. Use selected materials to obtain required finishes. Solidly butt joints and provide backup at joints to prevent leakage of cement paste.
- C. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the like, for easy removal.
- D. Provide temporary openings where interior area of formwork is inaccessible for clean-out, for inspection before concrete placement, and for placement of concrete. Securely brace temporary openings and set tightly to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
- E. Chamfer exposed corners and edges as indicated on the drawings, using wood, metal, PVC, or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.
- F. Provisions for other trades: Provide openings in concrete formwork to accommodate work of other trades. Determine size and location of openings, recesses, and chases from trades providing such items. Accurately place and securely support items built into forms.
- G. Proposed opening size and location must be submitted to Structural Engineer for review prior to construction.
- H. Earth forms: Concrete may be placed directly against sides of footing excavations when acceptable to Architect. When earth forms are acceptable, add one (1) inch to plan dimensions of footings.
- I. Cleaning and tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, or other debris just before concrete placement as required to prevent mortar leaks and maintain proper alignment.
- J. See ACI 117 for formwork tolerance.

3.03 VAPOR RETARDER/BARRIER INSTALLATION

- A. General: Following leveling and tamping of sub-base for slabs on grade, place vapor retarder/barrier sheeting with longest dimension parallel with direction of pour.
- B. Lap joints six (6) inches and seal vapor retarder/barrier joints with manufacturer's recommended mastic and pressure sensitive tape.

3.04 PLACEMENT REINFORCEMENT

- A. General: Comply with Concrete Reinforcing Steel Institute's recommended practice or "Placing Reinforcing Bars", for details and methods of reinforcement and supports and as herein specified.
- B. Avoid cutting or puncturing vapor retarder during reinforcement placement and concreting operations. Repair all tears or punctures with manufacturer's recommended mastic and pressure sensitive tape.
- C. Clean reinforcement of loose rust and mill scale, earth, and other materials that reduce or destroy bond with concrete.
- D. Reinforcing bars shall not be cut or bent in field unless specifically called for on the structural drawings.
- E. Accurately position, support and secure reinforcement against displacement. Locate and support reinforcing by metal chairs, runners, bolsters, spacers and hangers, as approved by the Architect.
- F. Place reinforcement to obtain at least minimum coverage for concrete protection. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.
- G. Install welded wire fabric in as long lengths as practicable. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset laps adjoining widths to prevent continuous laps in either direction. Snip every other wire at control joint locations as shown in the structural drawings. Pull wire up during placement.
- H. Minimum cover distances from edge of bar to face of concrete:

1.	Concrete cast against and permanently exposed earth	3"
2.	Concrete exposed to earth weather	
	#6 through #18 bars	2"
	#5 bar and smaller	1 ½"
3.	Concrete not exposed to weather or in contact with ground, slabs, walls, joists	
	#11 bar and smaller	¾"

3.05 JOINTS

- A. Construction joints: Locate and install construction joints as indicated or, if not indicated, locate so as not to impair strength and appearance of the structure, as acceptable to Architect.
- B. Provide keyways at least 1-1/2 inches deep in construction joints in walls and slabs and between wall and footings. Accepted bulkheads designed for this purpose may be used for slabs.
- C. Place construction joints perpendicular to main reinforcement. Continue reinforcement across construction joints except otherwise indicated. Do not continue reinforcement through sides of strip placement.
- D. Use bonding agent on existing concrete surfaces that will be joined with fresh concrete.

- E. Waterstops: Provide waterstops in construction joints as indicated. Install waterstops to form continuous diaphragm in each joint. Make provisions to support and protect exposed waterstops during progress of work. Field fabricate joints in waterstops in accordance with manufacturer's printed instructions.
- F. Isolation joints in slabs-on-ground: Construct isolation joints in slab-on-ground at points of contact between slabs-on-ground and vertical surfaces, such as column pedestals, foundation walls, grade beams, and elsewhere as indicated.
- G. Joint filler material: Bituminous fiber type conforming to ASTM D1751.
- H. Contraction (control) joints in slabs-on-ground: Construct contraction joints in slabs-on-ground to form panels of patterns as shown. Use saw cuts 1/8 inch wide by ¼ slab depth or inserts ¼ inch wide by ¼ slab depth, unless otherwise indicated.
- I. Form contraction joints by inserting pre-molded plastic, hardboard, or fiberboard strip into fresh concrete until top surface of strip is flush with slab surface. Tool slab edges round on each side of insert. After concrete has cured, remove inserts and clean groove of loose debris.
- J. Contraction joints in unexposed floor slabs may be formed by saw cuts as soon as possible after slab finishing as may be safely done without dislodging aggregate.
- K. If joint pattern not shown, provide joints not exceeding 15 feet in either direction and located to conform to bay spacing wherever possible (at column centerlines, half bays, third bays).
- L. Joint sealant material is specified in Division 7 Sections of these specifications.

3.06 INSTALLATION OF EMBEDDED ITEMS

- A. General: Set and build into work anchorage devices and other embedded items for other work that is attached to or supported by cast-in-place concrete. Use setting drawings, diagrams, instructions, and directions provided by suppliers of items to be attached thereto.
- B. Do not relocate or otherwise disturb reinforcing bars.
- C. Forms for slabs: Set edge forms, bulkheads, and intermediate screed strips for slabs to obtain required elevations and contours in finished surfaces. Provide and secure units to support screed strips using strike off templates or compacting type screeds.

3.07 PREPARATION OF FORM SURFACES

- A. General: Coat contact surfaces of forms with an approved, non-residual, low-VAC, form-coating compound before reinforcement is placed.
- B. Do not allow excess form-coating material to accumulate in forms or to come into contact with in-place concrete surfaces against which fresh concrete will be placed. Apply in compliance with manufacturer's instructions.
- C. Coat steel forms with non-staining, rust preventative material. Rust stained steel formwork is not acceptable.

3.08 CONCRETE PLACEMENT

- A. Inspection: Before placing concrete, inspect and complete formwork installation, reinforcing steel, and items to be embedded or case in. Notify other crafts to permit installation of their work; cooperate with other trades in setting such work. Place concrete in presence of a qualified concrete inspector from the independent testing laboratory.
- B. General: Comply with ACI 304, "Guide for Measuring, Mixing, Transporting, and Placing Concrete", and as herein specified.
- C. Deposit concrete continually or in layers of such thickness that no concrete will be placed on concrete that has hardened sufficiently to cause the formation of seams or planes or weakness. If a section cannot be placed continuously, provide construction joints as herein specified. Deposit concrete to avoid segregation at its final location.
- D. Placing concrete in forms: Deposit concrete in forms in horizontal layers not deeper than 24 inches and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.
- E. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures for consolidation of concrete in accordance with ACI 309.
- F. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than visible effectiveness of machine. Place vibrators to rapidly penetrate place layer and at least six (6) inches into preceding layer. Do not insert vibrators into lower layers of concrete that have not begun to set. At each intersection limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and the embedded items without causing segregation of mix.
- G. Use chutes or tremies for placing concrete where a drop of more than six (6) feet is required. Use flow checking devices where drop through tremies exceeds 18 feet.
- H. Placing concrete slabs: Deposit and consolidate concrete slabs in a continuous operation, within limits of construction joints, until the placing of a panel or section is completed.
- I. Consolidate concrete during placing operations so that concrete is thoroughly worked around reinforcement and other embedded items into corners.
- J. Bring slab surfaces to correct level with straightedge and strike off. Use bull floats or darbies to smooth surface, free of humps or hollows. Do not disturb slab surfaces prior to beginning finishing operations.
- K. Maintain reinforcing in proper position during concrete placement.
- L. Hot weather placing: When hot weather conditions exist that would seriously impair quality and strength of concrete, place concrete in compliance with ACI 305 and herein specified.
- M. Cool ingredients before mixing to maintain concrete temperature at time of placement below 90 degrees Fahrenheit (32 degrees Celsius). Mixing water may be chilled, or chopped ice may be used to control temperature provided water equivalent of ice is

calculated to total amount of mixing water. Use liquid nitrogen to cool concrete at Contractor's option.

- N. Cover reinforcing steel with water soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedment in concrete.
- O. Fog spray forms, reinforcing steel, and subgrade just before concrete is placed.
- P. Place slabs between dawn and 11:30 a.m. on any day which the temperature is expected to reach 80 degrees Fahrenheit.
- Q. Use water reducing retarding admixture when required by high temperatures, low humidity, or other adverse placing conditions, when acceptable to Architect.
- R. Freshly placed concrete shall be protected from damage or injury due to water, falling objects, persons, or anything that might mar, or discolor the concrete finish.

3.09 FINISH OR FORMED SURFACES

- A. Rough form finish: For formed concrete surfaces not exposed to view in the finish work or concealed by other construction. This is the concrete surface having texture imparted by form-facing material used, with tie holes and defective areas repaired and patched and fins and other projections exceeding ¼ inch in height rubbed down or chipped off. (Class B per ACI 347)
- B. Smooth form finish: For formed concrete surfaces exposed to view or to be covered with a coating material applied directly to concrete, or a covering material applied directly to concrete, such as waterproofing, damp-proofing, veneer plaster, painting, or similar system. This is an as cast concrete surface obtained with selected form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch defective areas with fins and other projections completely removed and smoothed. (Class A per ACI 347)
- C. Grout cleaned finish: Provide grout cleaned finish to scheduled concrete surfaces that have received smooth form finish treatment.
- D. Combine one part Portland cement to 1-1/2 parts fine sand by volume, and a 50:50 mixture of acrylic or styrene butadiene based bonding admixture and water to consistency of thick paint. Blend standard Portland cement and white Portland cement, amounts determined by trial patches, so that final color of dry grout will match adjacent surfaces.
- E. Thoroughly wet concrete surfaces, apply grout to coat surfaces and fill small holes. Remove excess grout by scraping and rubbing.
- F. Related unformed surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces occurring adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.10 MONOLITHIC SLAB FINISHES

- A. Scratch finish: Apply scratch finish to monolithic slab surfaces to receive concrete floor topping or mortar setting beds for tile, Portland cement terrazzo, and other bonded applied cementitious finish flooring material, and as otherwise indicated.
- B. After placing slabs, plane surface to tolerances for floor flatness (Ff) of 15 and floor levelness (fl) of 13. Slope surfaces uniformly to drains where required. After leveling, roughen surface before final set with stiff brushes, brooms, or rakes.
- C. Float finish: Apply float finish to monolithic slab surfaces to receive trowel finish and other finishes and hereinafter specified; slab surfaces to be covered with membrane or elastic waterproofing, membrane or elastic roofing, or sand-bed terrazzo; and as otherwise indicated.
- D. After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Begin floating, using float blades or float shoes only, when surface water has disappeared, when concrete has stiffened sufficiently to permit operation of power driven floats, or both. Consolidate surface with power driven floats or by hand floating if area is small or inaccessible to power units. Check and level surface plane tolerances of Ff18 – fl 15. Cut down high spots and fill low spots. Uniformly slope surfaces to drains. Immediately after leveling, refloat surface to uniform, smooth, granular texture.
- E. Trowel finish: Apply trowel finish to monolithic slab surfaces to be exposed to view and slab surfaces to be covered with resilient flooring, carpet, ceramic or quarry tile, paint , or other thin film finish coating system.
- F. After floating, begin first trowel finish operation using a power-driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over surface. Consolidate concrete surface by final hand-troweling operation, free of trowel marks, uniform in texture and appearance, and with surface leveled to tolerances of Ff 20 – fl 17. Grind smooth surface defects that would telegraph through applied floor covering system.
- G. Trowel and fine broom finish: Where ceramic or quarry tile is to be installed with thin set mortar, apply trowel as specified, then immediately follow with slightly scarifying surface by fine brooming.
- H. Non-slip broom finish: Apply non-slip broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated.
- I. Immediately after float finishing, slightly roughen concrete surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.
- J. Non-slip aggregate finish: Apply non-slip aggregate finish to concrete stair treads, platforms, ramps, sloped walks, and elsewhere as indicated.
- K. After completion of float finishing and before starting trowel finish, uniformly spread 25 pounds of dampened non-slip aggregate per 100 square feet of surface. Tamp aggregate flush with surface using a trowel, but do not force below surface. After broadcasting and tamping, apply trowel finishing as herein specified.
- L. After curing, lightly work surface with a steel wire brush, or an abrasive stone, and water to expose non-slip aggregate.

3.11 CONCRETE CURING AND PROTECTION

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperature. In hot, dry, and windy weather, protect concrete from rapid moisture loss before and during finishing operations with and evaporation control material. Apply in accordance with manufacturer's instructions after screeding and bull floating, but before power floating and troweling.
- B. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Weather permitting, keep continuously moist for not less than seven (7) days at 50 degrees minimum.
- C. Curing methods: Perform curing of concrete by curing and sealing compound, by moisture retaining cover curing, and by combinations thereof, as herein specified.
- D. Provide moisture curing by following methods:
1. Keep concrete surface continuously wet by covering with water.
 2. Use continuous fog spray.
 3. Cover concrete surface with specified absorptive cover, thoroughly saturate cover with water, and keep continuously wet. Place absorptive cover to provide coverage of concrete surfaces and edges, with four (4) inch lap over adjacent absorptive covers.
- E. Provide moisture cover curing as follows:
1. Cover concrete surfaces with moisture retaining cover for curing concrete, placed in widest practicable width with sides and ends lapped at least three (3) inches and sealed by waterproof tape or adhesive.
 2. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
- F. Provide curing and sealing compound to exposed interior slabs and to exterior slabs, walks and curbs as follows:
1. Apply specified curing and sealing compound to concrete slabs as soon as final finishing operations are complete (within 2 hours and after surface water sheen has disappeared). Apply uniformly in continuous operation by power spray or roller in accordance with manufacturer's directions. Re-coat areas subjected to heavy rainfall within three (3) hours after initial application. Maintain continuity of coating and repair damage during curing period.

Use membrane curing compounds that will not affect surfaces to be covered with finish materials applied directly to concrete.
- G. Curing formed surfaces: Cure formed surfaces, including underside of beams, supported slabs, and other similar surfaces, by moist curing with forms in place for full curing period or until forms are removed. If forms are removed, continue curing methods specified above, as applicable.
- H. Curing unformed surfaces: Cure unformed surfaces such as slabs, floor topping, and other flat surfaces, by application of appropriate curing method.
- I. Final cure concrete surfaces to receive liquid floor hardener or finish flooring by use of moisture retaining cover, unless otherwise directed.

- J. Floor sealer: Seal concrete slabs to be exposed to view in the completed structure with floor sealer product.

3.12 SHORES AND SUPPORTS

- A. General: Comply with ACI 347 for shoring and reshoring.
- B. Extend shoring from ground to roof for structures four (4) stories or less, unless otherwise permitted.
- C. Remove shores and reshore in a planned sequence to avoid damage to partially cured concrete. Locate and provide adequate reshoring to support work without excessive stress or deflection.
- D. Keep reshores in place a minimum of 15 days after placing upper tier, and longer if required, until concrete has attained its required 28 day strength and heavy loads due to construction operations have been removed.

3.13 REMOVAL OF FORMS

- A. General: Formwork not supporting weight of concrete, such as sides of beams, walls, columns, and similar parts of work, may be removed after cumulatively curing not less than 50 degrees Fahrenheit (10 degrees Celsius) for 24 hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form removal operations, and provided curing and protection operations are maintained.
- B. Formwork supporting weight of concrete, such as soffits, joists, slabs, and other structural elements, may not be removed in less than 14 days or until concrete has attained 100 percent of design minimum compressive strength of cast-in-place concrete by testing field cured specimens representative of concrete location members.
- C. Form-facing material may be removed four (4) days after placement only if shores and other vertical supports have been arranged to permit removal of form-facing material without loosening or disturbing shores and supports.

3.14 REUSE OF FORMS

- A. Clean and repair surfaces of forms to be reused in work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be accepted for exposed surfaces. Apply new form-coating compound as specified for new formwork.
- B. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close joints. Align and secure joint to avoid offsets. Do not use "patched" forms for exposed concrete surfaces except as acceptable to Architect.

3.15 MISCELLANEOUS CONCRETE ITEMS

- A. Filling in: Fill in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after work of other trades is in place. Mix, place, and cure concrete as herein specified, to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete work.

- B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and steel troweling surfaces to a hard, dense finish with corners, intersections and terminations slightly rounded.
- C. Equipment bases and foundations: Provide machine and equipment bases and foundations, as shown on drawings. Set anchor bolts for machines and equipment to template at correct elevations, complying with certified diagrams or templates of manufacturer furnishing machines and equipment.
- D. Reinforced masonry: Provide masonry grout for reinforced masonry lintels and bond beams where indicated on drawings and as scheduled. Maintain accurate location of reinforcing steel during concrete placement.

3.16 CONCRETE SURFACE REPAIRS

- A. Patching defective areas: Repair and patch defective areas with cement mortar immediately after removal of forms, when acceptable to Architect, and at no additional cost to owner.
- B. Cut out honeycomb, rock pockets, voids over ¼ inch in any dimension and holes left by tie rods and bolts, down to solid concrete but in no case to a depth of less than 1 inch. Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water, and brush coat the area to be patched with specified bonding agent. Place patching mortar before bonding compound has dried.
- C. For expose-to-view surfaces, blend white Portland cement and standard Portland cement so that, when dry, patching mortar will match color surrounding. Provide test areas at inconspicuous location to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
- D. Repair of formed surfaces: Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Architect. Surface defects as such include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets, fins and other projections on surface and stains and other discolorations that cannot be removed by cleaning. Flush out form tie holes, fill with dry pack mortar, or precast cement cone plugs secured in place with bonding agent.
- E. Repair concealed formed surfaces, where possible, that contain defects that affect the durability of concrete. If defects cannot be repaired, remove and replace concrete.
- F. Repair of unformed surfaces: Test unformed surfaces, such as monolithic slabs, for smoothness and verify surface plane tolerances specified for each surface and finish. Correct low and high areas as herein specified. Test unformed surfaces sloped to drain for trueness of slope and smoothness by using a template having required slope.
- G. Correct high areas in unformed surfaces by grinding after concrete after concrete has cured at least 14 days.
- H. Correct low areas in unformed surfaces during or immediately after completion of surface finishing operations by cutting out low areas and replacing with patching compound. Finish repaired areas to blend in to adjacent concrete. Proprietary underlayment compounds may be used when acceptable to Architect.

- I. Repair defective areas, except random cracks and single holes not exceeding one (1) inch in diameter, by cutting out and replacing with fresh concrete. Remove defective areas to sound concrete with clean, square cuts and expose reinforcing steel with at least $\frac{3}{4}$ inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding compound. Mix patching concrete of same materials to provide concrete of same type or class as original concrete. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
- J. Repair isolated random cracks and single holes not over one (1) inch in diameter by dry pack method. Groove top of cracks and cut out holes to sound concrete and clean of dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding compound. Mix dry-pack, consisting of one part Portland cement to 2-1/2 parts fine aggregate passing a #16 mesh sieve, using only enough water as required for handling and placing. Place dry-pack before bonding compound has dried. Compound dry-pack mixture in place and finish to match adjacent concrete. Keep patched area continuously moist for not less than 72 hours.
- K. Perform structural repairs with prior approval of Architect for method and procedure, using specified epoxy adhesive and mortar.
- L. Repair methods not specified above may be used, subject to acceptance of Architect.

3.17 QUALITY CONTROL TESTING DURING CONSTRUCTION

- A. General: The Owner will employ a testing laboratory to perform tests and to submit test reports. Testing Agency shall be subject to approval by the Architect. The Contractor is to notify the Testing Agency of scheduled concrete placements in sufficient time to allow the inspector to verify reinforcing steel placement and to observe the concrete placement.
- B. Sampling and testing for quality control during placement of concrete may include the following , as directed by Architect.
- C. Sampling fresh concrete: ASTM C172, except modified for slump to comply with ASTM C94.
- D. Slump: ASTM C143; one test at point of discharge for each day's pour of each type of concrete; additional tests when concrete consistency seems to have changed.
- E. Air content: ASTM C173; volumetric method for light weight or normal weight concrete; ASTM C231 pressure method for normal weight concrete; one for each day's pour of each type of air-entrained concrete.
- F. Concrete temperature: Test hourly when air temperature is 40 degrees Fahrenheit (4 degrees Celsius) and below, when 80 degrees Fahrenheit (27 degrees Celsius) and above, and each time a set of compression test specimens are required.
- G. Compression test specimen: ASTM C31; one set of four (4) standard cylinders for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory cured test specimens except when field cure test specimens are required.
- H. Compressive strength tests: ASTM C39; one set for each day's pour exceeding five (5) cubic yards plus additional sets for each 50 cubic yards more than the first 25 cubic yards for each concrete class placed in any one day; one specimen tested at seven (7)

days, two specimens tested at twenty-eight (28) days, and one specimen retained in reserve for later testing if required.

- I. When frequency of testing will provide fewer than five (5) strength tests for a given class of concrete, conduct testing from at least five (5) randomly selected batches or from each batch if fewer than five (5) are used.
- J. When total quantity of a given class of concrete is less than 50 cubic yards, Architect may waive strength test if adequate evidence of satisfactory strength is provided,
- K. When strength of field cured cylinder is less than 85 percent of companion laboratory cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in-place concrete.
- L. Strength level of concrete will be considered satisfactory if averages of sets of three consecutive strength tests results equal or exceed specified compressive strength, and no individual strength test result falls below specified compressive strength by more than 500 psi.
- M. Test results will be reported in writing to Architect, Structural Engineer, Ready-Mix Producer and Contractor within 24 hours after tests. Reports of compressive strength tests shall contain the project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive breaking strength, and type of break for both seven (7) day tests and 28 day tests.
- N. Non-destructive testing: Impact hammer, sonoscope, or other non-destructive device may be permitted but shall not be used as the sole basis for acceptance or rejection.
- O. Additional tests: The testing service will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by Architect. Testing service may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42, or by other methods as directed. Contractor shall pay for such tests when unacceptable concrete is verified.

END OF SECTION

**SECTION 04200
UNIT MASONRY**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply this section.

1.02 DESCRIPTION OF WORK

- A. This section includes the following:
1. Concrete unit masonry

1.03 RELATED SECTIONS

- A. Division 3 Section: "Cast-in-Place Concrete"
- B. Products installed but not furnished under this Section include the following:
1. Steel lintels in unit masonry are specified in Division 5 Section, "Metal Fabrication".
 2. Wood nailers and blocking built into unit masonry are specified in Division 6 Section, "Rough Carpentry".
 3. Reglets in masonry joints for metal flashing are specified in Division 7 Section, "Flashing and Sheet Metal".
 4. Hollow metal frames in unit masonry openings are specified in Division 8 Section, "Hollow Metal Doors and Frames".

1.04 SYSTEM PERFORMANCE REQUIREMENTS

- A. Provide unit masonry that develops the following installed compressive strengths (f'm):
1. f'm = 1,500 psi on net area., U.N.O.

1.05 SUBMITTALS

- A. General: Submit the following in accordance with conditions of Contract and Division 1 Specification Section.
1. Product data for each different masonry unit, accessory, pre-mixed mortar, pre-mixed masonry grout and other manufactured product indicated.
 2. Shop drawings for reinforcing detailing fabrication, bending, and placement of unit masonry reinforcing bars. Comply with ACI 315 "Details and Detailing of Concrete Reinforcing" showing bar schedules, stirrup spacing, diagrams of bent bars, and arrangement of masonry reinforcement.
 3. Submitted shop drawings must be checked and signed by the General Contractor.
 4. Material certificates signed by manufacturer and Contractor certifying that each type of masonry unit complies with requirements specified in referenced unit masonry standard, including fire performance characteristics.
 5. Hot weather construction procedures evidencing compliance with requirements specified in referenced unit masonry standard.

6. Results from tests and inspections performed by Owner's representatives will be reported promptly and in writing to Architect and Contractor.
7. Mix designs for ready mix masonry grout showing the proportions of all materials and compression test reports for the mix.

1.06 QUALITY ASSURANCE

- A. Unit masonry standard: TMS 402/602-16 "Building Code Requirements and Specification for Masonry Structures.
- B. Fire performance characteristics: Where indicated, provide materials and construction identical to those of assemblies whose fire resistances has been determined per ASTM E119 by a testing and inspecting organization, by equivalent concrete masonry thickness, or by other means, as acceptable to authorities having jurisdiction.
- C. Single source responsibility for masonry units: Obtain mortar ingredients of uniform quality, including color for exposed masonry, from the manufacturer for each cementitious component and from one source and producer for each aggregate.
- D. The contractor shall retain a qualified testing laboratory to perform the following tests:
 1. Sample and test grout in accordance with ASTM C1019 for each 5,000 square foot of masonry.
 2. Slump tests – ASTM C143
- E. When requested by the Architect/Engineer, the Contractor shall retain a qualified testing laboratory to perform a masonry prism test in accordance with ASTM E447, Method B, modified as follows:
 1. Prisms shall be stack bond, one unit long and thick with a full mortar bed.
 2. Limit height/thickness ratio from 1.33 – 5.00.
 3. Provide a minimum of one joint.One set of three (3) prisms prior to construction and during construction for each 5,000 square feet of wall.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver masonry material to project in undamaged condition.
- B. Store and handle masonry units off the ground, under cover, and in a dry location to prevent their deterioration or damage due to moisture, temperature changes, contaminants, corrosion and other causes. If units become wet, do not place until units are in an air-dried condition.
- C. Store cementitious materials off the ground, under cover, and in a dry location.
- D. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.08 PROJECT CONDITIONS

- A. Protection of masonry: During erection, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.
- B. Extend cover to minimum of 24 inches down both sides and hold cover securely in place.
- C. Where one wythe of multi-wythe masonry walls is completed in advance of other wythes, secure cover a minimum of 24 inches down face next to unconstructed wythe and hold cover in place.
- D. Do not apply uniform floor or roof loads for at least 12 hours and concentrate loads for at least three (3) days after building masonry walls or columns.
- E. Stain prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Remove immediately any grout, mortar, and soil that come in contact with such masonry.
- F. Protect base of walls from rain splashed mud and mortar splatter by means of covering spread on ground and over wall surface.
- G. Protect sills, ledges, and projections from mortar droppings.
- H. Protect surfaces of window and door frames, as well as similar products with painted and integral finish from mortar droppings.
- I. Hot weather construction: Comply with referenced unit masonry standard.

PART 2 - GENERAL**2.01 MATERIALS - GENERAL**

- A. Comply with referenced unit masonry standard and other requirements specified in this Section applicable to each material indicated.
- B. Size: Provide concrete masonry units complying with requirements indicated below for size that are manufactured to specified face dimensions within tolerances specified in the applicable referenced ASTM specification for concrete masonry units.
- C. Concrete masonry units: Manufactured to specified dimensions of 3/8 inch less than nominal widths by nominal heights by nominal lengths indicated on drawings.
- D. Provide non-moisture controlled units.
- E. Exposed faces: Manufacturer's standard color and texture, unless otherwise indicated.
- F. Hollow load-bearing concrete masonry units: ASTM C90 and as follows:
 - 1. Unit compressive strength: Provide units with minimum average net area compressive strength 1500 psi, average of 3 units.
- G. Weight classification: Normal weight.

2.02 CONCRETE MASONRY UNITS (CMU)

- A. Hollow and solid concrete masonry units shall conform to ASTM C90. Cement shall have a low alkali content and be of one brand.
 - 1. Aggregates: Lightweight aggregates and blends of lightweight and heavier aggregates in proportions used in producing the units, shall comply with the following requirement when tested for stain-producing iron compounds in accordance with ASTM C641: by visual classification method, the iron stain deposited on the filter paper shall not exceed the "light stain" classification.
 - 2. Kinds and Shapes: Units shall be modular in size and shall include closer, jamb, header, lintel and bond beam units and special shapes and sizers to complete the work as indicated. In exposed interior masonry surfaces, units having a bullnose shall be used for vertical external corners except at door, window, and louver jambs. Radius of the bullnose shall be 1-inch. Units used in exposed masonry surfaces in any one building shall have a uniform fine to medium texture and a uniform color.

2.03 MORTAR AND GROUT MATERIALS

- A. Mortar – ASTM C270, Type S using either ASTM C1329, Type S mortar cement or ASTM C91, Type S masonry cement. Other mortar materials shall meet the requirements of the ASTM standards listed in ASTM C270.
- B. Grout – ASTM C 476, 3,000 psi at 28 days with high w/c ratio and minimum slump of 8-10". Do not use water reducers to obtain slump in grout.
- C. Portland cement: ASTM C150, Type 1 or II. Provide natural color.
- D. Ready-mixed mortar: Cementitious materials, water, and aggregate complying with requirements specified in this article, combined with set controlling admixtures to produce a ready-mixed mortar complying with ASTM C1142.
- E. Hydrated lime: ASTM C207, Type S.
- F. Aggregate for mortar: ASTM C144, except for joints less than ¼ inch use aggregate graded with 100 percent passing the #16 sieve.
- G. Aggregate for grout: ASTM C404.
- H. Water: Clean and potable.

2.04 REINFORCING STEEL

- A. General: Provide reinforcing steel complying with requirements of referenced unit masonry standard and this article, formed from the following:
 - 1. Galvanized carbon steel wire, coating class as required by referenced unit masonry standard for application indicated.
 - 2. Reinforcing bars ASTM A615 Grade 60 deformed.
- B. Description: Galvanized welded wire units pre-fabricated with deformed continuous side rods and plain cross rods into straight lengths of not less than 10 feet, with pre-fabricated corner on tee units, and complying with requirements indicated below:
 - 1. Wire diameter for side rods: 0.1483 inch (9 gage).

- C. For single wythe masonry, provide type as follows with single pair of side rods:
 - 1. Ladder design with perpendicular cross rods only spaced not more than 16 inches O.C.
- D. For multi-wythe masonry, provide type as follows:
 - 1. Ladder design with perpendicular cross spaced not more than 16 inches O.C. and number of side rods as follows:
 - 2. Number of side rods for multi-wythe concrete masonry: One side rod for each face shell of hollow masonry units more than 4 inches or less in nominal width.
- E. Tab design with single pair of side rods and rectangular box-type cross ties spaced not more than 16 inches O.C., with side rods spaced for embedment within each face shell of back-up wythe and ties extended to engage the outer wythe by at least 1 ½ inches.
- F. Use units with adjustable two piece rectangular ties where horizontal joints of facing wythe do not align with those of back-up by more than and where indicated.
- G. Available manufacturers: Subject to compliance with requirements, manufacturers offering joint reinforcement that may be incorporated in the Work include, but are not limited to, the following:
 - 1. AA Wire Products
 - 2. Dur-O-Wal, Inc.
 - 3. Heckman Building Products, Inc.
 - 4. Hohmann & Barnard, Inc.
 - 5. Wire-Bond

2.05 TIES AND ANCHORS

- A. General: Provide ties and anchors specified in subsequent articles that comply with requirements for metal and size of reference unit masonry standard and this article.
- B. Galvanized carbon steel wire: ASTMA82, coating class as required by reference unit masonry standard for application indicated.
- C. Wire diameter: 0.1875 inch.
- D. Galvanized heavy thickness steel sheet: ASTMA635 (commercial quality) hot-rolled carbon steel sheet hot-dip galvanized after fabrication to comply with ASTMA525, Class B3, for rigid anchors fabricated from steel sheet or strip with a thickness of 0.180 inch and greater.
- E. Steel plates and bars: ASTMA36, hot dipped galvanized to comply with ASTMA123 or ASTMA153, Class B3, as applicable to size and form indicated.
- F. Available manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the work include, but are not limited to, the following:
 - 1. Dur-O-Wal, Inc.
 - 2. Heckman Building Products, Inc.
 - 3. Hohmann & Barnard, Inc.

2.06 BENT WIRE TIES

- A. Individual units pre-fabricated from bent wire to comply with requirements indicated below:
 - 1. Tie shape for hollow masonry units laid with cells vertical: Rectangular with closed ends and not less than four (4) inches wide.
- B. Type for masonry where coursing between wythes align: Unit ties bent from one piece of wire.
- C. Type for masonry where coursing between wythes does not align: Adjustable ties composed of two parts, one with pintles, the other with eyes, maximum misalignment: 1-1/4 inches.

2.07 ADJUSTABLE ANCHORS FOR CONNECTING MASONRY TO STRUCTURAL WORK

- A. General: Two piece assemblies as described below allowing vertical or horizontal differential movement between wall and framework parallel to plane of wall, but resisting tension and compression force perpendicular to it.
- B. For anchorage to concrete framework, provide manufacturer's standard with dovetail anchor section formed from sheet metal and triangular shaped wire ties section sized to extend within one (1) inch of masonry face and as follows:
 - 1. Wire diameter: 0.1875 inch.

2.08 MISCELLANEOUS ANCHORS

- A. Unit type masonry inserts in concrete: Cast iron or malleable iron inserts of type and sized indicated.
- B. Dovetail slots: Furnished dovetail slots, with filler strips, or slot size indicated, fabricated from 0.0336 inch (22 gauge) sheet metal.
- C. Rebar Positioners: Furnish 9 gauge, galvanized rebar positioners with one bent wire in each face shell and double closed loops to accurately position rebar.

2.09 POST-INSTALLED ANCHORS

- A. Anchors as described below, with capacity to sustain, without failure, load imposed within factors of safety indicated, as determined by testing per ASTM E488, conducted by a qualified independent testing laboratory.
 - 1. Type: Chemical Anchors
 - 2. Type: Expansion Anchors
- B. Corrosion protection: Carbon steel components zinc plated to comply with ASTM B633, Class Fe/Zn 5 (5 microns) for Class SC 1 service condition (mild).
- C. For cast-in-place and post-installed anchors in concrete: Capability to sustain, without failure, a load equal to four (4) times load imposed.
- D. For post-installed anchors in grouted concrete masonry units: Capability to sustain, without failure, a load equal to six (6) times loads imposed.

2.10 MISCELLANEOUS MASONRY ACCESSORIES

- A. Non-metallic expansion joint strips: Pre-molded filler strips complying with ASTM D1056, type 2 (closed cell), Class A (cellular rubber and rubber-like materials with specific resistance to petroleum base oils), Grade 1 (compression deflection range of 2 – 5 psi), compressible up to 35 percent, of width and thickness indicated, formulated from the following material:
 - 1. Neoprene
 - 2. Urethane
 - 3. Polyvinyl chloride

- B. Pre-formed control joint gaskets: Materials as indicated below, designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated:
 - 1. Styrene-Butadiene rubber compound: ASTM D2000, Designation 2AA-805
 - 2. Polyvinyl Chloride: ASTM D2287, General Purpose Grade, Type PVC-65406

- C. Bond breaker strips: Asphalt saturated organic roofing felt complying with ASTM D226, Type 1 (No. 15 asphalt felt).

2.11 MASONRY CLEANERS

- A. Job mixed detergent solution: Solution of trisodium phosphate (1/2 cup dry measure) dissolved in one gallon of water.

- B. Job mixed muriatic solution: Solution of 1 part muriatic acid and ten (10) parts clean water, mixed in a non-metallic container with acid added to water.

- C. Proprietary acidic cleaner: Manufacturer's standard strength, general purpose cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry surfaces of type indicated below without discoloring or damaging masonry surfaces; expressly approved for intended use by manufacturer of masonry units being cleaned.

- D. For masonry not subject to metallic oxidation stains, use formulation consisting of a concentrated blend of surface acting acids, chelating, and wetting agents.

- E. For masonry subject to metallic oxidation stains, use formulation consisting of a liquid blend of organic and inorganic acids and special inhibitors.

- F. Available products: Subject to compliance with requirements, a product that may be used to clean until masonry surfaces includes, but is not limited to, the following:
 - 1. "Sure Klean No. 600 Detergent", ProSoCo, Inc.
 - 2. "Sure Klean No. 101 Lime Solvent", ProSoCo, Inc.
 - 3. "Sure Klean Vana Trol", ProSoCo, Inc.

2.12 MORTAR AND GROUT MIXES

- A. General: Do not add admixtures including coloring pigments, air-entraining agents, antifreeze compounds, or admixtures, unless otherwise indicated.

- B. Do not use calcium chloride in mortar or grout.

- C. Mortar for unit masonry: Comply with ASTM C270, Proportion Specification, for types of mortar indicated below:
 - 1. Type M or S, Portland Cement/Lime or Mortar cement mortar only. Do not use Masonry cement mortar for concrete masonry.
- D. Grout for unit masonry: Comply with ASTM C476 and referenced unit masonry standard. Use concrete grout with pea gravel for all grouting in 8" and larger concrete masonry units.

2.13 SOURCE QUALITY CONTROL

- A. Concrete masonry unit tests: For each type, class, and grade of concrete masonry unit indicated, units will be tested by qualified independent testing laboratory for strength, absorption, and moisture content per ASTM C140, if required by Architect.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other specific conditions, and other conditions affecting performance of unit masonry.
- B. Examine rough-in and built-in construction to verify actual locations of piping connections prior to installation.
- C. Do not proceed until unsatisfactory conditions have been corrected.

3.02 INSTALLATION - GENERAL

- A. Mix mortar and grout in power driven, drum type mixers. Operate mixer a minimum of five (5) minutes after addition of all materials.
- B. Comply with referenced unit masonry standard and other masonry construction to the full thickness shown. Build single wythe walls to the actual thickness of the masonry units, using units of nominal thickness indicated.
- C. Build chases and recesses as shown or required to accommodate items specified in this and other sections of the specifications. Provide not less than eight (8) inches of masonry between chase or recess and jamb of openings and between adjacent chases and recesses.
- D. Leave openings for equipment to be installed before completion of masonry. After installation of equipment, complete masonry to match construction immediately adjacent to the opening.
- E. Cut masonry units with motor driven saws to provide clean, sharp, unchipped edges. Cut units as required to provide continuous pattern and to fit adjoining constructions. Uses full size units without cutting where possible.
- F. Matching existing masonry: Where applicable, match coursing, bonding, color, and texture of new masonry with existing masonry.

3.03 CONSTRUCTION TOLERANCES

- A. Comply with construction tolerances of NCMA.

3.04 LAYING MASONRY WALLS

- A. Layout walls in advance for accurate spacing of surface bond patterns with uniform joint widths and for accurate locating of openings, movement type joints, returns, and offsets. Avoid the use of less-than-half-size units at corners, jambs, and where possible at other locations.
- B. Lay-up walls to comply with specified construction tolerances, with courses accurately spaced and coordinated with other construction.
- C. Bond pattern for exposed masonry: Lay exposed masonry in the following bond pattern; Do not use units with less than nominal four (4) inch horizontal face dimensions at corners or jambs.
1. One half running bond with vertical joint in each course centered on units in courses above and below.
- D. Lay concealed masonry with all units in a wythe in running bond or bounded by lapping not less than two (2) inches. Bond and interlock each course of each wythe at corners. Do not use units with less than nominal four (4) inch horizontal face dimensions at corners or jambs.
- E. Stopping and resuming work: In each course, rack back $\frac{1}{2}$ unit length for one-half running bond or $\frac{1}{3}$ unit length for one-third running bond; do not tooth. Clean exposed surfaces of set masonry, and remove loose masonry units and mortar prior to laying fresh masonry.
- F. Re-temper mortar as necessary to keep plastic. Use no mortar after setting has begun or after 2 $\frac{1}{2}$ hours of initial mixing.
- G. Built-in work: As construction progresses, built-in items specified under this and other sections of the specifications. Fill in solidly with masonry around built-in items.
- H. Fill space between hollow metal frames and masonry solidly with mortar, unless otherwise indicated.
- I. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath in the joint below and rod mortar or grout into core.
- J. Fill cores in hollow concrete masonry units with grout three (3) courses (24 inches) under bearing plates, beams, lintels, posts, and similar items, unless otherwise indicated.
- K. Reinforced vertical concrete blocks cells, grouting solid where indicated on plan.

3.05 MORTAR BEDDING AND JOINTING

- A. Lay hollow concrete masonry units as follows: With full mortar coverage on horizontal and vertical face shells. Bed webs in mortar in starting course on footings and in all courses of piers, columns, and pilasters, and where adjacent to cells or cavities to be filled with grout.
For starting course on footings where cells are not grouted, spread out full mortar bed, including areas under cells.

3.06 HORIZONTAL JOINT REINFORCEMENT

- A. General: Provide continuous horizontal joint reinforcement as indicated. Install longitudinal side rods in mortar for their entire length with a minimum cover of 5/8 inch of exterior side of walls, 1/2 inch elsewhere. Lap reinforcing a minimum of six (6) inches.
- B. Cut or interrupt joint reinforcement at control and expansion joints, unless otherwise indicated.
- C. Provide continuity at corners and wall intersections by use of pre-fabricated "L" and "T" sections. Cut and bed reinforcement units as directed by manufacturer for continuity at returns, offsets, column fireproofing, pipe enclosures, and other special conditions.
- D. Provide horizontal joint reinforcement at doors and windows for first and second block course above and below apertures. Run reinforcing continuous or extend two (2) feet from aperture edge.

3.07 ANCHORING MASONRY TO STRUCTURAL MEMBERS

- A. Anchor masonry to structural members where masonry abuts or faces structural members to comply with the following:
 - 1. Provide an open space not less than one (1) inch in width between masonry and structural member, unless otherwise indicated. Keep open space free of mortar or other rigid materials.
 - 2. Anchor masonry to structural members with flexible anchors embedded in masonry joints and attached to structure.
 - 3. Space anchors as indicated, but not more than 24 inches O.C. vertically and 26 inches O.C. horizontally.

3.08 MOVEMENT (CONTROL AND EXPANSION) JOINTS

- A. General: Install control and expansion joints in unit masonry where indicated, not to exceed twenty five feet on centers (25'-0"). Build in related items as masonry progresses. Do not form a continuous span through movement joints unless provisions are made to prevent in-plane restraint of wall or partition movement.
- B. Form control joints in concrete masonry as follows:
 - 1. Fit bond breaker strips on in ends of block units on one side of control joint. Fill the joint with mortar and rake joints in exposed faces.

3.09 LINTELS

- A. Install steel lintels where indicated.
- B. Provide masonry lintels where shown and wherever openings of more than 1'- 0" for brick size units and 2' - 0" for block size units are shown without structural steel or other supporting lintels. Provide reinforced pre-cast concrete lintels. Cure pre-cast lintels before handling and installation.
- C. Provide minimum bearing of eight (8) inches at each jamb, unless otherwise indicated.

3.10 INSTALLATION OF REINFORCED UNIT MASONRY

- A. General: Install reinforced unit masonry to comply with requirements or referenced unit masonry standard. All reinforced unit masonry shall be inspected by a certified structural masonry inspector.
- B. Temporary formwork: Construct formwork and shores to support reinforced masonry elements during construction. Contractor is completely responsible for the proper design and construction of all temporary forms and bracing.
- C. Construct formwork to conform to shape, line, and dimensions shown. Make sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
- D. Do not place grout until entire height of masonry to be grouted has attained sufficient strength to resist grout pressure.
- E. All vertical reinforcing in concrete masonry cells shall be held in place with rebar positioners. At least one positioner shall be used at the top and bottom of each grout pour.
- F. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other temporary loads that may be placed on them during construction.
- G. Masonry wall lateral support interval, per Florida Building Code Table 2109.4.1, is 12 foot horizontal maximum.
- H. High-lift grouting in conformance with TMS 402/602 shall be used for all reinforced masonry. Maximum grout pour height shall be 12'-0", placed in 6'-0" maximum lifts.

3.11 STRUCTURAL BONDING OF MULTI-WYTHE MASONRY

- A. Use individual metal ties installed in horizontal joints to bond wythes together. Provide ties as shown, but not less than 1 metal tie for 4 sq. ft. (0.37 sq. m) of wall area spaced not to exceed 24 inches (610 mm) o.c. horizontally and vertically. Stagger ties in alternate courses. Provide additional ties within 12 inches (305 mm) of openings and space not more than 36 inches (915 mm) apart around perimeter of openings. At intersecting and abutting walls, provide ties at no more than 24 inches (610 mm) o.c. vertically.
- B. Use continuous horizontal-joint reinforcement installed in horizontal mortar joints for bond tie between wythes.
- C. Use either of the structural bonding systems specified above.
- D. Use structural bonding system indicated on Drawings.
- E. Corners: Provide interlocking masonry unit bond in each course at corners, unless otherwise shown.
 - 1. Provide continuity with horizontal-joint reinforcement at corners by using prefabricated "L" units in addition to masonry bonding.
- F. Intersecting and Abutting Walls: Unless vertical expansion or control joints are shown at juncture, provide same type of bonding specified for structural bonding between wythes and space as follows:

1. Provide individual metal ties not more than 16 inches (406 mm) o.c.
1. Provide continuity with horizontal-joint reinforcement by using prefabricated "T" units.
2. Provide rigid metal anchors not more than 24 inches (610 mm) o.c. If used with hollow masonry units, embed ends in mortar-filled cores.

3.12 FLASHING, WEEP HOLES, AND VENTS

- G. General: Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to the downward flow of water in the wall, and where indicated.
- H. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Place through-wall flashing on sloping bed of mortar and cover with mortar. Seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer before covering with mortar.
- I. Install flashing as follows:
3. At composite masonry walls, including cavity walls, extend flashing from exterior face of outer wythe of masonry, through the outer wythe, turned up a minimum of 4 inches (100 mm), and through the inner wythe to within 1/2 inch (13 mm) of the interior face of the wall in exposed masonry. Where interior surface of inner wythe is concealed by furring, carry flashing completely through the inner wythe and turn up approximately 2 inches (50 mm), unless otherwise indicated.
 4. At lintels and shelf angles, extend flashing a minimum of 4 inches (100 mm) into masonry at each end. At heads and sills, extend flashing 4 inches (100 mm) at ends and turn up not less than 2 inches (50 mm) to form a pan.
 3. Interlock end joints of ribbed sheet-metal flashing by overlapping ribs not less than 1-1/2 inches (38 mm) or as recommended by flashing manufacturer, and seal lap with elastomeric sealant complying with requirements of Division 7 Section "Joint Sealants" for application indicated.
 4. Extend sheet-metal flashing 1/2 inch (13 mm) beyond face of masonry at exterior and turn down to form a drip.
 5. Cut off flashing flush with face of wall after masonry wall construction is completed.
- J. Install weep holes in the head joints in exterior wythes of the first course of masonry immediately above embedded flashing and as follows:
1. Form weep holes with product specified in Part 2 of this Section.
 2. Form weep holes by keeping head joints free and clear of mortar.
 3. Space weep holes 24 inches (600 mm) o.c.
 4. Space weep holes 16 inches (400 mm) o.c.
 5. In cavities, place pea gravel to a height equal to height of first course, but not less than 2 inches (50 mm), immediately above top of flashing embedded in the wall, as masonry construction progresses, to splatter mortar droppings and to maintain drainage.
 6. Place cavity drainage material immediately above flashing in cavities.
 7. In insulated cavities, cover cavity side of open weep holes with copper or plastic insect screening before placing loose-fill masonry insulation in cavity.

- K. Trim wicking material used in weep holes flush with outside face of wall after mortar has set.
- L. Install vents in vertical head joints at the top of each continuous cavity. Space vents and close off cavities vertically and horizontally with blocking in manner indicated.
 - 1. Install through-wall flashing and weep holes above horizontal blocking.
- M. Install reglets and nailers for flashing and other related construction where shown to be built into masonry.

3.13 CAVITIES

- A. Keep cavities clean of mortar droppings and other materials during construction. Strike joints facing cavities flush.
 - 1. Use wood strips temporarily placed in cavity to collect mortar droppings. As work progresses, remove strips, clean off mortar droppings, and replace in cavity.
 - 2. Provide temporary opening by omitting 1 brick every 48 inches (1200 mm) at bottom of cavity and in first course above flashing. After wall has been built to top of cavity and mortar has set, flush out cavity with a hose, allow to dry, and then close temporary opening.
- B. Tie exterior wythe to back-up with continuous horizontal-joint reinforcing

3.14 REPAIRING, POINTING, AND CLEANING

- A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or if units do not match adjoining units. Install new units to match adjoining units and in fresh mortar or grout, pointed to eliminate evidence of replacement.
- B. Pointing: During the tooling of joints, enlarge any voids or holes, except weep holes, and completely fill with mortar. Point up all joints including corners, openings, and adjacent construction to provide a neat, uniform appearance, prepared for application of sealants.
- C. 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 non-metallic scrape hoes or chisels.
 - 2. Test cleaning methods on sample wall panel; leave ½ panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
 - 3. Protect adjacent stone and non-masonry surfaces from contact with cleaner by covering them with liquid strippable masking agent, polyethylene film, or waterproof masking tape.
 - 4. Wet all surfaces with water prior to application of cleaners; remove cleaners promptly by rinsing thoroughly with clear water.
 - 5. Clean concrete masonry by means of cleaning method indicated in NCMA TEK 45 applicable to type of stain present on exposed surfaces.

- D. Protection: Provide final protection and maintain conditions, in a manner acceptable to Installer, that ensure unit masonry is without damage and deterioration at time of substantial completion.

END OF SECTION

**SECTION 06100
ROUGH CARPENTRY**

PART 1 - GENERAL**1.01 RELATED DOCUMENTS**

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications, apply to this section.

1.02 DESCRIPTION OF WORK

- A. This Section includes the following:
1. Framing with dimension lumber.
 2. Framing with timbers.
 3. Framing with engineered wood products.
 4. Rooftop equipment bases and support curbs.
 5. Wood furring, grounds, nailers, and blocking.
 6. Sheathing.
 7. Subflooring.
 8. Underlayment.
 9. Utility shelving.

1.03 RELATED SECTIONS

- A. Related Sections: The following Sections contain requirements that relate to this Section:
1. Division 6 Section "Metal-Plate-Connected Wood Trusses."
 2. Division 6 Section "Finish Carpentry" for nonstructural carpentry items exposed to view and not specified in another Section.
 3. Division 9 Section "Gypsum Board Assemblies"

1.04 DEFINITIONS

- A. Rough Carpentry: Carpentry work not specified in other Sections and not exposed, unless otherwise specified.
- B. Exposed Framing: Dimension lumber not concealed by other construction and indicated to receive a stained or natural finish.

1.05 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product Data for the following products:
1. Engineered wood products.
 2. Underlayment.
 3. Insulating sheathing.
 4. Air-infiltration barriers.
 5. Metal framing anchors.
 6. Construction adhesives.
- C. Material certificates for dimension lumber specified to comply with minimum allowable unit

stresses. Indicate species and grade selected for each use and design values approved by the American Lumber Standards Committee's (ALSC) Board of Review.

- D. Wood treatment data as follows, including chemical treatment manufacturer's instructions for handling, storing, installing, and finishing treated materials:
 - 1. For each type of preservative-treated wood product, include certification by treating plant stating type of preservative solution and pressure process used, net amount of preservative retained, and compliance with applicable standards.
 - 2. For waterborne-treated products, include statement that moisture content of treated materials was reduced to levels indicated before shipment to Project site.
 - 3. For fire-retardant-treated wood products, include certification by treating plant that treated materials comply with specified standard and other requirements as well as data relative to bending strength, stiffness, and fastener-holding capacities of treated materials.
- E. Material test reports from a qualified independent testing agency indicating and interpreting test results relative to compliance of fire-retardant-treated wood products with requirements indicated.
- F. Warranty of chemical treatment manufacturer for each type of treatment.
- G. Research or evaluation reports of the model code organization acceptable to authorities having jurisdiction that evidence the following products' compliance with building code in effect for Project.
 - 1. Engineered wood products.
 - 2. Foam-plastic sheathing.
 - 3. Air-infiltration barriers.
 - 4. Metal framing anchors.
 - 5. Power-driven fasteners.
 - 6. Fire-retardant-treated wood.

1.06 QUALITY ASSURANCE

- A. Testing Agency Qualifications: To qualify for approval, an independent testing agency must demonstrate to Architect's satisfaction, based on evaluation of agency-submitted criteria conforming to ASTM E699, that it has the experience and capability to satisfactorily conduct the testing indicated without delaying the Work.
- B. Single-Source Responsibility for Engineered Wood Products: Obtain each type of engineered wood product from one source and by a single manufacturer.
- C. Single-Source Responsibility for Fire-Retardant-Treated Wood: Obtain each type of fire-retardant-treated wood product from one source and by a single producer.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Keep materials under cover and dry. Protect from weather and contact with damp or wet surfaces. Stack lumber, plywood, and other panels. Provide for air circulation within and around stacks and under temporary coverings.
 - 1. For lumber and plywood pressure treated with waterborne chemicals, place spacers between each bundle to provide air circulation.

PART 2 - PRODUCTS**2.01 MANUFACTURERS**

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Wood-Preservative-Treated Materials:
 - a. Baxter: J. H. Baxter Co.
 - b. Chemical Specialties, Inc.
 - c. Continental Wood Preservers, Inc.
 - d. Hickson Corp.
 - e. Hoover Treated Wood Products, Inc.
 - f. Osmose Wood Preserving, Inc.
 2. Fire-Retardant-Treated Materials, Interior Type A:
 - a. Baxter: J. H. Baxter Co.
 - b. Chemical Specialties, Inc.
 - c. Continental Wood Preservers, Inc.
 - d. Hickson Corp.
 - e. Hoover Treated Wood Products, Inc.
 3. Fire-Retardant-Treated Materials, Exterior Type:
 - a. American Wood Treaters, Inc.
 - b. Hoover Treated Wood Products, Inc.
 4. Laminated-Veneer Lumber:
 - a. Alpine Structures.
 - b. Boise Cascade Corp.
 - c. Georgia-Pacific Corp.
 - d. Louisiana-Pacific Corp.
 - e. Trus Joist MacMillan.
 - f. Willamette Industries, Inc.
 5. Parallel-Strand Lumber:
 - a. Alpine Structures.
 - b. Trus Joist MacMillan.
 6. Prefabricated Wood I-Joists:
 - a. Alpine Structures.
 - b. Boise Cascade Corp.
 - c. Georgia-Pacific Corp.
 - d. Louisiana-Pacific Corp.
 - e. Superior Wood Systems, Inc.
 - f. Trus Joist MacMillan.
 - g. Willamette Industries, Inc.
 7. Gypsum Sheathing Board:
 - a. Domtar Gypsum.
 - b. Georgia-Pacific Corp.
 - c. National Gypsum Co.; Gold Bond Building Products Division.
 - d. United States Gypsum Co.
 8. Glass-Fiber-Surfaced Gypsum Sheathing Board:
 - a. Georgia-Pacific Corp.
 - b. United States Gypsum Co.
 9. Extruded Cellular Polystyrene Sheathing:

- a. Amoco Foam Products Co.
 - b. Dow Chemical Company (The).
 - c. UC Industries, Inc.
10. Polyisocyanurate Foam Sheathing:
- a. Celotex Corporation (The); Building Products Division.
 - b. NRG Barriers, Inc.
11. Air-Infiltration Barriers:
- a. Amoco Foam Products Co.
 - b. Anthony Industries, Inc.; Simplex Products Division.
 - c. Celotex Corporation (The); Building Products Division.
 - d. DuPont Company; Fibers Department.
 - e. Parsec, Inc.
 - f. Raven Industries, Inc.
 - g. Reemay, Inc.
 - h. Sto-Cote Products, Inc.
12. Metal Framing Anchors:
- a. Cleveland Steel Specialty Co.
 - b. Hilti Inc. USA
 - c. DeWalt, USA
 - d. Simpson Strong-Tie Company, Inc.
 - e. Southeastern Metals Manufacturing Co., Inc.

2.02 LUMBER, GENERAL

- A. Lumber Standards: Comply with DOC PS 20, "American Softwood Lumber Standard," and with applicable grading rules of inspection agencies certified by ALSC's Board of Review.
- B. Inspection Agencies: Inspection agencies, and the abbreviations used to reference them, include the following:
- 1. NELMA - Northeastern Lumber Manufacturers Association.
 - 2. SPIB - Southern Pine Inspection Bureau.
 - 3. WWPA - Western Wood Products Association.
- C. Grade Stamps: Provide lumber with each piece factory marked with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grade, species, moisture content at time of surfacing, and mill.
- 1. For exposed lumber, furnish pieces with grade stamps applied to ends or back of each piece, or omit grade stamps and provide grade-compliance certificates issued by inspection agency.
- D. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
- 1. Provide dressed lumber, S4S, unless otherwise indicated.
 - 2. Provide dry lumber with 19 percent maximum moisture content at time of dressing for 2-inch nominal (38-mm actual) thickness or less, unless otherwise indicated.

2.03 WOOD-PRESERVATIVE-TREATED MATERIALS

- A. General: Where lumber or plywood is indicated as preservative treated or is specified to be treated, comply with applicable requirements of AWWA C2 (lumber) and AWWA C9

(plywood). Mark each treated item with the Quality Mark Requirements of an inspection agency approved by ALSC's Board of Review.

1. Do not use chemicals containing chromium or arsenic.
 2. For exposed items indicated to receive stained finish, use chemical formulations that do not bleed through, contain colorants, or otherwise adversely affect finishes.
- B. Pressure treat aboveground items with waterborne preservatives to a minimum retention of 0.25 lb/cu. ft. (4.0 kg/cu. m). After treatment, kiln-dry lumber and plywood to a maximum moisture content of 19 and 15 percent, respectively. Treat indicated items 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 members less than 18 inches (460 mm) above grade.
 4. Wood floor plates installed over concrete slabs directly in contact with earth.
- C. Pressure treat wood members in contact with ground or freshwater with waterborne preservatives to a minimum retention of 0.40 lb/cu. ft. (6.4 kg/cu. m).
- D. Complete fabrication of treated items before treatment, where possible. If cut after treatment, apply field treatment complying with AWWA M4 to cut surfaces. Inspect each piece of lumber or plywood after drying and discard damaged or defective pieces.

2.04 FIRE-RETARDANT-TREATED MATERIALS

- A. General: Where fire-retardant-treated wood is indicated, comply with applicable requirements of AWWA C20 (lumber) and AWWA C27 (plywood). Identify fire-retardant-treated wood with appropriate classification marking of UL; U.S. Testing; Timber Products Inspection, Inc.; or another testing and inspecting agency acceptable to authorities having jurisdiction.
1. Research or Evaluation Reports: Provide fire-retardant-treated wood acceptable to authorities having jurisdiction and for which a current model code research or evaluation report exists that evidences compliance of fire-retardant-treated wood for application indicated.
 2. For exposed items indicated to receive stained finish, use chemical formulations that do not bleed through, contain colorants, or otherwise adversely affect finishes.
- B. Interior Type A: For interior locations, use chemical formulation that produces treated lumber and plywood with the following properties under conditions present after installation:
1. Bending strength, stiffness, and fastener-holding capacities are not reduced below values published by manufacturer of chemical formulation under elevated temperature and humidity conditions simulating installed conditions when tested by a qualified independent testing agency.
 2. No form of degradation occurs due to acid hydrolysis or other causes related to treatment.
 3. Contact with treated wood does not promote corrosion of metal fasteners.
- C. Exterior Type: Use for exterior locations and where indicated.

- D. Inspect each piece of treated lumber or plywood after drying and discard damaged or defective pieces.

2.05 DIMENSION LUMBER

- A. General: Provide dimension lumber of grades indicated according to the ALSC National Grading Rule (NGR) provisions of the inspection agency indicated.
- B. Non-Load-Bearing Interior Partitions: Provide framing of the following grade and species:
 - 1. Grade: Construction, Stud, or No. 3.
 - 2. Grade: Standard, Stud, or No. 3.
 - 3. Species: Eastern softwoods; NELMA.
 - 4. Species: Spruce-pine-fir south; NELMA.
 - 5. Species: Hem-fir north; NLGA.
 - 6. Species: Spruce-pine-fir north; NLGA.
 - 7. Species: Northern species; NLGA.
 - 8. Species: Southern pine; SPIB.
 - 9. Species: Mixed southern pine; SPIB.
 - 10. Species: Hem-fir; WCLIB or WWPA.
 - 11. Species: Spruce-pine-fir south; WCLIB or WWPA.
 - 12. Species: Any species above.
- C. Exterior and Load-Bearing Walls: Provide framing of the following grade and species:
 - 1. Grade: No. 2, or better.
 - 2. Species: Southern pine; SPIB.
 - 3. Species: Hem-fir; WCLIB or WWPA.
 - 4. Species: Douglas fir south; WWPA.
- D. Framing Other than Non-Load-Bearing Partitions: Provide framing of the following grade and species:
 - 1. Grade: No. 2.
 - 2. Grade: Construction or No. 2.
 - 3. Grade: Construction, Stud, or No. 3.
 - 4. Species: Spruce-pine-fir south; NELMA.
 - 5. Species: Douglas fir-larch north; NLGA.
 - 6. Species: Hem-fir north; NLGA.
 - 7. Species: Spruce-pine-fir north; NLGA.
 - 8. Species: Southern pine; SPIB.
 - 9. Species: Mixed southern pine; SPIB.
 - 10. Species: Douglas fir-larch; WCLIB or WWPA.
 - 11. Species: Hem-fir; WCLIB or WWPA.
 - 12. Species: Douglas fir south; WWPA.
 - 13. Species: Any species above.
 - 14. Species and Grade: Any species of machine stress-rated (MSR) dimension lumber with a grade of 1450f-1.3E.
 - 15. Species and Grade: Any species of machine stress-rated (MSR) dimension lumber with a grade of 1800f-1.6E.
- E. Ceilings (Non-Load-Bearing): For ceiling framing that does not support a floor, roof, or attic, provide the following grade and species:
 - 1. Grade: No. 2.
 - 2. Grade: Construction or No. 2.
 - 3. Grade: Construction, Stud, or No. 3.

4. Species: Spruce-pine-fir south; NELMA.
5. Species: Douglas fir-larch north; NLGA.
6. Species: Hem-fir north; NLGA.
7. Species: Spruce-pine-fir north; NLGA.
8. Species: Southern pine; SPIB.
9. Species: Mixed southern pine; SPIB.
10. Species: Douglas fir-larch; WCLIB or WWPA.
11. Species: Hem-fir; WCLIB or WWPA.
12. Species: Douglas fir south; WWPA.
13. Species: Any species above.

F. Other Framing Not Listed Above: Provide the following grades and species:

1. Grade: Select Structural.
2. Grade: No. 1.
3. Grade: No. 2.
4. Grade: Construction or No. 2.
5. Grade: Construction, Stud, or No. 3.
6. Species: Douglas fir-larch north; NLGA.
7. Species: Hem-fir north; NLGA.
8. Species: Southern pine; SPIB.
9. Species: Douglas fir-larch; WCLIB or WWPA.
10. Species: Hem-fir; WCLIB or WWPA.
11. Species: Douglas fir south; WWPA.
12. Species: Any species above.
13. Species and Grade: Any species of machine stress-rated (MSR) dimension lumber with a grade of 1450f-1.3E.
14. Species and Grade: Any species of machine stress-rated (MSR) dimension lumber with a grade of 1800f-1.6E.
15. Species and Grade: Any species and grade with a modulus of elasticity of at least 1,300,000 psi (8950 MPa) and an extreme fiber stress in bending of at least 850 psi (5.9 MPa) for 2-inch nominal (38 mm-actual) thickness and 12-inch nominal (286-mm actual) width for single member use.

G. Exposed Framing: Provide material hand-selected from lumber of species and grade indicated below for uniformity of appearance and freedom from characteristics that would impair finish appearance.

1. Species and Grade: As indicated above for load-bearing construction of same type.
2. Species and Grade: Spruce-pine-fir south, Select Structural; NELMA, WCLIB, or WWPA.
3. Species and Grade: Hem-fir north, Select Structural; NLGA.
4. Species and Grade: Spruce-pine-fir north, Select Structural; NLGA.
5. Species and Grade: Southern pine, Select Structural; SPIB.
6. Species and Grade: Hem-fir, Select Structural; WCLIB or WWPA.

2.06 BOARDS

A. Exposed Boards: Where boards will be exposed in the finished work, provide the following:

1. Moisture Content: 19 percent maximum.
2. Moisture Content: 15 percent maximum.
3. Species and Grade: Eastern white pine, D Select per NELMA or NLGA rules.
4. Species and Grade: Redwood, Clear per RIS rules.
5. Species and Grade: Southern pine, C Finish per SPIB rules.
6. Species and Grade: Hem-fir, C & Btr per WCLIB rules or C Select per NLGA or

- WWPA rules.
7. Species and Grade: Spruce-pine-fir, C & Btr per WCLIB rules or C Select per NLGA or WWPA rules.
- B. Concealed Boards: Where boards will be concealed by other work, provide lumber with 19 percent maximum moisture content and of following species and grade:
1. Species and Grade: Eastern softwoods, No. 3 Common per NELMA rules.
 2. Species and Grade: Northern species, No. 3 Common or Standard per NLGA rules.
 3. Species and Grade: Mixed southern pine, No. 2 per SPIB rules.
 4. Species and Grade: Hem-fir, Standard per WCLIB rules or No. 3 Common per WWPA rules.
 5. Species and Grade: Spruce-pine-fir, Standard per WCLIB rules or No. 3 Common per WWPA rules.
 6. Species and Grade: Western woods, Standard per WCLIB rules or No. 3 Common per WWPA rules.
 7. Species and Grade: Any species above.

2.07 MISCELLANEOUS LUMBER

- A. General: Provide lumber for support or attachment of other construction, including rooftop equipment curbs and support bases, cant strips, bucks, nailers, blocking, furring, grounds, stripping, and similar members.
- B. Fabricate miscellaneous lumber from dimension lumber of sizes indicated and into shapes shown.
- C. Moisture Content: 19 percent maximum for lumber items not specified to receive wood preservative treatment.
- D. Grade: For dimension lumber sizes, provide No. 3 or Standard grade lumber per ALSC's NGRs of any species. For board-size lumber, provide No. 3 Common grade per NELMA, NLGA, or WWPA; No. 2 grade per SPIB; or Standard grade per NLGA, WCLIB or WWPA of any species.

2.08 GYPSUM SHEATHING

- A. Gypsum Sheathing Board: Water-resistant-core gypsum sheathing board complying with ASTM C79 with long edges surfaced with water-repellent paper and as follows:
 1. Type: Regular.
 2. Type: X.
 3. Edge Configuration: V-shaped tongue-and-groove long edges, for horizontal application.
 4. Edge Configuration: Square, for vertical application.
 5. Thickness: 1/2 inch (12.7 mm).
 6. Thickness: 5/8 inch (15.9 mm).
- B. Glass-Fiber-Surfaced Gypsum Sheathing Board: Gypsum sheathing board consisting of noncombustible gypsum core incorporating a water-resistant material, surfaced on face and back with glass-fiber mats with alkali-resistant coating, and with unsurfaced square edges; complying with ASTM C79, and requirements indicated below:
 1. Type: Regular.
 2. Type: X.
 3. Thickness: As indicated.

2.09 AIR-INFILTRATION BARRIER

- A. Asphalt-saturated organic felt complying with ASTM D226, Type I (No. 15 asphalt felt), unperforated.
- B. Air retarder complying with ASTM E1677; made from polyolefins; either cross-laminated films, woven strands, or spunbonded fibers; coated or uncoated; with or without perforations to transmit water vapor but not liquid water; and as follows:
 - 1. Minimum Thickness: 3 mils (0.08 mm).
 - 2. Minimum Water-Vapor Transmission: 10 perms (575 ng/Pa x s x sq. m) when tested according to ASTM E96, Procedure A.
 - 3. Maximum Flame Spread: 25 per ASTM E84.
 - 4. Minimum Allowable Exposure Time: 3 months.

2.10 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.
 - 1. Where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with a hot-dip zinc coating per ASTM A153 or of Type 304 stainless steel.
- B. Nails, Wire, Brads, and Staples: FS FF-N-105.
- C. Power-Driven Fasteners: CABO NER-272.
- D. Wood Screws: ASME B18.6.1.
- E. Lag Bolts: ASME B18.2.1. (ASME B18.2.3.8M)
- F. Bolts: Steel bolts complying with ASTM A307, Grade A (ASTM F568, Property Class 4.6); with ASTM A563 (ASTM A563M) hex nuts and, where indicated, flat washers.

2.11 METAL FRAMING ANCHORS

- A. General: Provide galvanized steel framing anchors of structural capacity, type, and size indicated and as follows:
 - 1. Research or Evaluation Reports: Provide products for which model code research or evaluation reports exist that are acceptable to authorities having jurisdiction and that evidence compliance of metal framing anchors for application indicated with building code in effect for Project.
 - 2. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, that meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis, and demonstrated by comprehensive testing performed by a qualified independent testing agency.
- B. Galvanized Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A653, G60 (ASTM A653M, Z180) coating designation; structural, commercial, or lock-forming quality, as standard with manufacturer for type of anchor indicated.
- C. Joist Hangers: U-shaped joist hangers with 2-inch- (50-mm-) long seat and 1-1/4-inch- (32-mm-) wide nailing flanges at least 85 percent of joist depth.

1. Thickness: 0.052 inch (1.3 mm).
 2. Thickness: 0.064 inch (1.6 mm).
- D. Top Flange Hangers: U-shaped joist hangers, full depth of joist, formed from metal strap with tabs bent to extend over and be fastened to supporting member.
1. Strap Width: 1-1/2 inches (38 mm).
 2. Strap Width: 2 inches (50 mm).
 3. Thickness: 0.052 inch (1.3 mm).
 4. Thickness: 0.064 inch (1.6 mm).
- E. Post Bases: Adjustable-socket type for bolting in place with standoff plate to raise post 1 inch (25 mm) above base and with 2-inch (50-mm) minimum side cover, socket 0.064 inch (1.6 mm) thick, standoff and adjustment plates 0.108 inch (2.8 mm) thick.
- F. Joist Ties: Flat straps, with holes for fasteners, for tying joists together over supports.
1. Width: 3/4 inch (19 mm).
 2. Width: 1-1/4 inches (32 mm).
 3. Thickness: 0.052 inch (1.3 mm).
 4. Thickness: 0.064 inch (1.6 mm).
 5. Length: 16 inches (400 mm).
 6. Length: 24 inches (600 mm).
 7. Length: As indicated.
- G. Rafter Tie-Downs (Hurricane Ties): Bent strap tie for fastening rafters or roof trusses to wall studs below, 1-5/8 inches (41 mm) wide by 0.052 inch (1.3 mm) thick.

PART 3 - EXECUTION

3.01 INSTALLATION, GENERAL

- A. Discard units of material with defects that impair quality of rough carpentry and that are too small to use with minimum number of joints or optimum joint arrangement.
- B. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted.
- C. Fit rough carpentry to other construction; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds, and similar supports to allow attachment of other construction.
- D. Apply field treatment complying with AWPA M4 to cut surfaces of preservative-treated lumber and plywood.
- E. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
1. CABO NER-272 for power-driven staples, P-nails, and allied fasteners.
 2. Published requirements of metal framing anchor manufacturer.
 3. "Recommended Nailing Schedule" of referenced framing standard and with AFPA's "National Design Specifications for Wood Construction."
 4. "Table 23-I-Q–Nailing Schedule" of the Uniform Building Code.
 5. Florida Building Code
- F. Use common wire nails, unless otherwise indicated. Use finishing nails for finish work.

Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood; predrill as required.

- G. Use hot-dip galvanized or stainless-steel nails where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity.
- H. Countersink nail heads on exposed carpentry work and fill holes with wood filler.

3.02 WOOD GROUNDS, NAILERS, BLOCKING, AND SLEEPERS

- A. Install wood grounds, nailers, blocking, and sleepers where shown and where required for screeding or attaching other work. Form to shapes shown and cut as required for true line and level of attached work. Coordinate locations with other work involved.
- B. Attach to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated. Build into masonry during installation of masonry work. Where possible, anchor to formwork before concrete placement.
- C. Install permanent grounds of dressed, preservative-treated, key-beveled lumber not less than 1-1/2 inches (38 mm) wide and of thickness required to bring face of ground to exact thickness of finish material. Remove temporary grounds when no longer required.

3.03 WOOD FURRING

- A. Install plumb and level with closure strips at edges and openings. Shim with wood as required for tolerance of finish work.
 - 1. Firestop furred spaces of walls at each floor level and at ceiling with wood blocking or noncombustible materials, accurately fitted to close furred spaces.
- B. Furring to Receive Plywood Paneling: Install 1-by-3-inch nominal- (19-by-63-mm actual-) size furring at 24 inches (610 mm) o.c., horizontally and vertically. Select furring with no knots capable of producing bent-over nails and damage to paneling.
- C. Furring to Receive Gypsum Board: Install 1-by-2-inch nominal- (19-by-38-mm actual-) size furring at 16 inches (406 mm) o.c., vertically.
- D. Furring to Receive Plaster Lath: Install 1-by-2-inch nominal- (19-by-38-mm actual-) size furring at 16 inches (406 mm) o.c., vertically.

3.04 WOOD FRAMING, GENERAL

- A. Framing Standard: Comply with AFPA's "Manual for Wood Frame Construction," unless otherwise indicated.
- B. Framing with Engineered Wood Products: Install engineered wood products to comply with manufacturer's written instructions.
- C. Install framing members of size and at spacing indicated.
- D. Do not splice structural members between supports.
- E. Firestop concealed spaces of wood-framed walls and partitions at each floor level and at ceiling line of top story. Where firestopping is not inherent in framing system used, provide

closely fitted wood blocks of 2-inch nominal- (38-mm actual-) thickness lumber of same width as framing members.

3.05 WALL AND PARTITION FRAMING

- A. General: Arrange studs so that wide face of stud is perpendicular to direction of wall or partition and narrow face is parallel. Provide single bottom plate and double top plates using members of 2-inch nominal (38-mm actual) thickness whose widths equal that of studs; except single top plate may be used for non-load-bearing partitions. Nail or anchor plates to supporting construction, unless otherwise indicated.
1. For exterior walls, provide 2-by-4-inch nominal- (38-by-89-mm actual-) size wood studs spaced 16 inches (406 mm) o.c., except where otherwise indicated or required.
 2. For interior partitions and walls, provide 2-by-4-inch nominal- (38-by-89-mm actual-) size wood studs spaced 16 inches (406 mm) o.c., except where otherwise indicated or required.
- B. Construct corners and intersections with 3 or more studs. Provide miscellaneous blocking and framing as shown and as required to support facing materials, fixtures, specialty items, and trim.
1. Provide continuous horizontal blocking at midheight of single-story partitions over 96 inches (2438 mm) high and multistory partitions, using members of 2-inch nominal (38-mm actual) thickness and of same width as wall or partitions.
- C. Frame openings with multiple studs and headers. Provide nailed header members of thickness equal to width of studs. Set headers on edge and support on jamb studs.
1. For non-load-bearing partitions, provide double-jamb studs with headers not less than 4-inch nominal (89-mm actual) depth for openings 36 inches (900 mm) and less in width, and not less than 6-inch nominal (140-mm actual) depth for wider openings.
 2. For load-bearing walls, provide double-jamb studs for openings 72 inches (1800 mm) and less in width, and triple-jamb studs for wider openings. Provide headers of depth shown or, if not shown, as recommended by AFPA's "Manual for Wood Frame Construction."
- D. Provide bracing in exterior walls, at both walls of each external corner, full-story height, unless otherwise indicated. Provide one of the following:
- E. Provide bracing in walls, at locations indicated, full-story height, unless otherwise indicated. Provide one of the following:
1. Diagonal bracing at 45-degree angle using let-in 1-by-4-inch nominal- (19-by-89-mm actual-) size boards.
 2. Diagonal bracing at 45-degree angle using metal bracing.
 3. Plywood panels, not less than 48 by 96 inches (1219 by 2438 mm) applied vertically.

3.11 GYPSUM SHEATHING

- A. General: Fasten gypsum sheathing to supports with galvanized roofing nails or divergent point galvanized staples. Nail or staple to comply with manufacturer's recommended spacing and referenced fastening schedule. Keep perimeter fasteners 3/8 inch (10 mm) from edges and ends of units. Fit units tightly against each other and around openings.

- B. Install 24-by-96-inch (609-by-2438-mm) sheathing horizontally with long edges at right angles to studs with V-grooved edge down and tongue edge up. Interlock tongue with groove to bring long edges in contact with edges of adjacent board without forcing. Abut ends of boards over centers of studs and stagger end joints of adjacent boards not less than 1 stud spacing, 2 where possible.

3.12 AIR-INFILTRATION BARRIER

- A. Cover sheathing with air-infiltration barrier as follows:
 - 1. Apply asphalt-saturated organic felt horizontally with 2-inch (50-mm) overlap and 6 inch (150 mm) end lap; fasten to sheathing with galvanized staples or roofing nails.
 - 2. Apply air retarder to comply with manufacturer's written instructions.
 - 3. Apply air-infiltration barrier to cover upstanding flashing with 4-inch (100-mm) overlap.

END OF SECTION

SECTION 06176
METAL-PLATE-CONNECTED WOOD TRUSSES

PART 1 - GENERAL**1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 DESCRIPTION OF WORK

- A. This Section includes wood roof floor and girder trusses and truss accessories.

1.03 RELATED SECTIONS

- A. Related Sections include the following:
 - 1. Division 6 Section "Carpentry" for roof sheathing and subflooring and dimension lumber for supplementary framing and permanent bracing.
 - 2. Division 6 Section "Rough Carpentry" for supporting framing.

1.04 DEFINITIONS

- A. Metal-Plate-Connected Wood Trusses: Planar structural units consisting of metal-plate-connected members fabricated from dimension lumber and cut and assembled before delivery to Project site.
- B. Lumber grading agencies, and the abbreviations used to reference them, include the following:
 - 1. NELMA - Northeastern Lumber Manufacturers Association.
 - 2. NLGA - National Lumber Grades Authority.
 - 3. SPIB - Southern Pine Inspection Bureau.

1.05 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide metal-plate-connected wood trusses capable of withstanding design loads within limits and under conditions indicated.
 - 1. Design Loads: As indicated.
 - 2. Maximum Deflection Under Design Loads:
 - a. Roof Trusses: Vertical deflection of 1/360 of span.
 - b. Floor Trusses: Vertical deflection of 1/360 of span.

1.06 SUBMITTALS

- A. Product Data: For metal-plate connectors, metal framing anchors, bolts, and fasteners.
 - 1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used, net amount of preservative retained, and chemical treatment manufacturer's written instructions for handling, storing, installing, and finishing treated material.

2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements, including bending strength, stiffness, and fastener-holding capacity. Include physical properties of treated materials, both before and after exposure to elevated temperatures when tested according to ASTM D5664.
 3. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
 4. Include copies of warranties from chemical treatment manufacturers for each type of treatment.
- B. Shop Drawings: Show location, pitch, span, camber, configuration, and spacing for each type of truss required; species, sizes, and stress grades of lumber; splice details; type, size, material, finish, design values, orientation, and location of metal connector plates; and bearing details.
1. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- C. Product Certificates: For metal-plate-connected wood trusses, signed by officer of truss fabricating firm.
- D. Qualification Data: For **fabricator and Installer**.
- E. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the American Lumber Standards Committee Board of Review.

1.07 QUALITY ASSURANCE

- A. Metal Connector-Plate Manufacturer Qualifications: A manufacturer that is a member of TPI and that complies with TPI quality-control procedures for manufacture of connector plates published in TPI 1.
1. Manufacturer's responsibilities include providing professional engineering services needed to assume engineering responsibility.
 2. Engineering Responsibility: Preparation of Shop Drawings and comprehensive engineering analysis by a qualified professional engineer.
- B. Fabricator Qualifications: Shop that participates in a recognized quality-assurance program that involves inspection by SPIB, Timber Products Inspection, TPI, or other independent testing and inspecting agency acceptable to Architect and authorities having jurisdiction.
- C. Source Limitations for Connector Plates: Obtain metal connector plates through one source from a single manufacturer.
- D. Source Limitations for Fire-Retardant-Treated Wood: Obtain each type of fire-retardant-treated wood product through one source from a single producer.
- E. Comply with applicable requirements and recommendations of the following publications:
1. TP1 1, "National Design Standard for Metal Plate Connected Wood Truss Construction."
 2. TPI DSB, "Recommended Design Specification for Temporary Bracing of Metal Plate Connected Wood Trusses."

3. TPI HIB, "Commentary and Recommendations for Handling, Installing & Bracing Metal Plate Connected Wood Trusses."
- F. Wood Structural Design Standard: Comply with applicable requirements in AFPA's "National Design Specifications for Wood Construction" and "Supplement."

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Comply with TPI recommendations to avoid damage and lateral bending. Provide for air circulation around stacks and under coverings.
- B. Inspect trusses showing discoloration, corrosion, or other evidence of deterioration. Discard and replace trusses that are damaged or defective.

1.09 COORDINATION

- A. Time delivery and erection of trusses to avoid extended on-site storage and to avoid delaying progress of other trades whose work must follow erection of trusses.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 1. Metal Connector Plates:
 - a. Alpine Engineered Products, Inc.
 - b. CompuTrus, Inc.
 - c. Eagle Metal Products.
 - d. Jager Industries, Inc.
 - e. Mitek Industries, Inc.
 - f. Robbins Engineering, Inc.
 - g. TEE-LOK Corporation.
 - h. Truswal Systems Corporation.
 2. Metal Framing Anchors:
 - a. Alpine Engineered Products, Inc.
 - b. Cleveland Steel Specialty Co.
 - c. Harlen Metal Products, Inc.
 - d. KC Metals Products, Inc.
 - e. Silver Metal Products, Inc.
 - f. Simpson Strong-Tie Company, Inc.
 - g. Southeastern Metals Manufacturing Co., Inc.
 - h. United Steel Products Company, Inc.

2.02 DIMENSION LUMBER

- A. Grade and Species: Provide dimension lumber of any species for truss chord and web members, graded visually or mechanically, and capable of supporting required loads without exceeding allowable design values according to AFPA's "National Design Specifications for Wood Construction" and its "Supplement."
 1. Grade for Chord Members: No. 2.
 2. Grade for Web Members: No. 2, same grade as indicated for chord members.

3. Species: Southern pine; SPIB.

2.03 WOOD-PRESERVATIVE-TREATED LUMBER

- A. Preservative Treatment by Pressure Process: AWPA C2, except that lumber that is not in contact with the ground and is continuously protected from liquid water may be treated according to AWPA C31 with inorganic boron (SBX).
 1. Preservative Chemicals: Acceptable to authorities having jurisdiction and **one of** the following:
 - a. Chromated copper arsenate (CCA).
 - b. Ammoniacal copper zinc arsenate (ACZA).
 - c. Ammoniacal, or amine, copper quat (ACQ).
 - d. Copper bis (dimethyldithiocarbamate) (CDDC).
 - e. Ammoniacal copper citrate (CC).
 - f. Copper azole, Type A (CBA-A).
 - g. Oxine copper (copper-8-quinolinolate) in a light petroleum solvent.
 2. For exposed items indicated to receive a stained or natural finish, use chemical formulations that do not require incising, contain colorants, bleed through, or otherwise adversely affect finishes.
- B. Kiln-dry material after treatment to maximum moisture content of 19 percent. Do not use material that is warped or does not comply with requirements for untreated material.
- C. Mark each treated item with the treatment quality mark of an inspection agency approved by the American Lumber Standards Committee Board of Review.
 1. For exposed lumber indicated to receive a stained or natural finish, omit marking and provide certificates of treatment compliance issued by inspection agency.
- D. Application: Treat trusses where indicated on Drawings.

2.04 FIRE-RETARDANT-TREATED WOOD

- A. General: Where fire-retardant-treated wood is indicated, provide wood that complies with performance requirements in AWPA C20. Identify fire-retardant-treated wood with appropriate classification marking of UL, U.S. Testing, Timber Products Inspection, or another testing and inspecting agency acceptable to authorities having jurisdiction.
 1. Use treatment for which chemical manufacturer publishes physical properties of treated wood after exposure to elevated temperatures, when tested by a qualified independent testing agency according to ASTM D5664.
 2. Use treatment that does not promote corrosion of metal fasteners.
 3. Use Exterior type for exterior locations and where indicated.
 4. Use Interior Type A High Temperature (HT), unless otherwise indicated.
- B. For exposed items indicated to receive a stained or natural finish, use chemical formulations that do not bleed through, contain colorants, or otherwise adversely affect finishes.

2.05 METAL CONNECTOR PLATES

- A. General: Fabricate connector plates to comply with TPI 1 from metal complying with requirements indicated below:

- B. Hot-Dip Galvanized Steel Sheet: ASTM A653/A653M, G60 (Z180) coating designation; Designation SS, Grade 33, and not less than 0.036 inch (0.9 mm) thick.
- C. Electrolytic Zinc-Coated Steel Sheet: ASTM A591/A591M, 80Z (24G) coating designation; ASTM A570/A570M, Structural Steel (SS), Grade 33, and not less than 0.047 inch (1.2 mm) thick.
- D. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A792/A792M, AZ50 (AZ150) coating designation; Structural Steel (SS), Grade 33, and not less than 0.036 inch (0.9 mm) thick.
- E. Stainless-Steel Sheet: ASTM A666, Type 316, and not less than 0.035 inch (0.88 mm) thick.

2.06 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.
 - 1. Where trusses are exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A153/A153M.
- B. Nails, Wire, Brads, and Staples: FS FF-N-105.
- C. Power-Driven Fasteners: CABO NER-272.
- D. Wood Screws: ASME B18.6.1.
- E. Lag Bolts: ASME B18.2.1. (ASME B18.2.3.8M).
- F. Bolts: Steel bolts complying with ASTM A307, Grade A (ASTM F568M, Property Class 4.6); with ASTM A563 (ASTM A563M) hex nuts and, where indicated, flat washers.
- G. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E488 conducted by a qualified independent testing and inspecting agency.
 - 1. Material: Carbon-steel components, zinc plated to comply with ASTM B633, Class Fe/Zn 5.
 - 2. Material: Stainless steel with bolts and nuts complying with ASTM F593 and ASTM F594, Alloy Group 1 or 2 (ASTM F738M and ASTM F836M, Grade A1 or A4).

2.07 METAL FRAMING ANCHORS

- A. General: Provide framing anchors made from metal indicated, of structural capacity, type, and size indicated, and as follows:
 - 1. Research/Evaluation Reports: Provide products acceptable to authorities having jurisdiction and for which model code research/evaluation reports exist that show compliance of metal framing anchors, for application indicated, with building code in effect for Project.
 - 2. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, that meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering

analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

- B. Galvanized Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A653/A653M, G60 (Z180) coating designation.
- C. Stainless-Steel Sheet: ASTM A666, Type 316.
 - 1. Use for exterior locations and where indicated.
- D. Truss Tie-Downs: Refer to Structural Drawings for Truss to Structure straps, hangers & anchors. Truss to Truss connections shall be by the Truss Design Engineer.
- E. Roof Truss Clips: Angle clips for bracing bottom chord of roof trusses at non-load-bearing walls, 1-1/4 inches (32 mm) wide by 0.050 inch (1.3 mm) thick. Clip is fastened to truss through slotted holes to allow for truss deflection.
- F. Floor Truss Hangers: Refer to Structural Drawings for Truss to Structure straps, hangers & anchors. Truss to Truss connections shall be by the Truss Design Engineer.

2.08 MISCELLANEOUS MATERIALS

- A. Galvanizing Repair Paint: SSPC-Paint 20 or DOD-P-21035, with dry film containing a minimum of 94 percent zinc dust by weight.
- B. Protective Coatings: SSPC-Paint 22, epoxy-polyamide primer or SSPC-Paint 16, coal-tar epoxy-polyamide paint.

2.09 FABRICATION

- A. Cut truss members to accurate lengths, angles, and sizes to produce close-fitting joints.
- B. Fabricate metal connector plates to sizes, configurations, thicknesses, and anchorage details required to withstand design loads for types of joint designs indicated.
- C. Assemble truss members in design configuration indicated; use jigs or other means to ensure uniformity and accuracy of assembly with joints closely fitted to comply with tolerances in TPI 1. Position members to produce design camber indicated.
 - 1. Fabricate wood trusses within manufacturing tolerances in TPI 1.
- D. Connect truss members by metal connector plates located and securely embedded simultaneously in both sides of wood members by air or hydraulic press.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install wood trusses only after supporting construction is in place and is braced and secured.
- B. Before installing, splice trusses delivered to Project site in more than one piece.
- C. Hoist trusses in place by lifting equipment suited to sizes and types of trusses required, exercising care not to damage truss members or joints by out-of-plane bending or other causes.

- D. Install and brace trusses according to TPI recommendations and as indicated.
- E. Install trusses plumb, square, and true to line and securely fasten to supporting construction.
- F. Space trusses as indicated; adjust and align trusses in location before permanently fastening.
- G. Anchor trusses securely at bearing points; use metal framing anchors. Install fasteners through each fastener hole in metal framing anchor according to manufacturer's fastening schedules and written instructions.
- H. Securely connect each truss ply required for forming built-up girder trusses.
 - 1. Anchor trusses to girder trusses as indicated.
- I. Install and fasten permanent bracing during truss erection and before construction loads are applied. Anchor ends of permanent bracing where terminating at walls or beams.
 - 1. Install and fasten strongback bracing vertically against vertical web of parallel-chord floor trusses at centers indicated.
- J. Install wood trusses within installation tolerances in TPI 1.
- K. Do not cut or remove truss members.
- L. Replace wood trusses that are damaged or do not meet requirements.
 - 1. Do not alter trusses in field.

3.02 REPAIRS AND PROTECTION

- A. Repair damaged galvanized coatings on exposed surfaces with galvanized repair paint according to ASTM A780 and manufacturer's written instructions.
- B. Protective Coating: Clean and prepare exposed surfaces of metal connector plates. Brush apply primer, when part of coating system, and one coat of protective coating.
 - 1. Apply materials to provide minimum dry film thickness recommended by coating system manufacturer.

END OF SECTION

**SECTION 06200
INTERIOR FINISH CARPENTRY**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Finish carpentry items
- B. Wood casing and moldings
- C. Hardware and attachment accessories
- D. Fiberglass reinforcement panels
- E. Upholstered wall panels.

1.02 RELATED REQUIREMENTS

- A. Section 06402 – Interior Architectural Woodwork: Shop fabricated custom cabinet work.
- B. Section 12353 – Residential Casework: Shop fabricated cabinet work.

1.03 REFERENCE STANDARDS

- A. ANSI A208.1 – American National Standard for Particleboard; 2009
- B. ASTM E84 – Standard Test Method for Surface Burning Characteristics of Building Materials; 2012.
- C. NEMA LD 3 – High Pressure Decorative Laminates; National Electrical Manufacturers Association; 2005.
- D. NHLA G-101 – Rules for the Measurement & Inspection of Hardwood & Cypress; National Hardwood Lumber Association; 2007.
- E. PS 1 – Structural Plywood; 2007.

1.04 SUBMITTALS

- A. Submit the following under provisions of Section 013310 – Submittal Procedures
- B. Product Data:
 - 1. Provide data on fire retardant treatment materials and application instructions.
 - 2. Provide manufacturer's data on products included in this Section.
- C. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
- D. Samples: Submit two samples of products included in this Section showing color, texture, and other features required for Architect's approval.

1.05 QUALITY ASSURANCE

- A. Perform work in accordance with AWI Architectural Woodwork Quality Standards Illustrated, Section 300, Premium or Custom grade.
- B. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.

**INTERIOR FINISH CARPENTRY
SECTION 06200 - 1**

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Protect work from moisture damage.
- B. Resin Panels to be individually wrapped in moisture-resistant plastic film, inspect for damage to protective wrap and color discoloration or damage to panel tiles.

1.07 PROJECT CONDITIONS

- A. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.
- B. Coordinate the work with plumbing rough-in, electrical rough-in, and installation of associated and adjacent components.
- C. Wood trim and finish carpentry to acclimate to prevailing humidity conditions for a minimum of 24 hours.

PART 2 - PRODUCTS**2.01 LUMBER MATERIALS**

- A. As specified under Sections 06402 – Interior Architectural Woodwork
- B. Softwood Lumber: Pine or Poplar species, plain sawn, maximum moisture content of 6 percent; with vertical grain.
 - 1. Grading: In accordance with rules certified by ALSC; www.alsc.org.
- C. Hardwood Lumber: Poplar species, Grade: FAS plain sawn, maximum moisture content of 6 percent, of quality suitable for transparent finish.
 - 1. Grading: In accordance with NHLA Grading Rules; www.natlhardwood.org.
 - 2. Sizing: Random lengths and widths ranging from nominal 4 to 8 inches.

2.02 SHEET MATERIALS

- A. Softwood Plywood: PS 1 Grade A-B; Veneer core; fir face species, rotary cut.
 - 2.02.1.1.A.1 Fire-retardant treated at exposed locations.
- B. Particleboard: ANSI A208.1; composed of wood chips, sawdust, or flakes of medium density, made with waterproof resin binders; of grade to suit application; sanded faces.

2.03 STANDING AND RUNNING TRIM

- A. Wood trim and molding profiles:
 - 1. Door and Window Casing – Type CAS-1: 13/16 by 3-1/2 inch Heavy-beaded Colonial; Wood Species: Type Primed softwood; Product: KB130 by Kuiken Bros. or equal.
 - 2. Base Type WDB-1; SSI Moldings #SSI – 322, 3/4"X4", Paint Grade.
 - 3. Applied Molding – Type AM-1: Bead Moldings or equal.-3/4 by 1-3/8 inch; Wood species: Primed softwood; KB808 by Kuiken Bros. or equal.
 - 4. Applied Molding – Type AM-2: Base Cap, 11/16 by 1-1/8 inch; Wood species: Primed softwood. Product: KB392 by Kuiken Bros. or equal.

**INTERIOR FINISH CARPENTRY
SECTION 06200 - 2**

5. Applied Molding – Type AM-2: Base Cap, 3/4 by 1-3/8 inch; Wood species: Mahogany;. Product: KB393 by Kuiken Bros. or equal.
6. Crown Molding – Type CM-1: 21/32 by 5-1/2 inch Beaded Crown; Wood species: Primed softwood or MDF; Product: KB350 by Kuiken Bros. or equal.

2.04 FIBERGLASS REINFORCED PANELS (FRP)

- A. Random chopped fiberglass with modified polyester copolymer resins and pigments with the following characteristics:
 1. Thickness: 0.09 inches
 2. Size: 48 by 120 inches
 3. Hardness: ASTM D-2553 Barcol Test: 35 to 50
 4. Water Absorption: ASTM D-570, 0.15 percent / 24 hours
 5. Flame and Smoke Ratings: ASTM E-84, Class A/I. flame spread less than 25, smoke development less than 450.
 6. Finish: Pebbled
 7. Color: White – P100
- B. Accessories: One-piece vinyl, edge moldings, inside and outside corner trim, division bar.
- C. Adhesive: Manufacturer's recommended type with primer, if required, for substrate.
- D. Manufacturers and Products:
 1. Crane Composites, Inc.; Product: Glasbord-FSI
 2. Marlite; Product: Standard FRP
 3. Substitutions: As provided under Section 01600

2.05 MISCELLANEOUS ITEMS

- A. Picture Hanging System (ADS-1): Extruded aluminum rail and fiberglass rod with clip-on devices as produced by AS Hanging Systems or approved equal; consisting of the following and as noted in the Interior Material Legend:
 1. Wall Mounting Rail: Extruded aluminum, color: Silver satin anodized;
 2. Rod: Anti-thief Secure Rod Kit with secure fastener.
- B. Resin Panel (RP-1); molded decorative panel, Product: Tours 753 by Tableaux Faux Rod. Finish: To be determined.
- C. Wire Panel, DMP-1: Uniformly woven metal wire; ¼-inch spaced double woven wire, 1-inch with flat crimp; Finish: Antique Brass; Size: 36 by 48 inches; Product: Kent Design Double Round Flat Crimp No. 204110 by Van Dyke's Restorers.
- D. Memory Boxes (MB-1): Prefabricated wood and glass box, with 4-point security hardware; Finish: To be determined; Tackable Fabric: To be determined; Product: Private Room Cue Box by Artline Ltd. Or approved equal.
- E. Bar Rail Termination" BRL-2: 1.40 inch outside diameter fitting, with 2 to 2-1/2 inch diameter ball; Finish: Polished Brass

2.06 FASTENINGS

- A. General Adhesives: Water-based type, unless otherwise required by manufacturer's instruction for product and substrate.

INTERIOR FINISH CARPENTRY SECTION 06200 - 3

- B. Fasteners: Of size and type to suit application; Cadmium finish in concealed locations and Cadmium finish in exposed locations.

2.07 ACCESSORIES

- A. Lumber for Shimming, Blocking, and Joining: Softwood lumber of Cedar species.
- B. Primer: As specified under Section 09900 – Painting and Coatings.
- C. Wood Filler: Solvent base, tinted to match surface finish color.

2.08 WOOD TREATMENT

- A. Fire Retardant Treatment: Chemically treated and pressure impregnated; capable of providing flame spread index of 25, maximum, and smoke developed index of 450, maximum, when tested in accordance with ASTM E84.
- B. Provide identification on fire retardant treated material.
- C. Redry wood after pressure treatment to maximum 9 percent moisture content.

2.09 FABRICATION

- A. Shop assemble work for delivery to site, permitting passage through building openings.
- B. Cap exposed plastic laminate finish edges with material of same finish and pattern.
- C. When necessary to cut and fit onsite, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.
- D. Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit counter butt joints minimum 2-feet from sink cut-outs.
- E. Apply laminate backing sheet to reverse face of plastic laminate finished surfaces.
- F. Seal cut edge of resin panels with manufacturer's recommended sealer.
- G. Treat all custom millwork to meet Class-A fire-rating
- H. Fabric Covered Seating: Shape medium density fiberboard with ½ inch radius on one face.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify adequacy of backing and support framing.
- B. Verify mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work.
- C. See Section 06100 – Rough Carpentry for installation of recessed wood blocking.

3.02 INSTALLATION

- A. Set and secure materials and components in place, plumb and level.

**INTERIOR FINISH CARPENTRY
SECTION 06200 - 4**

- B. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.
- C. Attach suspended false beam using following manufacturer's instructions, ASTM E 636/E636M and ASTM E580/E580M for seismic restraint.

3.03 FIBERGLASS REINFORCED PANEL INSTALLATION

- A. Follow manufacturer's written instructions for preparation, cutting and drilling, fitting, and securing fiberglass reinforced panels.
- B. Allow fiberglass reinforced panels to acclimate to room temperature for at least 24 hours with the shipping materials and banding removed. Lay panels flat on a solid level, dry surface. Do not store directly on concrete or any other surface that emits moisture.
- C. Walls should be flat and even. Remove high spots and fill in low spots prior to beginning installation.
- D. Follow adhesive manufacturer's recommendations for trowel style and application amount. Using cross-hatch pattern achieve 100 percent adhesive coverage. Extend adhesive to all edges of the panel and apply directly to the back of each panel.
- E. Provide manufacturer's recommended spacing between panels for thermal expansion and contraction.
- F. Seal joints with silicone sealant specified under Section 07900 – Joint Sealants.
- G. Install edge, corner and division bars in accordance with manufacturer's instructions at all edges.

3.04 RESIN WALL PANEL INSTALLATION

- A. Clean surfaces to receive panel titles, removing dust and other bonding inhibiting finishes.
- B. Apply panel titles in accordance with manufacturer's instructions; set tiles level, plumb and with maximum gap of 1/16 inch.
- C. Provide shoring and clamping of panel titles to allow undisturbed setting time of adhesive tape, recommended minimum time 72 hours.

3.05 PREPARATION FOR SITE FINISHING

- A. Set exposed fasteners. Apply wood filler in exposed fastener indentations. Sand smooth.
- B. Before installation, prime paint surfaces of items or assemblies to be in contact with cementitious materials.

3.06 TOLERANCES

- A. Maximum Variation from True Position: 1/16 inch.
- B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch.

**END OF SECTION
INTERIOR FINISH CARPENTRY
SECTION 06200 - 5**

SECTION 07412
STANDING SEAM ROOF PANELS

PART I – GENERAL**1.01 RELATED DOCUMENTS**

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications, apply to this section.

1.02 DESCRIPTION OF WORK

- A. Work described in this section includes pre-formed metal roofing system complete with Class A Fire Rated waterproof Underlayment, clips, Metal Panels, perimeter and penetration flashing, closures, gutters, and down spouts.
- B. HPR SA FR Modified base sheet shall be attached to the structural decking under all areas where metal roof panels are to be installed.

1.03 RELATED SECTIONS

- A. Preparation for Roofing
- B. Roof and Deck Insulation
- C. Flashing and Sheet Metal

1.04 REFERENCE STANDARDS

- A. American Architectural Manufacturer Association (AAMA):
AAMA 501.1 Standard Test Method for Metal Curtain Walls for Water Penetration using Dynamic Pressure.
- B. American Iron and Steel Institute (AISI):
1996 Ed. Specification for the Design of Cold-Formed Steel Structural Members.
- C. American Society of Civil Engineers (ASCE):
ASCE 7-98 Minimum Design Loads for Buildings and Other Structures.
- D. American Society for Testing and Materials (ASTM):
 - 1. A792-96 - Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
 - 2. B209-96 Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
 - 3. D1056-91 - Specification for Flexible Cellular Materials - Sponge or Expanded Rubber.
 - 4. D3575-84 - Test Methods for Flexible Cellular Materials made from Olefin Polymers.
 - 5. E283-93 - Standard Test Method for Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
 - 6. E331-86 - Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.

7. E1592-95 - Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference.
 8. E1646-95 - Standard Test Method for Water Penetration of Exterior Metal Roof Panel Systems by Uniform Static Air Pressure Difference.
 9. E1680-95 - Standard Test Method for Rate of Air Leakage Through Exterior Metal Roof Panel Systems.
 10. FBC (Florida Building Code) 5th Edition 2014 – Florida Product Approval Required.
- E. Sheet Metal and Air Conditioning Contractors National Association (SMACNA):
1993 Architectural Sheet Metal Manual, 5th edition.
- F. Underwriters' Laboratories (UL):
1. UL-263 Fire Tests of Building Constructions and Materials.
 2. UL-580 Tests for Uplift Resistance of Roof Assemblies.
 3. UL-790 Tests for Fire Resistance of Roof Covering Materials.
- G. Factory Mutual Research (FM):
FM 4471 Approval Standard for Class 1 Panel Roofs.

1.05 SUBMITTALS

- A. Shop Drawings: Show roofing system with flashings and accessories in plan, sections and details. Include metal thickness' and finishes, panel lengths, joining details, anchorage details, flashings and special fabrication provisions for termination and penetrations; thermal expansion provisions and special supports. Indicate relationships with adjacent and interfacing work. Indicate fastener types and spacing; and provide fastener pullout values. Shop drawings must be completed by the metal panel manufacturer's engineering department. Any and/or all changes recommended by the successful bidder must be approved by the manufacturer in writing prior to submittal.
- B. Product Data: Include manufacturer's detailed material and system description, sealant and closure installation instructions, engineering performance data and finish specifications. Indicate fastener types and spacing; and required fastener pullout values.
- C. Design Loads: Submit copy of manufacturer's minimum design load calculations according to ASCE 7-10, Method 2 for Components and Cladding. Design load calculations shall be sealed by a registered professional engineer employed by the system manufacturer as a full-time staff engineer. In no case shall the design loads be taken to be less than those detailed in section 1.9 of this specification.
- D. Design Test Reports: Provide certified test reports from an independent testing laboratory that bear the seal of a registered professional engineer to show compliance with the performance criteria specified in section 1.9. Each of the following test reports must be submitted:
1. ASTM E1592-95: Test results must clearly demonstrate compliance with the following requirements:
 - a. The ultimate test failure load shall be reduced by the safety factor specified in section 1.9 to determine the allowable working load for the panel system.
 - b. The proposed system has been tested to insure that the allowable working load of the panel system meets or exceeds the specified negative wind uplift pressures listed in section 1.9 of this specification for all roof zones.

- c. The test results are applicable for the panel material, grade, thickness, width, and profile specified. Results are not applicable for systems that are thinner, wider, lower grade, or different material/profile than the system which was tested.
 - d. The results must clearly show that the allowable clip spacing meets or exceeds the requirements specified in section 3.2 C for all roof areas. Clip spacing shall not be reduced for any roof zone from that which is specified.
 2. ASTM E283-93 & E331-86: Test results must clearly demonstrate compliance with the performance requirements specified in section 1.9.
 3. ASTM E1646-95 & E1680-95: Test results must clearly demonstrate compliance with the performance requirements specified in section 1.9. Results are not applicable for systems that are thinner, wider, lower grade, or different material/profile than the system which was tested. The differential test pressures must be equal to those specified in section 1.9.
 4. UL 580: The test report shall clearly show a rating of Class 120 over the same substrate as specified for this project. The clip spacing as tested for UL approval must be in compliance with the required clip spacing specified for this project in section 3.2 C.
 5. UL 790: The test report shall clearly show a rating of Class A roofing material.
 6. UL 263: The panel system shall clearly be shown as approved for use in an UL Construction Assembly which conforms to the construction of this project.
 7. FM 4471: Test report must be submitted for windstorm rating no less than that specified in section 1.9. The proposed roof system must have approval over the specified substrate with clips spaced no closer than as specified in section 3.2 C for roof Zone 1.
- E. Samples: Provide full scale samples of the following materials and system components. Samples shall be of identical material type, thickness, panel width, and material grade/alloy/temper as the system specified for this project. Except for item 2, samples may be of any of the manufacturer's standard colors.
 1. Submit a 12" long by actual width sample of panel showing seam profile and stiffening mesas across the flat pan of the panel. Also include separate snap-on cap with factory applied hot melt sealant beads.
 2. Provide a 6" x 6" sample of the color selected for this project. The sample shall be the actual specified coating system on a metal substrate.
 3. Provide samples of actual system components, including: each type of anchor/clip required, head closure assembly, roll goods (if specified), bearing plates and/or framing (if specified).
 4. Wind uplift and negative wind pressure calculations shall be submitted by the manufacturer.

1.06 ALTERNATE MANUFACTURERS-

- A. Manufacturer Approval: The materials outlined in this Materials and Methods Specification are the type of materials to be used on this project. This specification is based on the performance characteristics of the system identified in section 2.1. Alternate manufacturers must gain approval 7 days prior to the bid opening by submitting all items in section 1.5 B. Bidder will not be allowed to change materials after the bid opening date. Failure of a panel system to meet all requirements of this specification will result in forfeiture of the bid award.

1.07 INSTALLER QUALIFICATIONS.

- A. Engage an experienced metal roofing contractor (erector) to install standing seam system who has a minimum of three (3) years experience specializing in the installation of structural standing seam metal roof systems.
- B. Contractor must be certified by manufacturer specified as supplier of structural standing seam system and obtain written certification from manufacturer that installer is approved for installation of specified system. If requested, contractor must supply owner with a copy of this certification.
- C. Successful contractor is required to maintain a full-time supervisor/foreman who is on the job-site at all times during installation of new roof system. Foreman must have a minimum of five (5) years experience with the installation of system similar to that specified.
- D. Successful contractor must obtain all components of roof system from a single manufacturer including any roll good materials if required. Any secondary products that are required which cannot be supplied by the specified manufacturer must be recommended and approved in writing by primary manufacturer prior to bidding.
- E. If required, fabricator/installer shall submit work experience and evidence of adequate financial responsibility. The owners representative reserves the right to inspect fabrication facilities in determining qualifications.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Manufacturer's responsibility:
 - 1. Protect components during fabrication and packing from mechanical abuse, stains, discoloration, and corrosion.
 - 2. Provide protective interleaving between contact areas of exposed surfaces to prevent abrasion during shipment, storage, and handling.
- B. Installer's responsibility:
 - 1. Store materials off ground providing for drainage; under cover providing for air circulation; and protected from wind movement, foreign material contamination, mechanical damage, cement, lime or other corrosive substances.
 - 2. Handle materials to prevent damage to surfaces, edges and ends of roofing sheets and sheet metal items. Damaged material shall be rejected and removed from the site.
 - 3. Protect panels from wind-related damages.
 - 4. Inspect materials upon delivery. Reject and remove physically damaged or marred material from project site.

1.09 JOB CONDITIONS

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

- C. Ascertain that work of other trades which penetrates the roof or is to be made watertight by the roof is in place and approved prior to installation of roofing.

1.10 DESIGN AND PERFORMANCE CRITERIA.

- A. Thermal Expansion and Contraction
1. Completed metal roofing and flashing system shall be capable of withstanding expansion and contraction of components caused by changes in temperature without buckling, producing excess stress on structure, anchors or fasteners, or reducing performance ability.
 2. The design temperature differential shall be not less than 75 degrees F.
 3. Interface between panel and clip shall provide for unlimited thermal movement in each direction along the longitudinal direction.
 4. Location of metal roofing rigid connector shall be at roof ridge unless otherwise approved by the project architect and designed per job conditions by specified manufacturer.
 5. Manufacturer must submit negative wind uplift engineering calculations.
- B. Uniform Wind Uplift Load Capacity
1. Installed roof system shall withstand negative (uplift) design wind loading pressures complying with the following criteria. Anchor clips shall not be installed closer than the spacing given in section 3.2 C.
 - b. Safety Factor: 1.875 after any load reduction or material stress increase.
 - c. Category II Building with an Importance Factor of 1.15.
 - d. Wind Speed: 146 mph.
 - e. Ultimate Pullout Value: 400 pounds per each of the two fasteners holding the panel anchor to the roof decking or framing system.
 - f. Exposure Category: C.
 - g. Design Roof Height: 25 feet.
 - h. Minimum Building Width: 10 > feet.
 - i. Roof Pitch: see drawing
 2. Capacity shall be determined using pleated airbag method in accordance with ASTM E 1592, testing of sheet metal roof panels. Allowable safe working loads shall be determined by dividing the ultimate test load by the safety factor specified above.
- C. Uniform Positive Load Capacity
1. The installed roof system shall be capable of resisting the following positive uniform roof loads: Roof Live Load of 20 psf.
 2. Capacity to resist positive loads shall be determined by empirical calculations in accordance with AISI. Calculation shall be sealed by a registered professional engineer.
 3. Installed roof system shall carry positive uniform design loads with a maximum system deflection of L/180 as measured at the rib (web) of the panel.
- D. Underwriters' Laboratories, Inc., (UL) fire resistance P ratings for roof assemblies: If applicable, panel system shall be approved for use in an appropriate Construction Assembly, as defined by UL 263.
- E. Underwriters' Laboratories, Inc., (UL), wind uplift resistance classification: Roof assembly shall be classified as Class 1-90, as defined by UL 580.

- F. Underwriters’ Laboratories, Inc., (UL) Class A fire rating per UL 790.
- G. Water penetration (dynamic pressure): No water penetration, other than condensation, when exposed to dynamic rain and 70 mph wind velocities for not less than five minutes duration, when tested in accord with principles of AAMA 501.1.
- H. Capacities for gauge, span or loading other than those tested may be determined by interpolation of test results within the range of test data. Extrapolation for conditions outside test range are not acceptable.
- I. Factory Mutual Research (FM), wind uplift resistance classification: Roof assembly shall be classified as FM 1-120 >, as defined by FM 4471. The system shall be listed for the identical panel profile, gauge, width, and material as specified for this project. The anchor clip spacing defined in the FM listing shall not be closer than the anchor clip spacing specified for this project in section 3.2 C.

1.11 WARRANTIES

- A. Owner shall receive ONE (1) WARRANTY from manufacturer of roof panels and modified built up roof system covering ALL of the following criteria. Multiple warranties are NOT acceptable.
 - 1. Manufacturer’s 30 year watertight warranty, including coverage for all trim, flashings, and penetrations associated with the standing seam roof area.
 - 2. 20 year coverage on finish including checking, crazing, peeling, chalking, fading and/or adhesion.
 - 3. 30 year material coverage.
 - 4. Warranty shall commence on date of substantial completion.
 - 5. Installer shall provide manufacturer with 2 year warranty covering roofing system installation and watertightness.

PART 2 - PRODUCTS

2.01 STANDING SEAM ROOFING SYSTEM

- A. General.
 - 1. Whenever a particular make of material, trade name and/or manufacturer's name is specified herein, it shall be regarded as being indicative of the minimum standard of quality required. A bidder who proposes to quote on the basis of an alternate material and/or system will only be considered if the proposed alternate is submitted on time and is documented as being equivalent or superior in quality to the specified system in accordance with section 1.5. Additionally, all manufacturer and contractor/fabricator guidelines and performance criteria must be met as specified in section 1.4, 1.5, 1.6, and 1.9.
 - 2. Product names for the metal roof panel system and waterproofing materials used in this section shall be based on performance characteristics, and shall form the basis of the contract documents. Any proposed alternate systems must meet or exceed the following listed characteristics and be submitted for approval 10 days prior to bid opening. Additionally, all performance requirements listed in “Design Criteria” (Section 1.9) and Warranty Criteria (Section 1.10) must be met and submitted as well as all items listed in the Manufacturer’s Qualifications (Section 1.5).
- B. Acceptable Manufacturers:
 - 1. Peterson Aluminum Corporation – Pac-Clad Snap On Standing Seam
 - 2. The Garland Company - R-MER

3. CENTRIA – SRS 3
 4. Berridge Manufacturing Co. – Flat Tee-Panel - **Basis of Design**
 5. Other approved by Architect
- C. Materials.
1. Panel material: 24 ga. steel, type, smooth as per ASTM A792-96 (0.032 aluminum). Color to be selected by the Owner from standard color selection.
 2. Flashing and flat stock material: Fabricate in profiles indicated on drawings of same material, thickness, and finish as roof system, unless indicated otherwise.
- D. Finish on surfaces:
1. Exposed surfaces for coated panels:
 - a. Kynar 500 or Hylar 5000 Fluorocarbon coating with a top side film thickness of 0.70 to 0.90 mil over a 0.25 to 0.3 mil prime coat to provide a total dry film thickness of 0.95 to 1.25 mil, to meet AAMA 621. Bottom side shall be coated with a primer with a dry film thickness of 0.25 mil. Finish shall conform to all tests for adhesions, flexibility and longevity as specified by Kynar 500 or Hylar 5000 finish supplier. Two coat coil applied, baked-on full-strength (70% resin) fluorocarbon coating system (polyvinylidene fluoride, PVF2), applied by manufacturer's approved applicator.
 2. Unexposed surfaces for coated panels shall be baked-on polyester coating with .20 - .30 dry film thickness (TDF).
- E. Panel Design:
1. The same panel profile from a single manufacturer shall be used for ALL standing seam roof areas.
 - a. General: Provide factory-formed metal roof panels designed to be installed by lapping and interconnecting raised 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 a weathertight installation.
 - b. Roof panels shall be Snap On Standing Seam in 12" widths with 1" high seams. Curving Option: Roof panels may be "field-curved/radiused" with the Factory-Supplied Curving Machine to achieve the proper installation of these panels on the radiused/curved roofs on this project
 - c. Panels to be produced Smooth - Factory Standard.
 - d. Panels to be designed for attachment with concealed fastener clips, spaced as required by the manufacturer to provide for both positive and negative design loads, while allowing for the expansion and contraction of the entire roof system resulting from variations in temperature.
 - e. Forming: Use continuous end rolling method. No end laps on panels. No portable rollforming machines will be permitted on this project, no installer-owned or installer-rented machines will be permitted. It is the intent of the Architect to provide Factory-Manufactured panel systems only for this project.

2. Configuration: Standing seams incorporating mechanically interlocked, concealed anchor clips allowing unlimited thermal movement, and of configuration which will prevent entrance or passage of water.
 - a. Panel/Cap configuration must have a total of four (4) layers of steel surrounding anchor clip for prevention of water infiltration and increased system strength designed to limit potential for panel blow-off.
 - b. Exposed fasteners, screws and/or roof mastic is unacceptable and will be rejected. System configuration only allows for exposed fasteners at panel overlap (if required) and trim details (as per manufacturer's guidelines).
 - d. Panels must be furnished in continuous lengths from ridge to eave with no overlaps unless approved by manufacturer to length of run.
 - e. Panels lengths which exceed maximum shipping lengths shall be field rolled on equipment owned by the panel manufacturer. Equipment shall have at least 12 rolling stations and provide a product identical to factory manufactured product. The equipment shall be operated by a trained full time experienced technician. Seam caps shall be manufactured in the factory and may be installed with endlaps. Seam sealant must be factory applied! All requirements of section 1.5 C shall apply.
 - g. Tapered Panels: Tapered panels shall be formed from a single piece of metal. Tapered panels formed from multiple pieces of joined metal are unacceptable. All performance tests must be applicable for the greatest panel width of the tapered panels. Tapered panels must be designed to accommodate thermal expansion and contraction while fixed at the narrowest end of the panel.
 3. Trim: Trim shall be fabricated of the same material and finish to match the profile, and will be press broken in lengths of 10 to 12 feet. Trim shall be formed only by the manufacturer of their approved dealer. Trim to be erected in overlapped condition. Use lap strips only as indicated on drawings. Miter conditions shall be factory welded material to match the sheeting. Seam must be 2-3/8" minimum height for added upward pressures and aesthetic appeal. Seam shall have continuous anchor reveals to allow anchor clips to resist positive and negative loading and allow unlimited expansion and contraction of panels due to thermal changes. Integral (not mechanically sealed) seams are not acceptable.
 4. Concealed Standard Anchor Clips: Clips must be 16 gauge Galvalume steel, ONE (1) piece clip with projecting legs for additional panel alignment and provision for
 - a. Two-piece (2) clips are NOT acceptable.
 - b. Clip design must isolate sealant in panel cap from clip to insure that no sealant damage occurs from the clip during expansion and contraction.
 - c. Clip must maintain a clearance of a minimum of 3/8" between panel and substrate for proper ventilation to help prevent condensation on underside of panel and eliminate the contact of panel fastener head to panel.
- F. Accessories.
1. Gable anchor clips: Standing Seam style 16 gauge stainless steel alloy 316L.
 2. Fasteners:
 - a. Concealed fasteners: Corrosion resistant steel screws (zinc plated or equal) designed to meet structural loading requirements. The normal minimum screw size shall be #14.
 - b. Exposed fasteners: Series 410 stainless steel screws or 1/8" diameter stainless steel waterproof rivets. All exposed fasteners shall be factory painted to match the color of the standing seam panels.
 3. Closures: Factory precut closed cell foam meeting ASTM D1056 and/or D3575, enclosed in metal channel matching panels when used at hip, ridge, rake, and jamb.

4. Provide all miscellaneous accessories for complete installation.
5. Gutter and fascia metal to match the indicated profile.
6. Substrate shall be Fire Treated Plywood
7. Roofing Underlayment
 - a. On all surfaces to be covered with roofing material, furnish and install RhinoRoof U20 Self-adhered, Class A Fire, underlayment membrane.

Underlayment shall be laid in horizontal layers with joints lapped toward the eaves a minimum of 6", and well secured along laps and at ends as necessary to properly hold the felt in place. All underlayment shall be preserved unbroken and whole.
 - b. Membrane shall lap all hips and ridges at least 12" to form double thickness and shall be lapped 6" over the metal of any valley or built-in gutters.
 - c. FBC Product Approval #FL15216

2.02 ACCESSORY PRODUCTS

- A. Sealant:
 1. Provide two-part polysulfide class B non-sag type for vertical and horizontal joints or
 2. one part polysulfide not containing pitch or phenolic extenders
or
 3. Exterior grade silicone sealant recommended by roofing manufacturer
or
 4. One part non-sag, gun grade exterior type polyurethane recommended by the roofing manufacturer.
 5. Colors: to match existing roof panels **from manufacturer's standard colors.**

PART 3 EXECUTION

3.01 PREPARATION

- A. Inspection: Examine the alignment and placement of the building structure and substrate. Correct any objectionable warp, waves or buckles in the substrate and shingles before proceeding with installation of the pre-formed metal roofing. The installed roof panels will follow the contour of the structure and may appear irregular if not corrected.
- B. Establish straight side and crosswise benchmarks.
- C. Use proper size and length fastener for strength requirements. Approximately 5/16" is allowable for maximum fastener head size beneath the panel.
- D. Rectangular Roofs shall be checked for square and straightness. Gable ends may not be straight; set a true line for the gable clips and flashing with string line.
- E. Measure the roof lengthwise to confirm panel lengths, overhangs, coverage of flashings at eaves and ridges and verify clearances for thermal movement.
- F. Pre-roofing conference: Prior to beginning metal roofing work, a pre-roofing conference shall be held to review work to be accomplished.
 1. Owner, contractor, metal roofing subcontractor, metal roofing system manufacturer's representative and all other subcontractors who have equipment penetrating roof or whose work involves access to roof shall be present.

3.02 ROOFING AND FLASHING INSTALLATION

- A. All details will be shown on manufacturer's shop drawings to successful bidder; install roofing and flashings in accordance with approved shop drawings and manufacturer's product data, within specified erection tolerances.
- B. Prepare roof for the installation of standing seam panels, including:
1. Install all decking, framing, and/or furring members as indicated in this specification and bid documents.
 2. Install all insulation, vapor retarders, and/or air infiltration barriers as indicated in this specification and bid documents. (between the hat channels)
 3. Install all underlayments and/or temporary water proofing materials as required in this specification and bid documents. Underlayment shall go over all insulation and hat channels.
- C. Directly over the completed roof substrate, install one piece panel anchor clips. All anchor clips will be set on 16 gauge galvanized pre-punched bearing plates to distribute the loads on the board insulation. All anchor clips will be fastened into the structural roof substrate based on the following spacing pattern:
1. Clip spacing must be 2.5' on center for Zone 1 (field)
 - a. Hips and ridges are considered as Zone 1 field of roof for roof slopes of 10 degrees (2 inches per foot) or less.
 2. Clip spacing must be 2.5' on center for Zone 2 (eave, ridge, hip, and rake).
 3. Clip spacing must be 2.5' on center for Zone 3 (corners)
 4. Clip spacing for Zones 2 & 3 must extend 3' on center feet onto the roof area.
 5. This clip spacing must be followed to ensure integrity of the completed installation. These have been determined based on the uplift calculations for the specified roof and the test results of ASTM E-1592.
- D. Installation of Roof Panels: Roof panels can be installed by starting from either end and working towards the opposite end. Due to the symmetrical design of the specified panel system, it is also acceptable to start from the middle of the roof and work toward each end.
1. A stainless steel pop rivet shall be secured through the anchor reveal of the panel leg and extend into the arms of the panel clip located at the ridge of the system. This is done at each arm of the clip along the ridge. The panel is then anchored at both sides of the clip.
 - a. Be sure to capture all drilling debris during this operation with a rag or cloth placed on the panels at the drilling operation.
 - b. Panels are not securely attached to the roof until fixed to the anchor clip. To avoid damage and injury, all panels shall be fixed to the anchor clip immediately as they are installed.
 2. The seam caps are shipped with four (4) beads of factory applied hot melt sealant located inside the caps. To install the caps, hook one side of the cap over the panel edge and rotate over the opposite panel leg. For ease of installation, start at one end of the panel and work toward the opposite end.
 3. A hand crimping tool is used to crimp the cap around the top of two adjacent panels
 4. Caps shall then be permanently seamed with manufacturers mechanical seamer.
 5. At the end of each day's work, seam caps shall be mechanically seamed or hand crimped (crimp 4 inches every 8 feet) to reduce the possibility of wind damage prior to completion of the project.

6. Un-installed panels which are temporarily stored on the ground or roof shall be secured in place at the end of each day's work to prevent possible damage or injury.
- E. Isolate dissimilar metals and masonry or concrete from metals with bituminous coating. Use gasketed fasteners where required to prevent corrosive action between fastener, substrate, and panels.
- F. Limit exposed fasteners to extent indicated on shop drawings.
- G. Anchorage shall allow for temperature expansion/contraction movement without stress or elongation of panels, clips, or anchors. Attach clips to structural substrate using fasteners of size and spacing as determined by manufacturer's design analysis to resist specified uplift and thermal movement forces.
- H. Seal laps and joints in accordance with roofing system manufacturer's product data.
- I. Coordinate flashing and sheet metal work to provide weathertight conditions at roof terminations. Fabricate and install in accordance with standards of SMACNA Manual.
- J. Provide for temperature expansion/contraction movement of panels at roof penetrations and roof mounted equipment in accordance with system manufacturer's product data and design calculations.
- K. Installed system shall be true to line and plane and free of dents, and physical defects. In light gauge panels with wide flat surfaces, some oil canning may be present. Oil canning does not affect the finish or structural integrity of the panel and is therefore not cause for rejection.
- L. Maximum variation from true planes or lines shall be 1/4" in 20 feet and 3/8" in 40 feet of more.
- M. Form joints in linear sheet metal to allow for 1/4" minimum expansion at 20'-0" o.c. maximum and 8'-0" from corners.
- N. At joints in linear sheet metal items, set sheet metal items in two 1/4" beads of butyl sealant. Extend sealant over all metal surfaces. Mate components for positive seal. Allow no sealant to migrate onto exposed surfaces.
- O. Remove damaged work and replace with new, undamaged components.
- P. Touch up exposed fasteners using paint furnished by roofing panel manufacturer and matching the exposed panel color and finish.
- Q. Clean exposed surfaces of roofing and accessories after completion of installation. Leave in clean condition at date of substantial completion. Touch up minor abrasions and scratches in finish.

END OF SECTION

**SECTION 08110
HOLLOW METAL DOORS AND FRAMES**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. Section Includes:
1. Standard hollow metal doors, panels and frames.
- B. Related Sections:
1. Division 04 Section "Unit Masonry" for embedding anchors for hollow metal work into masonry construction.
 2. Division 08 Section "Wood Doors" for wood doors in hollow metal frames.
 3. Division 08 Section "Door Hardware (Scheduled by Describing Products)" for door hardware for hollow metal doors and frames.
 4. Division 09 Sections "Exterior Painting" and "Interior Painting" for field painting hollow metal doors and frames.
 5. Division 26 Sections for electrical connections including conduit and wiring for door controls and operators installed on frames with factory installed electrical knock out boxes.
- C. References:
1. ANSI/SDI A250.8 (2003) - Recommended Specifications for Standard Steel Doors and Frames.
 2. ANSI/SDI A250.4 (2001) - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames, Frames Anchors and Hardware Reinforcing.
 3. ANSI/SDI A250.6 (1997) - Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames.
 4. ANSI/SDI A250.10 (1998) - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.
 5. ANSI/SDI A250.11 (2001) - Recommended Erection Instructions for Steel Frames.
 6. ANSI/SDI A250.13 (2003) - Testing and Rating of Severe Windstorm Resistant Components.
 7. SDI 115 (1993) - Recommended Specifications for Steel Doors and Frames for Hardware Preparation.
 8. SDI 122 (1998) - Installation and Troubleshooting Guide for Standard Steel Doors and Frames.
 9. SDI 124 (1998) - Maintenance of Standard Steel Doors and Frames.
 10. ASTM A1008 (2003) - Standard Specification for Steel Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.

11. ASTM A568 (2003) - Standard Specification for General Requirements for Steel Sheet, Carbon, and High -Strength, Low-Alloy, Hot-Rolled and Cold-Rolled.
12. ASTM A653 (2007) - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
13. ASTM A879 (2006) – Standard Specification for Steel Sheet, Zinc Coated by the Electrolytic Process for Applications Requiring Designation of the Coating Mass on Each Surface.
14. ASTM A924 (1999) - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
15. ASTM A1011 (2007) – Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.
16. ASTM A153 (2005) – Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
17. ASTM E 90 (1990) - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
18. ASTM E 283 (1991) - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
19. ASTM E 330 – 02 – Test method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
20. ASTM E 331 (1996) - Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Differences.
21. ASTM E 1886 - 02 - Test method for Structural Performance of Exterior Windows, Curtain Walls, Doors, and Storm Shutters Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.
22. ASTM E 1996 – 02 - Test method for Structural Performance of Exterior Windows, Curtain Walls, Doors, and Storm Shutters Impacted by Windborne Debris in Hurricanes.
23. ANSI/NFPA 80 (1999) - Standard for Fire Doors and Fire Windows; National Fire Protection Association.
24. ANSI/UL 10C (1998) - Positive Pressure Fire Tests of Door Assemblies.
25. ANSI/NFPA 101 - Life Safety Code.
26. FBC-TPHVHZ – 04 - Florida Building Code, Test Portocols for High Velocity Hurricane Zone, TAS-201, TAS-202, TAS-203
27. Door and Hardware Institute (DHI) (1992) - Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames.
28. Florida Building code and Florida Fire Prevention Code.

1.03 DEFINITIONS

- A. Minimum Thickness: Minimum thickness of base metal without coatings.
- B. Standard Hollow Metal Work: Hollow metal work fabricated according to ANSI/SDI A250.8.

1.04 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, core descriptions, hardware reinforcements, profiles, anchors, fire-resistance rating, temperature-rise ratings, and finishes.
- B. Shop Drawings: Include the following:
1. Elevations of each door design.
 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.
 4. Locations of reinforcement and preparations for hardware.
 5. Details of each different wall opening condition.
 6. Details of anchorages, joints, field splices, and connections.
 7. Details of accessories.
 8. Details of moldings, removable stops, and glazing.
 9. Details of electrical knockout boxes and preparations for power, signal, and control systems.
 10. Product approval numbers for all exterior openings.
- C. Samples for Verification:
1. Samples are only required by request of the architect and for manufactures that are not current members of Steel Door Institute.
 2. For each type of exposed finish required, prepared on Samples of not less than 3 by 5 inches (75 by 125 mm).
 3. For the following items, prepared on Samples about 12 by 12 inches (305 by 305 mm) to demonstrate compliance with requirements for quality of materials and construction:
 - a. Doors: Show vertical-edge, top, and bottom construction; core construction; and hinge and other applied hardware reinforcement. Include separate section showing glazing if applicable.
 - b. Frames: Show profile, corner joint, floor and wall anchors, and silencers. Include separate section showing fixed hollow metal panels and glazing if applicable.
- D. Other Action Submittals:
1. Schedule: Provide a schedule of hollow metal work prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with door hardware schedule.
- E. Oversize Construction Certification: For assemblies required to be fire rated and exceeding limitations of labeled assemblies.

1.05 QUALITY ASSURANCE

- A. Source Limitations: Obtain hollow metal work from single source from single manufacturer.

- B. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 (neutral pressure at 40" above sill) or UL 10C.
 - 1. Oversize Fire-Rated Door Assemblies: For units exceeding sizes of tested assemblies provide certification by a qualified testing agency that doors comply with standard construction requirements for tested and labeled fire-rated door assemblies except for size.
 - 2. Temperature-Rise Limit: Where indicated and at vertical exit enclosures and exit passageways, provide doors that have a maximum transmitted temperature end point of not more than 450 deg F (250 deg C) above ambient after 30 minutes of standard fire-test exposure.
- C. Fire-Rated, Borrowed-Light Frame Assemblies: Assemblies complying with NFPA 80 that are listed and labeled, by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 257. Label each individual glazed lite.
- D. Smoke-Control Door Assemblies: Comply with NFPA 105.
- E. Pre-Installation Conference: Conduct conference at Project site for hollow metal frames requiring electrical knockout boxes to verify installation of conduit on frames.
- F. Windstorm rated openings within affected coastal states to show approval documentation and labels on both doors and frames showing compliance to the standards adopted by the state. The products that are being used must bear a label showing the standards tested, design pressure, the manufacturer name, and label number.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver hollow metal work palletized, wrapped, or crated to provide protection during transit and Project-site storage. Do not use non-vented plastic.
- B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- C. Store hollow metal work under cover at Project site. Place in stacks of five units maximum in a vertical position with heads up, spaced by blocking, on minimum 4-inch- (102-mm-) high wood blocking. Do not store in a manner that traps excess humidity.
 - 1. Provide minimum 1/4-inch (6-mm) space between each stacked door to permit air circulation. Doors and frames to be stacked in vertical upright position.

1.07 PROJECT CONDITIONS

- A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

1.08 COORDINATION

- A. Coordinate installation of anchorages for hollow metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

PART 2 - PRODUCTS**2.01 MANUFACTURERS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Pioneer Doors.
 2. Republic Steel Doors
 3. Jen-Weld
 4. Steelcraft; an Ingersoll-Rand company.
 5. No Substitution: Material from custom hollow metal fabricators will not be accepted on jobsite unless prior approval is given in accordance with substitution request requirements.

2.02 MATERIALS

- A. Cold-Rolled Steel Sheets: Carbon steel complying with ASTM A 1008 (ASTM A 1008M), commercial quality.
- B. Metallic-Coated Steel Sheet: Hot dipped zinc-coated (galvanized) or zinc-iron alloy coated (galvannealed) carbon steel complying with ASTM A 653 (ASTM A 653M), Commercial Steel (CS), Type B; with an A60 coating designation, mill phosphatized.
- C. Frame Anchors: ASTM A 879/A 879M, Commercial Steel (CS), 40Z (12G) 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.
- D. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.
- E. Glazing: Comply with requirements in Division 08 Section "Glazing."

2.03 STANDARD HOLLOW METAL DOORS

- A. General: Provide 1 3/4" thick doors of design indicated, fabricated with smooth surfaces, without visible joints or seams on exposed faces unless otherwise indicated. Comply with ANSI/SDI A250.8.
1. Design: Flush panel
 2. Core Construction: Manufacturer's standard kraft-paper honeycomb, polystyrene, polyurethane, polyisocyanurate, mineral-board, or vertical steel-stiffener core.
 - a. Fire Door Core: As required to provide fire-protection and temperature-rise ratings indicated.
 3. Vertical Edges for Single-Acting Doors: Beveled edge
 - a. Beveled Edge: 1/8 inch in 2 inches (3 mm in 50 mm).
 4. Vertical Edges for Double-Acting Doors: Round vertical edges with 2-1/8-inch (54-mm) radius.
 5. Top and Bottom Edges: Closed with flush or inverted 0.042-inch- (1.0-mm-) thick, end closures or channels of same material as face sheets.

6. Tolerances: Comply with SDI 117, "Manufacturing Tolerances for Standard Steel Doors and Frames."
- B. Exterior Doors: Face sheets fabricated from metallic-coated steel sheets. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:
 1. Level 3 and Physical Performance Level A (Extra Heavy Duty), minimum 16 gage (0.053-inch - 1.3-mm-) thick steel, Model 2 (Seamless face and edges).
- C. Interior Doors: Face sheets fabricated from cold-rolled steel sheet unless metallic-coated sheet is indicated. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:
 1. Level 2 and Physical Performance Level B (Heavy Duty), minimum 18 gage (0.042-inch - 1.0-mm-) thick steel, Model 2 (Seamless face and edges).
- D. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.
- E. Fabricate concealed stiffeners and hardware reinforcement from either cold- or hot-rolled steel sheet.

2.04 STANDARD HOLLOW METAL FRAMES

- A. General: Comply with ANSI/SDI A250.8 and with details indicated for type and profile.
- B. Exterior Frames: Fabricated from metallic-coated steel sheets.
 1. Fabricate frames with mitered or coped corners.
 2. Fabricate frames as face welded joints and back weld joints continuously, unless otherwise indicated.
 3. Frames for Level 3 Steel Doors: 0.053-inch- (1.3-mm-) thick steel sheet.
- C. Interior Frames: Fabricated from cold-rolled steel sheet unless metallic-coated sheet is indicated.
 1. Fabricate frames with mitered or coped corners.
 2. Fabricate frames as face welded unless otherwise indicated.
 3. Fabricate knocked-down, drywall slip-on frames for in-place gypsum board partitions.
 4. Frames for Level 2 Steel Doors: 0.053-inch- (1.3-mm-) thick steel sheet.
 5. Frames 48-inches and wider in opening width are required to be 0.067-inch- (1.7-mm-) thick steel sheet.
 6. Frames for Wood Doors: 0.053-inch- (1.3-mm-) thick steel sheet.
 7. Frames for Borrowed Lights: 0.053-inch- (1.3-mm-) thick steel sheet.
- D. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 Table 4 with reinforcement plates from same material as frames.

2.05 FRAME ANCHORS

- A. Jamb Anchors:
 - 1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, not less than 0.042 inch (1.0 mm) thick, with corrugated or perforated straps not less than 2 inches (50 mm) wide by 10 inches (250 mm) long; or wire anchors not less than 0.177 inch (4.5 mm) thick.
 - 2. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.042 inch (1.0 mm) thick.
 - 3. Compression Type for Drywall Slip-on (Knock-Down) Frames: Adjustable compression anchors.
- B. Floor Anchors: Formed from same material as frames, not less than 0.042 inch (1.0 mm) thick, and as follows:
 - 1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.
 - 2. Separate Topping Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.

2.06 HOLLOW METAL PANELS

- A. Provide hollow metal panels of same materials, construction, and finish as specified for adjoining hollow metal work.

2.07 STOPS AND MOLDINGS

- A. Moldings for Glazed Lites in Doors: Minimum 0.032 inch (0.8 mm) thick, fabricated from same material as door face sheet in which they are installed.
- B. Fixed Frame Moldings: Formed integral with hollow metal frames, a minimum of 5/8 inch (16 mm) high unless otherwise indicated.
- C. Loose Stops for Glazed Lites in Frames: Minimum 0.032 inch (0.8 mm) thick, fabricated from same material as frames in which they are installed.

2.08 ACCESSORIES

- A. Mullions and Transom Bars: Join to adjacent members by welding or rigid mechanical anchors.
- B. Grout Guards: Formed from same material as frames, not less than 0.016 inches (0.4 mm) thick.

2.09 FABRICATION

- A. Fabricate hollow metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.
- B. Tolerances: Fabricate hollow metal work to tolerances indicated in ANSI/SDI A250.8

- C. Hollow Metal Doors:
1. Exterior Doors:
 - a. Provide weep-hole openings in bottom of exterior doors to permit moisture to escape. Top of door to be flush and sealed joints in top edges of doors against water penetration.
 - b. Provide Polyurethane core.
 2. Glazed Lites: Factory cut openings in doors with applied flush trim to fit.
 3. Astragals: Provide overlapping astragal as noted in door hardware sets in Division 8 Door Hardware on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch (19 mm) beyond edge of door on which astragal is mounted.
 4. Continuous Hinge Reinforcement: Provide welded continuous 12 gauge strap for continuous hinges specified in hardware sets in Division 8 Door Hardware.
 5. Electrical Raceways: Provide raceways for electrified door hardware specified in hardware sets in Division 8 Door Hardware.
- D. Hollow Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
1. Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible. Continuously backweld joints at exterior frames.
 2. Sidelight 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 butt welding.
 3. Equal Rabbet Frames: Provide frames with equal rabbet dimensions unless glazing and removable stops required wider dimension on glass side of frame.
 4. High Frequency Hinge Reinforcement: Provide high frequency hinge reinforcements at door openings 48-inch and wider with mortise/butt type hinges at top hinge location.
 5. Continuous Hinge Reinforcement: Provide welded continuous 12 gauge strap for continuous hinges specified in hardware sets in Division 8 Door Hardware.
 6. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated for removable stops, provide security screws at exterior locations.
 7. Grout Guards: Weld guards boxes to frame at back of hardware mortises in frames at all hinge and strike preps regardless of grouting requirements.
 8. Electrical Knock Out Boxes: Factory weld 18 gauge electrical knock out boxes to frame for electrical hardware preps; includes but not limited to electric thru wire hinges, electrical raceways, door position switches, electric strikes, and magnetic locks as noted in door hardware sets in Division 8 Door Hardware.
 - a. Electrical knock out boxes are required at door position switches, electric strikes, and middle hinge locations for all exterior locations regardless of electrical hardware specified in Division 8 Door Hardware.
 - b. Provide electrical knock out boxes with a dual 1/2-inch and 3/4-inch knockouts.
 - c. Conduit to be coordinated and installed in field from middle hinge box and strike box to door position box.

- d. Electrical knock out boxes to comply with NFPA requirements and fit electrical door hardware as specified in hardware sets in Division 8 Door Hardware.
 - e. Electrical knock out boxes for continuous hinges should be located in the center of the vertical dimension on the hinge jamb.
9. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
10. Jamb Anchors: Provide number and spacing of anchors as follows:
- a. Masonry Type: Locate anchors not more than 18 inches (457 mm) from top and bottom of frame. Space anchors not more than 32 inches (813 mm) o.c. and as follows:
 - 1) Two anchors per jamb up to 60 inches (1524 mm) high.
 - 2) Three anchors per jamb from 60 to 90 inches (1524 to 2286 mm) high.
 - 3) Four anchors per jamb from 90 to 120 inches (2286 to 3048 mm) high.
 - 4) Four anchors per jamb plus 1 additional anchor per jamb for each 24 inches (610 mm) or fraction thereof above 120 inches (3048 mm) high.
 - b. Stud-Wall Type: Locate anchors not more than 18 inches (457 mm) from top and bottom of frame. Space anchors not more than 32 inches (813 mm) o.c. and as follows:
 - 1) Three anchors per jamb up to 60 inches (1524 mm) high.
 - 2) Four anchors per jamb from 60 to 90 inches (1524 to 2286 mm) high.
 - 3) Five anchors per jamb from 90 to 96 inches (2286 to 2438 mm) high.
 - 4) Five anchors per jamb plus 1 additional anchor per jamb for each 24 inches (610 mm) or fraction thereof above 96 inches (2438 mm) high.
 - 5) Two anchors per head for frames above 42 inches (1066 mm) wide and mounted in metal-stud partitions.
11. Door Silencers: Except on weather-stripped or gasketed doors, drill stops to receive door silencers as follows. Keep holes clear during construction. Silencers to be supplied by frame manufacture regardless if specified in division 8 Door Hardware.
- 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.
- E. Fabricate concealed stiffeners, edge channels, and hardware reinforcement from either cold- or hot-rolled steel sheet.
- F. Hardware Preparation: Factory prepare hollow metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to the Door Hardware Schedule and templates furnished as specified in Division 08 Section "Door Hardware."
- 1. Locate hardware as indicated, or if not indicated, according to ANSI/SDI A250.8.

2. Reinforce doors and frames to receive non-templated, mortised and surface-mounted door hardware.
 3. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/DHI A115 Series specifications for preparation of hollow metal work for hardware.
 4. Coordinate locations of conduit and wiring boxes for electrical connections with Division 26 Sections.
- G. Stops and Moldings: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted or mitered hairline joints at fabricators shop
1. Single Glazed Lites: Provide fixed stops and moldings welded on secure side of hollow metal work.
 2. Multiple Glazed Lites: Provide fixed and removable stops and moldings so that glazed lites are capable of being removed independently.
 3. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames.
 4. Coordinate rabbet width between fixed and removable stops with type of glazing and type of installation indicated.
 5. Gap for butted or mitered joints in glass stop should not exceed .0625-inch.

2.10 STEEL FINISHES

- A. Prime Finish: Apply manufacturer's standard primer immediately after cleaning and pretreating.
1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI/SDI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine roughing-in for embedded and built-in anchors to verify actual locations before frame installation.
- C. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 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.
- B. Prior to installation, adjust and securely brace welded hollow metal frames for squareness, alignment, twist, and plumbness to the following tolerances:

1. Squareness: Plus or minus 1/16 inch (1.6 mm), measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 2. Alignment: Plus or minus 1/16 inch (1.6 mm), measured at jambs on a horizontal line parallel to plane of wall.
 3. Twist: Plus or minus 1/16 inch (1.6 mm), measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 4. Plumbness: Plus or minus 1/16 inch (1.6 mm), measured at jambs on a perpendicular line from head to floor.
- C. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.03 INSTALLATION

- A. General: Install hollow metal work plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.
- B. Hollow Metal Frames: Install hollow metal frames of size and profile indicated. Comply with ANSI/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, leaving surfaces smooth and undamaged.
 - a. At fire-protection-rated openings, install frames according to NFPA 80.
 - b. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
 - c. Install frames with removable glazing stops located on secure side of opening.
 - d. Install door silencers in frames before grouting.
 - e. Remove temporary braces necessary for installation only after frames have been properly set and secured.
 - f. Check plumbness, squareness, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
 - g. Field apply bituminous coating to backs of frames that are filled with grout containing antifreezing agents.
 2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with post installed expansion anchors.
 - a. Floor anchors may be set with powder-actuated fasteners instead of post installed expansion anchors if so indicated and approved on Shop Drawings.
 3. Metal-Stud Partitions: Solidly pack mineral-fiber insulation behind frames.
 4. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout.
 5. Concrete Walls: Solidly fill space between frames and concrete with grout. Take precautions, including bracing frames, to ensure that frames are not deformed or damaged by grout forces.
 6. Field Supplied Ceiling Struts: Extend struts vertically from top of frame at each jamb to overhead structural supports or substrates above frame unless frame is anchored to masonry or to other structural support at each jamb. Bend top of struts to provide

flush contact for securing to supporting construction. Provide adjustable wedged or bolted anchorage to frame jamb members.

7. Grouting Requirements:
 - a. Do not grout head of frames unless reinforcing has been installed in head of frame.
 - b. Do not grout vertical or horizontal closed mullion members.
8. Installation Tolerances: Adjust hollow metal door frames for squareness, alignment, twist, and plumb to the following tolerances:
 - a. Squareness: Plus or minus 1/16 inch (1.6 mm), measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 - b. Alignment: Plus or minus 1/16 inch (1.6 mm), measured at jambs on a horizontal line parallel to plane of wall.
 - c. Twist: Plus or minus 1/16 inch (1.6 mm), measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 - d. Plumbness: Plus or minus 1/16 inch (1.6 mm), measured at jambs at floor.
- C. Hollow Metal Doors: Fit hollow metal doors accurately in frames, within clearances specified below. Shim as necessary.
 1. Non-Fire-Rated Standard Steel Doors:
 - a. Jambs and Head: 1/8 inch (3 mm) plus or minus 1/16 inch (1.6 mm).
 - b. Between Edges of Pairs of Doors: 1/8 inch (3 mm) plus or minus 1/16 inch (1.6 mm).
 - c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch (9.5 mm).
 - d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch (19 mm).
 2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.
 3. Smoke-Control Doors: Install doors according to NFPA 105.
- D. Glazing: Comply with installation requirements in Division 08 Section "Glazing" and with hollow metal manufacturer's written instructions.
 1. Secure stops with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches (230 mm) o.c. and not more than 2 inches (50 mm) o.c. from each corner.
 - a. Secure exterior removable stops with security head screws.

3.04 ADJUSTING AND CLEANING

- A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow metal work that is warped, bowed, or otherwise unacceptable.
- B. Remove grout and other bonding material from hollow metal work immediately after installation.
- C. 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.
- D. Metallic-Coated Surfaces: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

END OF SECTION

**HOLLOW METAL DOORS AND FRAMES
SECTION 08110-12**

05/15/2020

**SECTION 08141
FLUSH WOOD DOORS**

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications, apply to this section.

1.02 DESCRIPTION OF WORK

- A. Flush Wood doors, hollow core and solid core, frames and panels fire rated and non-rated.

1.03 RELATED WORK

- A. Section 06402 - Finish carpentry for wood door frames and jambs
- B. Section 08111 – Hollow Metal Doors and Frames
- C. Section 08710 – Hardware
- D. Section 09900 – Painting: Site finishing doors

1.04 REFERENCES

- A. ANSI/NWMA I.S.1 – Industry standard for Wood Flush Doors (includes Standards I.S.1.1 through I.I.S.1.7).
- B. ANSI A135.4 – Basic Hardboard.
- C. ASTM E90 – Measurement of Airborne Sound Transmission Loss of Building Partitions.
- D. ASTM E152 – Methods of Fire Tests of Door Assemblies
- E. AWI – Quality Standards of Architectural Woodwork Institute
- F. NFPA 80 – Fire Doors and Windows
- G. NFPA 252 – Standard Method of Fire Tests for Door Assemblies
- H. UL 10B – Fire Tests of Door Assemblies

1.05 QUALITY ASSURANCE

- A. Source Limitations: Obtain flush wood doors through one source from a single manufacturer.
- B. Quality Standard: Comply with the following standard:
 - 1. NWWDA Quality Standard: NWWDA I.S.1-A, "Architectural Wood Flush Doors."
 - 2. AWI Quality Standard: AWI's "Architectural Woodwork Quality Standards" for grade of door, core, construction, finish, and other requirements.

- C. Fire-Rated Wood Doors: Doors complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to NFPA 252.
 - 1. Test Pressure: Test at atmospheric pressure.
- D. Oversized, Fire-Rated Wood Doors: For door assemblies exceeding sizes of tested assemblies, provide manufacturer's certificate stating that doors comply with all standard construction requirements of tested and labeled fire-door assemblies except for size.
 - 1. Temperature-Rise Rating: At stairwell enclosures, provide doors that have a temperature-rise rating of 450 deg F (250 deg C) maximum in 30 minutes of fire exposure.
 - 2. Temperature-Rise Rating: At stairwell enclosures, provide doors that have a temperature-rise rating of 250 deg F (139 deg C) maximum in 30 minutes of fire exposure.

1.06 REGULATORY REQUIREMENTS

- A. Conform to all applicable codes for fire rated doors and panels.

1.07 SUBMITTALS

- A. Submit shop drawings and product data under provisions of Section 01300.

1.08 DELIVERY, STORAGE AND PROTECTION

- A. Protect products under provisions of Section 01600.
- B. Protect doors with resilient packaging, sealed with heat shrunk plastic. Break seal on site to permit ventilation.
- C. Package, deliver and store doors in accordance with AWI ANSI/AWMA requirements.

1.09 WARRANTY

- A. Provide five (5) year manufacturer's warranty under provisions of Section 01740.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. VT Industries
- B. Algoma
- C. Marshfield Door systems
- D. Florida made Doors
- E. Substitutions: Under provisions of Section 10600

2.02 DOOR AND PANEL TYPES

- A. Flush Interior Doors: 1-3/4" thick; solid core construction; fire rated as required, panel design per drawings.
- B. Flush interior doors in resident units: 1 3/8" thick, hollow core construction, panel design per drawings, with wood frames

2.03 DOOR AND PANEL CONSTRUCTION (ANSI/AWMA – I.S.1 STANDARD)

- A. Solid, Non-Rated Core: ANSI/NWMA I.S.1; solid wood block glued.
- B. Solid, Special Function Core: ANSI/NWMA I.S.1; labeled fire performance.

2.04 FLUSH DOOR AND PANEL FACING

- A. Facing Quality: AWI premium grade
- B. Basis of Design

Select appropriate species

Face veneer: Curly Maple – Rotary Cut (Clear transparent Finish)

Face veneer: Red Birch – Plane Sliced (Medium Stain Finish)

Face veneer: Red Oak – Plane Sliced (Dark transparent Finish)

- C. Wood Species for Opaque Finish: birch.

2.05 ADHESIVES

- A. Interior doors: AWI, ANSI/NWMA, Type II.

2.06 FABRICATION

- A. Fabricate flush wood doors in sizes indicated for Project site fitting.
- B. Factory fit doors to suit frame-opening sizes indicated, with the following uniform clearances and bevels, unless otherwise indicated:
 - 1. Comply with clearance requirements of referenced quality standard for fitting.
Comply with requirements of NFPA 80 for fire-rated doors.
- C. Factory machine doors for hardware that is not surface applied. Locate hardware to comply with DHI-WDHS-3. Comply with final hardware schedules, door frame Shop Drawings, DHI A115-W series standards, and hardware templates.
 - 1. Coordinate measurements of hardware mortises in metal frames to verify dimensions and alignment before factory machining.
 - 2. Metal Astragals: Pre-machine astragals and formed-steel edges for hardware for pairs of fire-rated doors.
- D. Transom and Side Panels: Fabricate matching panels with same construction, exposed surfaces, and finish as specified for associated doors.
 - 1. Fixed Transom Panels: Fabricate fixed panels with solid lumber transom bottom rail and door top rail, both rabbeted as indicated. Provide factory-installed spring bolts for concealed attachment into jambs of metal door frames.

- E. Openings: Cut and trim openings through doors to comply with applicable requirements of referenced standards for kind(s) of door(s) required.
 - 1. Light Openings: Trim openings with moldings of material and profile indicated.
 - 2. Louvers: Factory install louvers in prepared openings.
- F. Exterior Doors: Factory treat exterior doors with water repellent after manufacturing has been completed.
 - 1. Flash top of out-swinging doors (with manufacturer's standard metal flashing).

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install doors in accordance with manufacturer's instructions.
- B. Machine cut relief for hinges and closers and coring for handsets and cylinders.
- C. Trim door width by cutting equally on both jamb edges. Trim fire door width from lock edge only, to a maximum of 3/16 inch (5mm).
- D. Trim door height by cutting equally on top and bottom edges to a maximum of 3/4 inch (19mm). Trim fire door height at bottom edge only, to a maximum of one inch (25mm).
- E. Pilot drill screw and bolt holes. Use threaded through bolts for half surface hinges.
- F. Prepare doors to receive finish hardware in accordance with AWI ANSI/AWMA requirements.
- G. Conform to ANSI/AWMA requirements for fit tolerances.
- H. Coordinate installation of glass and glazing.
- I. Install door louvers.

3.02 INSTALLATION TOLERANCES

- A. Maximum Diagonal Distortion: 1/8 inch measured with straight edge, corner to corner.

3.03 ADJUSTING AND CLEANING

- A. Adjust for smooth and balanced door movement.

END OF SECTION

SECTION 08163
SLIDING ALUMINUM-FRAMED GLASS DOORS

PART 1 - GENERAL**1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 DESCRIPTION OF WORK

- A. This Section includes sliding aluminum-framed glass doors for exterior locations.

1.03 RELATED SECTIONS

- A. Related Sections include the following:
1. Division 4- Section "Unit Masonry"
 2. Division 7 Section "Building Insulation" for insulation materials and firesafing field installed in conjunction with glazed aluminum curtain wall system.
 3. Division 7 Section "Joint Sealants" for joint sealants installed as part of glazed aluminum curtain wall system.
 4. Division 9- Section "Gypsum Wallboard Assemblies"
 5. Division 8 -Section "Glazing" for glazing requirements for sliding aluminum-framed glass doors, including those specified to be factory glazed.

1.04 DEFINITIONS

- A. C: Commercial.
- B. Performance grade number, included as part of the AAMA code designating sliding aluminum-framed glass door products, is the actual design pressure in pounds force per square foot (pascals) used to determine the structural test pressure and water test pressure.
- C. Structural test pressure, for uniform load structural test, is equivalent to 150 percent of the design pressure.

1.05 PERFORMANCE REQUIREMENTS

- A. General: Provide sliding aluminum-framed glass doors capable of complying with performance requirements indicated based on testing manufacturer's doors representative of those specified and of the test size indicated below:
1. Minimum size required by AAMA/NWWDA 101/I.S.2.
 2. Minimum size required by gateway performance requirements for determining compliance with AAMA/NWWDA 101/I.S.2 for both gateway performance requirements and optional performance grades.
 3. Size indicated.

- B. AAMA Performance Requirements: Provide sliding aluminum-framed glass doors of the performance class and grade indicated that comply with AAMA/NWWDA 101/I.S.2.
1. Exception to AAMA/NWWDA 101/I.S.2: In addition to requirements for performance class and performance grade, design glass framing system to limit lateral deflections of the edges of the glass to less than 1/175 of glass-edge length at design pressure based on the following:
 - a. Testing performed according to AAMA/NWWDA 101/I.S.2, Uniform Load Deflection Test.
 - b. Structural computations.
- C. Structural Performance: Provide sliding aluminum-framed glass doors capable of withstanding the following, including wind loads based on passing AAMA/NWWDA 101/I.S.2, Uniform Load Structural Test, at the basic wind speed indicated:
1. Deflection: Based on passing AAMA/NWWDA 101/I.S.2, Uniform Load Deflection Test.
 2. Deflection: Design glass framing system to limit lateral deflections of the edges of the glass to less than 1/175 of glass-edge length at design pressure based on structural computations.
 3. Basic Wind Speed: As indicated in miles per hour (meters per second) at 33 feet (10 m) above grade. Determine wind loads and resulting design pressures applicable to Project according to the following, based on mean roof heights above grade as indicated on Drawings:
 - a. ASCE 7, "Minimum Design Loads for Buildings and Other Structures": Section 6.4.2, "Analytic Procedure."
 - b. Appendix B of AAMA/NWWDA 101/I.S.2.
 - c. State of Florida Wind Load Maps, Charts and Tables.
 4. Design Pressure: Doors and windows to resist 80 psf and 60 psf wind pressure. Sliding to be Miami Dade certified for Hurricane winds of 120 mph. Comply with pressures as indicated on drawings:
 5. Glass and Glazing: See Section 08800.
- D. Air Infiltration: Not more than 0.3 cfm/sq. ft. (5 cu. m/h x sq. m) of area 60 psf positive and 85 negative wind pressure at an inward test pressure of 6.24 lbf/sq. ft. (300 Pa) when tested according to AAMA/NWWDA 101/I.S.2, Air Infiltration Test.
- E. Water Resistance: No water leakage as defined in AAMA/NWWDA referenced test methods at a water test pressure equaling 20 percent of positive design pressure, but not more than 12 lbf/sq. ft. (580 Pa), when tested according to AAMA/NWWDA 101/I.S.2, Water Resistance Test.
- F. Condensation Resistance: Where sliding aluminum-framed glass doors are indicated to be "thermally improved," provide doors tested for thermal performance according to AAMA 1503.1, showing a condensation-resistance factor of 45.
- G. Thermal Transmittance: Provide sliding aluminum-framed glass doors with a U-value maximum of 0.61 Btu/sq. ft. x h x deg F (3.9 W/sq. m x K) at 15-mph (24-km/h) exterior wind velocity when tested according to AAMA 1503.1.
- H. Operating Force: Adjust each moving panel before performing tests so maximum force to open panel is 30 lbf (135 N) and maximum force required to maintain motion is 20 lbf (90 N).

- I. Deglazing: No disengagement of glazing surround members of operable panels when tested according to ASTM E 987 at 70 lbf (312 N) on vertical rails and 50 lbf (223 N) on other rails.
- J. Provide PVC threshold ramps for ADA access and compliance with State of Florida threshold laws.

1.06 SUBMITTALS

- A. Product Data: For each type of sliding aluminum-framed glass door indicated, including the following:
 - 1. Construction details and fabrication methods.
 - 2. Profiles and dimensions of individual components.
 - 3. Data on hardware, accessories, and finishes.
 - 4. Recommendations for maintaining and cleaning exposed surfaces.
 - 5. N.O.A. certificates from Miami Dade for Hurricane resistance.
 - 6. Certify sliders provide ADA width for wheel chair access.
- B. Shop Drawings: For each type of sliding aluminum-framed glass door indicated. Include information not fully detailed in manufacturer's standard Product Data and the following:
 - 1. Fabrication, layout, and installation details, including anchors.
 - 2. Typical door elevations.
 - 3. Full-size details of typical composite members, including reinforcement.
 - 4. Hardware.
 - 5. Glazing details.
 - 6. Accessories.
 - 7. Structural analysis data, signed and sealed by the qualified professional engineer responsible for their preparation, used to determine the following:
 - a. Structural test pressures and design pressures from basic wind speeds indicated.
 - b. Deflection limitations of glass framing systems.
- C. Samples for Initial Selection: For typical frame members, one 12-inch- (300-mm-) long section in the specified finish. If finish involves color and texture variations, include sample sets consisting of two or more units showing the full range of variations expected.
- D. Samples for Verification: Architect reserves the right to require additional Samples that show fabrication techniques, workmanship, and design of sliding glass door, hardware, and accessories.
- E. Product Test Reports: From a qualified testing agency indicating that each type, grade, and size of sliding glass door complies with requirements, based on comprehensive testing of current products within the last four years. Test results based on use of downsized test doors will not be accepted.

1.07 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed sliding aluminum-framed glass door installations similar in material, design, and extent to those indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

- B. 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 determining wind loads for sliding aluminum-framed glass door installations that are similar to those indicated for this Project in material, design, and extent.
- C. Source Limitations: Obtain sliding aluminum-framed glass doors through one source from a single manufacturer.
- D. Product Options: Drawings indicate size, profiles, dimensional requirements, and aesthetic effects of sliding aluminum-framed glass doors and are based on the specific doors indicated. Other manufacturers' products with equal performance characteristics may be considered provided deviations in size, profile, and dimensions are minor and do not alter the aesthetic effect. Refer to Division 1 Section "Substitutions."
- E. Sliding Aluminum-Framed Glass Door Standard: Comply with provisions of AAMA/NWWDA 101/I.S.2 for standards of performance, materials, components, and fabrication, unless more stringent requirements are indicated.
 - 1. Provide AAMA-certified sliding aluminum-framed glass doors with an attached label.
- F. Safety Glass: Category II materials complying with testing requirements in 16 CFR 1201 and ANSI Z97.1.
 - 1. Subject to compliance with requirements, permanently mark safety glass with certification label of Safety Glazing Certification Council or another certification agency acceptable to authorities having jurisdiction.
- G. Glazing Publications: Comply with written recommendations of glass manufacturers and GANA's "Glazing Manual," unless more stringent requirements are indicated.

1.08 PROJECT CONDITIONS

- A. Field Measurements: Verify sliding aluminum-framed glass door openings by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1.09 WARRANTY

- A. General Warranty: Special warranty specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Special Warranty: Written warranty, executed by manufacturer agreeing to repair or replace components of sliding aluminum-framed glass doors that fail in materials or workmanship within specified warranty period. Failures include, but are not limited to, the following:
 - 1. Structural failures, including excessive deflection, water leakage, air infiltration, or condensation.
 - 2. Faulty operation of movable panels and hardware.
 - 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - 4. Warranty Period: Three years from date of Substantial Completion.

5. Warranty Period for Glass: Five years from date of Substantial Completion.
6. Warranty Period for Metal Finishes: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 1. CGI Windows and Doors
 2. Lawson Windows and Doors
 3. Custom Window Systems.
 4. EFCO Corporation.
 5. Kawneer Company, Inc.
 6. PGT Industries, Series SGD-70

2.02 MATERIALS

- A. Aluminum Extrusions: Provide alloy and temper recommended by sliding aluminum-framed glass door manufacturer for strength, corrosion resistance, and application of required finish, but not less than 22,000-psi (150-MPa) ultimate tensile strength and not less than 0.062-inch (1.6-mm) thickness at any location for the main frame and panel members.
- B. Fasteners: Provide aluminum, nonmagnetic stainless steel, epoxy adhesive, or other materials warranted by manufacturer to be noncorrosive and compatible with sliding aluminum-framed glass door members, trim, hardware, anchors, and other components.
 1. Reinforcement: Where fasteners screw-anchor into aluminum less than 0.125 inch (3.2 mm) thick, reinforce interior with aluminum or nonmagnetic stainless steel to receive screw threads, or provide standard, noncorrosive, pressed-in, splined grommet nuts.
 2. Exposed Fasteners: Unless unavoidable for applying hardware, do not use exposed fasteners. For application of hardware, use fasteners that match finish of member or hardware being fastened, as appropriate.
- C. Anchors, Clips, and Accessories: Provide anchors, clips, and sliding aluminum-framed glass door accessories of aluminum, nonmagnetic stainless steel, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 (severe) service conditions; provide sufficient strength to withstand design pressure indicated.
- D. Compression-Type Weather Stripping: Provide compressible weather stripping designed for permanently resilient sealing under bumper or wiper action, and completely concealed when sliding aluminum-framed glass door is closed.
 1. Weather-Stripping Material: Manufacturer's standard system and materials complying with AAMA/NWWDA 101/I.S.2.
- E. Sliding-Type Weather Stripping: Provide woven-pile weather stripping of wool, polypropylene, or nylon pile and resin-impregnated backing fabric. Comply with AAMA 701/702.
 1. Provide weather stripping with integral, barrier fin or fins of semi-rigid, polypropylene sheet or polypropylene-coated material.

2.03 GLAZING

- A. Glass: Provide insulating-glass units that comply with safety glazing requirements and with Division 8 Section "Glazing."
- B. Glazing System: Provide manufacturer's standard glazing system that produces weathertight seal.

2.04 HARDWARE

- A. General: Provide manufacturer's standard hardware fabricated from aluminum, stainless steel, or other corrosion-resistant material compatible with aluminum; designed to smoothly operate, tightly close, and securely lock sliding aluminum-framed glass doors. Do not use aluminum in frictional contact with other metals. Where exposed, provide solid bronze; extruded, cast, or wrought aluminum; solid white metal with special coating finish; or nonmagnetic stainless steel.
 - 1. Roller Assemblies: Provide movable panels with rollers and roller assemblies that comply with AAMA 906.3.
 - 2. Threshold and Sill Cap/Track: Provide extruded-aluminum threshold and track of thickness, dimensions, and profile indicated; designed to comply with performance requirements indicated and to drain to the exterior; with manufacturer's standard finish.
 - 3. Door Pulls: Provide manufacturer's standard extruded-aluminum pull grips.
 - 4. Locks: Install manufacturer's standard pull and keyless locking device on each movable panel, lockable from the inside only. Adjust locking device to allow unobstructed movement of the panel across adjacent panel in the direction indicated.
 - 5. Provide protective burglar bars on sliders facing exterior balcony exitways.

2.05 INSECT SCREENS

- A. Insect Screens: Comply with SMA 2006.
 - 1. Glass-Fiber Mesh: 18-by-14 (1.4-by-1.8-mm) or 18-by-16 (1.4-by-1.6-mm) mesh of vinyl-coated glass-fiber threads; woven and fused to form a fabric mesh resistant to corrosion, shrinkage, stretch, impact damage, and weather deterioration in the following color. Comply with ASTM D 3656.
 - a. Mesh Color: Charcoal gray.
 - 2. Insect Screen Frames: Provide manufacturer's standard extruded-aluminum or formed-tubular-aluminum members, with concealed fasteners, adjustable rollers, and removable PVC spline/anchor concealing edge of frame.
 - a. Finish: Match sliding aluminum-framed glass door members.
 - 3. Insect Screen Lock: Install manufacturer's standard pull and keyless locking device on each movable panel, lockable from the inside only. Adjust locking device to allow unobstructed movement of the panel across adjacent panel in the direction indicated.

2.06 FABRICATION

- A. General: Fabricate sliding aluminum-framed glass doors in sizes indicated that comply with requirements and that meet or exceed AAMA/NWWDA 101/I.S.2 for performance requirements indicated and for performance class specified below. Include a complete system for assembling components and anchoring doors.
 - 1. Performance Class: HC.

- B. Fabricate sliding aluminum-framed glass doors that are re-glazeable without dismantling panel framing.
- C. Thermally Improved Construction: Fabricate sliding aluminum-framed glass doors with an integral, concealed, low-conductance thermal barrier; located between exterior materials and door members exposed on interior side; in a manner that eliminates direct metal-to-metal contact.
 - 1. Provide thermal-break construction that has been in use for not less than three years, and has been tested to demonstrate resistance to thermal conductance and condensation and to show adequate strength and security of glass retention.
- D. Weep Holes: Provide weep holes and internal passages to conduct infiltrating water to exterior.
- E. Weather Stripping: Provide operable panels with a double row of sliding weather stripping in horizontal rails and single- or double-row weather stripping in meeting or jamb stiles, as required to meet specified performance requirements. Provide compression-type weather stripping at the perimeter of each movable panel where sliding-type weather stripping is not appropriate.
 - 1. Provide weather stripping locked into extruded grooves in panels.
- F. Factory-Glazed Fabrication: Glaze sliding aluminum-framed glass doors in the factory where practical and possible for applications indicated. Comply with requirements in Division 8 Section "Glazing" and with AAMA/NWWDA 101/I.S.2.
- G. Glazing Stops: Provide snap-on glazing stops coordinated with Division 8 Section "Glazing" and glazing system indicated. Provide glazing stops to match panel frames.
- H. Insect Screens: Provide framed insect screen for each operable sliding door panel. Design doors and hardware to accommodate screens in a tight-fitting removable arrangement, on either inside or outside of door, with a minimum of exposed fasteners and latches.

2.07 FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Baked-Enamel Finish: AA-C12C42R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: acid-chromate-fluoride-phosphate conversion coating; Organic Coating: as specified below). Apply baked enamel complying with paint manufacturer's specifications for cleaning, conversion coating, and painting.
 - 1. Organic Coating: Thermosetting, modified-acrylic enamel primer/topcoat system complying with AAMA 603.8 except with a minimum dry film thickness of 1.5 mils (0.04 mm), medium gloss.
 - 2. Color: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine openings before installation. Verify that opening is correct and sill plate is level. Proceed with installation only after unsatisfactory conditions have been corrected.

1. Masonry Surfaces: Visibly dry and free of excess mortar, sand, and other construction debris.
2. Metal Surfaces: Dry; clean; free of grease, oil, dirt, rust, corrosion, and welding slag; without sharp edges or offsets at joints.
3. Coordinate door installation with wall flashings and other built-in components.

3.02 INSTALLATION

- A. Comply with manufacturer's written instructions for installing doors, hardware, accessories, and other components for Hurricane zones.
- B. Set doors level, plumb, and true to line, without warp or rack of frames and panels. Provide proper support and anchor securely in place.
 1. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials by complying with requirements specified in "Dissimilar Materials" Paragraph in Appendix B to AAMA/NWWDA 101/I.S.2.
- C. Set sill members in bed of sealant or with gaskets, as indicated, to provide weathertight construction.

3.03 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and to prepare test reports.
- B. Testing Methodology: Testing of sliding doors for air infiltration and water resistance will be performed according to AAMA 502, Test Method A, by applying the same test pressures required to determine compliance with AAMA/NWWDA 101/I.S.2 in Part 1 "Performance Requirements" Article.
- C. Testing Extent: Three sliding doors as selected by Architect and a qualified independent testing and inspecting agency will be tested immediately after installation.

3.04 ADJUSTING

- A. Adjust operating panels, screens, and hardware to provide a tight fit at contact points and weather stripping for smooth operation and weathertight closure. Lubricate hardware and moving parts.

3.05 CLEANING

- A. Clean aluminum surfaces immediately after installing sliding aluminum-framed glass doors. Avoid damaging protective coatings and finishes. Remove excess glazing and sealants, dirt, and other substances.
- B. Clean glass of factory-glazed doors immediately after installing sliding aluminum-framed glass doors. Comply with manufacturer's written recommendations for final cleaning and maintenance. Remove nonpermanent labels from glass surfaces.
- C. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during the construction period.

3.06 PROTECTION

- A. Protect sliding aluminum-framed glass doors from damage or deterioration until time of Substantial Completion.

END OF SECTION

**SECTION 08305
ACCESS DOORS**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications, apply to this section.

1.02 DESCRIPTION OF WORK

- A. Fire Rated and Non-rated access doors and frames for walls and ceilings

1.03 RELATED SECTIONS

- A. Section 09260 – Gypsum Board Systems
- B. Section 09900 – Painting: Field paint finish
- C. Division 15- Mechanical and plumbing systems and valves
- D. Division 16- Electrical junction boxes and controls

1.04 SUBMITTALS

- A. Submit product data under provisions of Section 01300.
- B. Include sizes, types, finishes, scheduled locations, and details of adjoining work.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. J.L. Industries
- B. Nystrom
- C. Milcor
- D. Substitutions: Under provisions of Section 01600.

2.02 ACCESS UNITS

- A. In Gypsum Board Ceilings: Concealed frame flush access panels, Model WB, 24" x 24", manufactured by J.L. Industries, or equal.
- B. In Gypsum Board Walls: Concealed frame flush access panels, Model WB, 12" x 12", manufactured by J.L. Industries.
- C. Fire-rated access panels: Concealed frame flush access panels, Model FDWB, sizes as shown on the drawings, manufactured by J. L. Industries, or equal.

**ACCESS DOORS
SECTION 08305-1**

2.03 FABRICATION

- A. Fabricate frames and flanges of 16 gauge steel and door panels of 18 gauge steel
- B. Weld, fill and grind joints to assure flush and square unit.
- C. Hardware: Screw driver slot, quarter turn cam lock.

2.04 FINISH

- A. Galvanized units to hot-dipped wiped coat finish. Prime coat units with alkyd baked on primer.
- B. Finish units with baked enamel, color as selected by architect.

PART 3 - EXECUTION**3.01 INSPECTION**

- A. Verify rough openings for door and frame are correctly sized and located.
- B. Beginning of installation means acceptance of existing conditions.

3.02 INSTALLATION

- A. Install frame plumb and level in wall and ceiling openings.
- B. Position to provide convenient access to concealed work requiring access.
- C. Secure rigidly in accordance with manufacturer's instructions.
- D. Install fire-rated access panels where located in fire-rated ceilings and assemblies.

END OF SECTION

SECTION 08410
ALUMINUM ENTRANCES AND STOREFRONTS

PART I - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications, apply to this section.

1.02 DESCRIPTION OF WORK

- A. Aluminum doors, frames, and glazed lites and transoms.
- B. Glass.
- C. Anchors, brackets, and attachments.
- D. Door hardware.
- E. Perimeter sealant.

1.03 WORK INSTALLED BUT FURNISHED UNDER OTHER SECTIONS

- A. Section 08710 – Door Hardware: Door hardware items other than specified in this Section.
- B. Section 08800 - Glazing

1.04 RELATED WORK

- A. Section 05500 – Metal Fabrications: Fabricated metal attachment devices.
- B. Section 06100 – Carpentry Work: Framed blocking and wood perimeter shims.
- C. Section 07900 – Joint Sealers: Perimeter sealant and back-up materials.
- D. Section 08520 – Aluminum Windows: Fixed and Operable individual aluminum windows.
- E. Section 08800 - Glazing

1.05 REFERENCES

- A. ANSI/ASTM A36 – Structural Steel.
- B. ANSI/ASTM A386 – Zinc Coating (Hot-Dip) on Assembled Steel Products.
- C. ANSI/ASTM A446 – Steel Sheet, Zinc Coated (Galvanized) by the Hot Dip Process, Structural (Physical) Quality.
- D. ANSI/ASTM B221 – Aluminum Alloy Extruded Bar, Rod, Wire, Shape, and Tube.
- E. ANSI/ASTM E283 – Rate of Air Leakage through Exterior Windows, Curtain Walls and Doors.
- F. ANSI/ASTM E330 – Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.

ALUMINUM ENTRANCES AND STOREFRONTS
SECTION 08410 -1

- G. ASTM B209 – Aluminum and Aluminum Alloy Sheet and Plate.
- H. FS TT-P-31 – Paint, Oil: Iron Oxide, Ready Mixed, Red and Brown.
- I. FS TT-P-641 – Primer Coating: Zinc Chromate, Alkyd Type.

1.06 PERFORMANCE

- A. System to provide for expansion and contraction within system components caused by a cycling temperature range 170 F degrees without causing detrimental effects to system or components.
- B. Design and size members to withstand dead loads and live loads caused by pressure and suction of wind as calculated in accordance with all applicable codes.
- C. Limit mullion deflection to 1/200, or flexure limit of glass with full recovery of glazing materials, whichever is less.
- D. Drain water entering joints, condensation occurring in glazing channels, or migrating moisture occurring within system, to exterior.
- E. Limit air infiltration through assembly to 0.10 cu ft/min/sq ft of assembly surface areas, as measured in accordance with ANSI/ASTM E283.
- F. System to accommodate, without damage to system or components, or deterioration or perimeter seal: Movement within system; movement between system and perimeter framing components; and deflection of structural support framing.

1.07 SUBMITALS

- A. Submit shop drawings and product data under provisions of Section 01300.
- B. Include system and component dimensions; components within assembly; framed opening requirements and tolerances; anchorage and fasteners; glass and infills; door hardware requirements; and affected related work.
- C. Submit manufacturer's installation instructions under provisions of Section 01300.
- D. Submit samples under provisions of Section 01300.
- E. Submit one sample, illustrating prefinished aluminum surface.
- F. N.O.A. Hurricane Winds of 150 mph.
- G. Submit Statement of Compliance with ADA regulations. Doors to have 12" base for protection of wheel chair feet pads.

1.08 DELIVERY, STORAGE AND HANDLING

- A. Deliver and handle system components under provisions of Section 01600.
- B. Store and protect system components under provisions of Section 01600.
- C. Provide wrapping strippable coating to protect prefinished aluminum surfaces.

1.09 WARRANTY

- A. Provide two-year manufacturer's warranty under provisions of Section 01740.
- B. Warranty: Cover complete system for failure to meet specified requirements.
- C. Finish Warranty: Five year for Kynar or anodized finish.

PART 2 - PRODUCTS**2.01 ACCEPTABLE MANUFACTURERS**

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Kawneer Company, Inc.
 - 2. EFCO Corporation
 - 3. Tubelite Architectural Systems.
 - 4. YKK AP America Inc.
 - 5. Oldcastle
 - 6. Substitutions: Under provisions of Section 01600

2.02 MATERIALS

- A. Extruded Aluminum: ANSI/ASTM B221: aluminum alloy.
- B. Sheet Aluminum: ASTM B209: aluminum alloy
- C. Fasteners: Stainless Steel

2.03 FABRICATED COMPONENTS

- A. Frames: profile as shown on drawings, thermally broken with interior portion of frame insulated from exterior portion, flush applied glazing stops. Frames for interior glazing need not be thermally broken.
- B. Doors: 3-1/2 inch wide top rail, 6-1/2 inch wide bottom rail; square beveled glazing stops.
- C. Reinforced Mullion: profile as shown on drawings; of extruded sheet aluminum cladding with internal reinforcement of steel shaped structural section.

2.04 GLASS AND GLAZING MATERIALS

- A. See Section 08800.

2.05 HARDWARE

- A. Weather-stripping, Sill Sweep Strips, Thresholds, Hinges: Manufacturers standard type to suit application.
- B. Hinges: Center butt type, full mortised.
- C. Pivots: M-19 Intermediate by Rixson.
- D. Push/Pull: Custom stainless as selected by the Architect.

**ALUMINUM ENTRANCES AND STOREFRONTS
SECTION 08410 -3**

2.06 FABRICATION

- A. Fabricate doors and frames allowing for minimum clearance and shim spacing around perimeter of assembly, yet enabling installation.
- B. Rigidly fit and secure joints and corners with screw and spline. Make joints and connections flush, hairline, and weatherproof.
- C. Develop drainage holes with moisture pattern to exterior.
- D. Prepare components to receive anchor devices. Fabricate anchorage items.
- E. Arrange fasteners, attachments, and jointing to ensure concealment from view.
- F. Prepare components with internal reinforcement for door hardware and door operator hinge hardware.

2.07 FINISHES

- A. Interior Exposed Aluminum Surfaces: Prefinished Aluminum.
- B. Concealed Aluminum Steel Items: Galvanized in accordance with ANSI/ASTM A386 to 2.0 oz/sq ft.
- C. Apply one coat of bituminous paint to concealed aluminum and steel surfaces in contact with cementitious or dissimilar materials.

PART 3 - EXECUTION**3.01 INSTALLATION**

- A. General: Comply with manufacturer's written instructions for protecting, handling, and installing entrance and storefront systems. Do not install damaged components. Fit frame joints to produce hairline joints free of burrs and distortion. Rigidly secure nonmovement joints. Seal joints watertight.
 - 1. Metal Protection: Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.
 - 2. Install components to drain water passing joints and condensation and moisture occurring or migrating within the system to the exterior.
 - 3. Set continuous sill members and flashing in a full sealant bed to provide weathertight construction, unless otherwise indicated. Comply with requirements of Division 7 Section "Joint Sealants."
 - 4. Install framing components plumb and true in alignment with established lines and grades without warp or rack of framing members.
 - 5. Install entrances plumb and true in alignment with established lines and grades without warp or rack. Lubricate operating hardware and other moving parts according to hardware manufacturers' written instructions.
- B. Install surface-mounted hardware according to manufacturer's written instructions using concealed fasteners to greatest extent possible.

- C. Install glazing to comply with requirements of Division 8 Section "Glazing," unless otherwise indicated.
- D. Prepare surfaces that will contact structural sealant according to sealant manufacturer's written instructions to ensure compatibility and adhesion. Preparation includes, but is not limited to, cleaning and priming surfaces.
- E. Install structural silicone sealant according to sealant manufacturer's written instructions.
- F. Mechanically fasten glazing in place until structural sealant is cured.
- G. Remove excess sealant from component surfaces before sealant has cured.
- H. Install secondary-sealant weatherseal according to sealant manufacturer's written instructions to provide weatherproof joints. Install joint fillers behind sealant as recommended by sealant manufacturer.
- I. Install perimeter sealant to comply with requirements of Division 7 Section "Joint Sealants," unless otherwise indicated.
- J. Erection Tolerances: Install entrance and storefront systems to comply with the following maximum tolerances:
 - 1. Variation from Plane: Limit variation from plane or location shown to 1/8 inch in 12 feet (3 mm in 3.7 m); 1/4 inch (6 mm) over total length.
 - 2. Alignment: Where surfaces abut in line, limit offset from true alignment to 1/16 inch (1.5 mm). Where surfaces meet at corners, limit offset from true alignment to 1/32 inch (0.8 mm).
 - 3. Diagonal Measurements: Limit difference between diagonal measurements to 1/8 inch (3 mm).

3.02 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent testing agency to perform field quality-control testing indicated.
- B. Testing Agency: Engage a qualified independent testing agency to perform field quality-control testing indicated.
 - 1. Structural-Silicone-Sealant Adhesion Test: Test installed structural silicone sealant according to field adhesion test method described in AAMA CW #13, "Structural Sealant Glazing Systems (A Design Guide)."
 - 2. Test a minimum of 2 areas.
 - 3. Water Spray Test: After completing the installation of test areas indicated, test storefront system for water penetration according to AAMA 501.2 requirements.
 - 4. Repair or remove and replace Work that does not meet requirements or that is damaged by testing; replace to conform to specified requirements.

3.03 ADJUSTING AND CLEANING

- A. Adjust doors and hardware to provide tight fit at contact points and weather stripping, smooth operation, and weathertight closure.
 - 1. Remove excess sealant and glazing compounds, and dirt from surfaces.

ALUMINUM ENTRANCES AND STOREFRONTS SECTION 08410 -5

3.04 PROTECTION

- A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and installer, that ensure entrance and storefront systems are without damage or deterioration at the time of Substantial Completion.

END OF SECTION

SECTION 08461
IMPACT & NON-IMPACT RATED SLIDING AUTOMATIC ENTRANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following types of automatic entrances:
1. Exterior and/or interior, bi-parting, non-impact rated, sliding automatic entrances.
 - a. - Basis of Design: Stanley Access Technologies
Dura-Storm 3000 Bi-Parting 168"W x 96"H Sliding Automatic Entrance Door System for pressures up to +/- 55 psf.
 - b. - Or equal complying with Section 16315
 2. Exterior, bi-parting, impact rated, sliding automatic entrances.
 - a. - Basis of Design: Stanley Access Technologies
Dura-Storm 3000 Bi-Parting Impact Rated 168"W x 96"H Sliding Automatic Entrance Door System.
 - b. - Or equal complying with Section 16315
- B. Related Sections:
1. Division 7 Sections for caulking to the extent not specified in this section.
 2. Division 8 Section "Aluminum-Framed Entrances and Storefronts" for entrances furnished and installed separately in Division 8 Section.
 3. Division 8 Section "Door Hardware" for hardware to the extent not specified in this Section.
 4. Division 8 Section Glazing for materials and installation requirements of glazing for automatic entrances.
 5. Division 26 Sections for electrical connections provided separately in Division 26 including conduit and wiring for power to sliding automatic entrances.

1.3 REFERENCES

- A. General: Standards listed by reference, including revisions by issuing authority, form a part of this specification section to extent indicated. Standards listed are identified by issuing authority, authority abbreviation, designation number, title or other designation established by issuing authority. Standards subsequently referenced herein are referred to by issuing authority abbreviation and standard designation.
- B. Underwriters Laboratories (UL):
1. UL 325 – Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems.
- C. American National Standards Institute (ANSI) / Builders' Hardware Manufacturers Association (BHMA):
1. ANSI/BHMA A156.10: Standard for Power Operated Pedestrian Doors.
 2. ANSI/BHMA A156.5: Standard for Auxiliary Locks and Associated Products

- D. American Society for Testing and Materials (ASTM):
 - 1. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
 - 2. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
 - 3. ASTM E283 - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
 - E. American Welding Society (AWS):
 - 1. AWS A5.10/A5.10M - Specification For Bare Aluminum And Aluminum-Alloy Welding Electrodes And Rods.
 - F. American Association of Automatic Door Manufacturers (AAADM):
 - G. National Fire Protection Association (NFPA):
 - 1. NFPA 101 – Life Safety Code.
 - 2. NFPA 70 – National Electric Code
 - H. International Organization for Standardization (ISO):
 - 1. ISO 9001 - Quality Management Systems
 - I. Miami-Dade County Building Code Compliance Office
 - 1. Product Control Division, Notice of Acceptance
 - J. State of Florida Building Code - 2017 Sixth addition
 - K. Florida Administrative Code (FAC)
 - L. National Association of Architectural Metal Manufacturers (NAAMM):
 - 1. Metal Finishes Manual for Architectural and Metal Products.
 - M. American Architectural Manufacturers Association (AAMA):
 - 1. AAMA 606.1 – Integral Color Anodic Finishes for Architectural Aluminum.
 - a. - Color anodizing options; “Champagne” to “Black”
 - b. - Multi-coat Fluoropolymer painted finishes.
 - 2. AAMA 607.1 - Clear Anodic Finishes for Architectural Aluminum.
 - 3. Submit samples of all finish types prior to selection by Architect and Owner
- 1.4 DEFINITIONS
- A. Activation Device: Device that, when actuated, sends an electrical signal to the door operator to open the door.
 - B. Safety Device: Device that prevents a door from opening or closing, as appropriate.
- 1.5 PERFORMANCE REQUIREMENTS
- A. General: Provide automatic entrance door assemblies capable of withstanding loads and thermal movements based on testing manufacturer's standard units in assemblies similar to those indicated for this Project.
 - B. Operating Range: Minus 30 deg F (Minus 34 deg C) to 130 deg F (54 deg C).

- C. Opening-Force Requirements for Egress Doors: Not more than 50 lbf (222 N) required to manually set door in motion if power fails, and not more than 15 lbf (67 N) required to open door to minimum required width.
- D. Closing-Force Requirements: Not more than 30 lbf (133 N) required to prevent door from closing.
- E. Air Infiltration: Maximum air leakage through fixed glazing and framing areas of 1.25 cfm/sf. (6.4 L/s-m²) of fixed entrance system area when tested according to ASTM E 283 at a minimum static-air-pressure difference of 6.24 lbf/sf (299 Pa).
- F. Design Pressures: Non-Impact rated sliding automatic entrance systems shall be designed to withstand up to 55 psf (2633 Pa), wind force in both the positive and negative direction in accordance with Florida Building Code.
- G. Design Pressures: Impact rated sliding automatic entrance systems shall be designed to withstand wind force pressures in both the positive and negative direction for the Florida Region of Installation, and be large and small missile impact rated in accordance with Florida Building Code noted in Section 1.3 References.

1.6 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of the Contract and Division 1 Specification Sections.
- B. Shop Drawings: Include plans, elevations, sections, details, hardware mounting heights, and attachments to other work.
- C. Color Samples for selection of factory-applied color finishes.
- D. Closeout Submittals:
 - 1. Owner's Manual.
 - 2. Warranties.
- E. Design Certifications:
 - 1. Product Control Division, Notice of Acceptance from Miami-Dade County Building Code Compliance Office.
 - 2. Product Approval in accordance with FAC 9N-3.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative, with certificate issued by AAADM, who is trained for installation and maintenance of units required for this Project.
- B. Manufacturer Qualifications: A qualified manufacturer with a manufacturing facility certified under ISO 9001.
- C. Manufacturer shall have in place a national service dispatch center providing 24 hours a day, 7 days a week, emergency call back service.
- D. Certifications: Automatic sliding door systems shall be certified by the manufacturer to meet performance design criteria in accordance with the following standards:
 - 1. ANSI/BHMA A156.10.
 - 2. NFPA 101.

3. UL 325 listed.
4. IBC 2009 and 2012.
5. BOCA.
6. Miami-Dade County Building Code Compliance Office
7. Florida Building Code, 2010.

- E. Source Limitations: Obtain automatic entrance door assemblies through one source from a single manufacturer.
- F. Product Options: Drawings indicate sizes, profiles, and dimensional requirements of automatic entrance door assemblies and are based on the specific system indicated. Refer to Division 1 Section "Product Requirements."
- G. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- H. Emergency-Exit Door Requirements: Comply with requirements of authorities having jurisdiction for automatic entrances serving as a required means of egress.

1.8 PROJECT CONDITIONS

- A. Field Measurements: General Contractor shall verify openings to receive automatic entrance door assemblies by field measurements before fabrication and indicate measurements on Shop Drawings.
- B. Mounting Surfaces: General Contractor shall verify all surfaces to be plumb, straight and secure; substrates to be of proper dimension and material.
- C. Other trades: General Contractor shall advise of any inadequate conditions or equipment.

1.9 COORDINATION

- A. Templates: Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing automatic entrances to comply with indicated requirements.
- B. Electrical System Roughing-in: Coordinate layout and installation of automatic entrance door assemblies with connections to power supplies.

1.10 WARRANTY

- A. Automatic Entrances shall be free of defects in material and workmanship for a period of one (1) year from the date of substantial completion.
- B. During the warranty period the Owner shall engage a factory-trained technician to perform service and affect repairs. A safety inspection shall be performed after each adjustment or repair and a completed inspection form shall be submitted to the Owner.
- C. During the warranty period all warranty work, including but not limited to emergency service, shall be performed during normal working hours.

PART 2 - PRODUCTS

2.1 AUTOMATIC ENTRANCES

- A. Manufacturer: Stanley Access Technologies; Dura-Storm™ 3000 full breakout entrance Series sliding automatic entrances.

2.2 MATERIALS

- A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
 - 1. Headers, stiles, rails, and frames: 6063-T6.
 - 2. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221.
 - 3. Sheet and Plate: ASTM B 209.
- B. Sealants and Joint Fillers: Performed under Division 7 Section "Joint Sealants".

2.3 AUTOMATIC ENTRANCE DOOR ASSEMBLIES

- A. General: Provide manufacturer's standard automatic entrance door assemblies including doors, sidelights, framing, headers, carrier assemblies, roller tracks, door operators, activation and safety devices, and accessories required for a complete installation.
- B. Sliding Automatic Entrances:
 - 1. Bi-Parting Entrances:
 - a. Configuration: Two sliding leaves and two full sidelights.
 - b. Traffic Pattern: Two-way.
 - c. Emergency Breakaway Capability: **Sliding leaves and sidelights.**
 - d. Mounting: Between jambs.

2.4 COMPONENTS

- A. Framing Members: Manufacturer's standard extruded aluminum reinforced as required to support imposed loads.
 - 1. Nominal Size: 1 3/4 inch by 4 1/2 inch (45 by 115 mm)
 - 2. Concealed Fastening: Framing shall incorporate a concealed fastening pocket, and continuous flush insert cover, extending full length of each framing member.
- B. Stile and Rail Doors and Sidelights: Manufacturer's standard 1 3/4 inch (45 mm) thick glazed doors with extruded-aluminum tubular stile and rail members. Incorporate concealed tie-rods that span full length of top and bottom rails. All corners, including intersections of stiles and rails or stiles and muntin bars, shall be welded secure.
 - 1. Glazing Stops and Gaskets: Snap-on, extruded-security aluminum stops, mechanically fastened, with preformed glazing gaskets.
 - 2. Stile Design: Medium stile; 3 1/2 inch (95 mm) nominal width.
 - 3. Bottom Heavy Stile Rail Design: Minimum [10 inch (254 mm) nominal height.
 - 4. Muntin Bars: Horizontal tubular rail member for each door; 4 1/4 inch (108 mm)] nominal height.
- C. Glazing: Interior Non-Impact Door(s) furnished under Division 8 Section Glazing .
 - 1. All Glazing furnished under separate section shall be 1/4 inch (6 mm) tempered.

- D. Glazing: Exterior Impact Doors performed under Division 8 Section "Glazing" in accordance with product approvals and the following:
 - 1. Glass: 9/16 inch (14 mm) laminated impact rated glass as specified in product approvals.
 - 2. Glazing: Outboard stop with approved structural tape.
- E. Headers: Fabricated from extruded aluminum and extending full width of automatic entrance door units to conceal door operators, carrier assemblies, and roller tracks. Provide hinged or removable access panels for service and adjustment of door operators and controls. Secure panels to prevent unauthorized access.
 - 1. Mounting: Concealed, with one side of header flush with framing.
 - 2. Capacity: Capable of supporting up to 220 lb (100 kg) per panel, up to four panels, over spans up to 14 feet (4.3 m) without intermediate supports.
- F. Carrier Assemblies and Overhead Roller Tracks: Manufacturer's standard carrier assembly that allows vertical adjustment of at least 1/8 inch (3 mm); consisting of urethane with precision steel lubricated ball-bearing wheels, operating on a continuous roller track. Support panels from carrier assembly by load wheels and anti-riser wheels with factory adjusted cantilever and pivot assembly. Minimum two ball-bearing load wheels and two anti-rise rollers for each active leaf. Minimum load wheel diameter shall be 2 1/2 inch (64 mm); minimum anti-rise roller diameter shall be 2 inch (51 mm).
- G. Thresholds: Manufacturer's standard thresholds as indicated below:
 - 1. Continuous standard tapered extrusion double bevel.
 - 2. All thresholds to conform to details and requirements for code compliance.
- H. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, non-staining, non-bleeding fasteners and accessories compatible with adjacent materials.
- I. Signage: Provide signage in accordance with ANSI/BHMA A156.10.

2.5 DOOR OPERATORS

- A. General: Provide door operators of size recommended by manufacturer for door size, weight, and movement; for condition of exposure; and for long-term, operation under normal traffic load for type of occupancy indicated.
- B. Electromechanical Operators: Self-contained overhead unit powered by a minimum of 1/4 horsepower, permanent-magnet DC motor with gear reduction drive, microprocessor controller; and encoder.
 - 1. Operation: Power opening and power closing.
 - 2. Features:
 - a. Adjustable opening and closing speeds.
 - b. Adjustable latch-check and back-check.
 - c. Adjustable acceleration and braking.
 - d. Adjustable hold-open time between 0 and 30 seconds.
 - e. Obstruction recycle.
 - f. On/Off switch to control electric power to operator.
 - g. Energy conservation switch that reduces door-opening width.
 - h. Closed loop speed control with active braking and acceleration.
 - i. Adjustable obstruction recycle time delay.
 - j. Self adjusting stop position.
 - k. Self adjusting closing compression force.
 - l. Onboard sensor power supply.

- m. Onboard sensor monitoring.
 - n. Optional Switch to open/Switch to close operation.
 - 3. Mounting: Concealed.
 - 4. Drive System: Synchronous belt type.
- C. Electrical service to door operators shall be provided under Division 26 Electrical. Minimum service to be 120 VAC, 5 amps.

2.6 ELECTRICAL CONTROLS

- A. Electrical Control System: Electrical control system shall include a microprocessor controller and position encoder. The encoder shall monitor revolutions of the operator shaft and send signals to microprocessor controller to define door position and speed. Systems utilizing external magnets and magnetic switches are not acceptable.
- B. Performance Data: The microprocessor shall collect and store performance data as follows:
 - 1. Counter: A non-resettable counter to track operating cycles.
 - 2. Event Reporting: Unit shall include event and error recording including number of occurrences of events and errors, and cycle count of most recent events and errors.
 - 3. LED Display: Display presenting the current operating state of the controller.
- C. Controller Protection: The microprocessor controller shall incorporate the following features to ensure trouble free operation:
 - 1. Automatic Reset Upon Power Up.
 - 2. Main Fuse Protection.
 - 3. Electronic Surge Protection.
 - 4. Internal Power Supply Protection.
 - 5. Resettable sensor supply fuse protection.
 - 6. Motor Protection, over-current protection.
- D. Soft Start/Stop: A "soft-start" "soft-stop" motor driving circuit shall be provided for smooth normal opening and recycling.
- E. Obstruction Recycle: Provide system to recycle the sliding panels when an obstruction is encountered during the closing cycle. If an obstruction is detected, the system shall search for that object on the next closing cycle by reducing door closing speed prior to the previously encountered obstruction location, and will continue to close in check speed until doors are fully closed, at which time the doors will reset to normal speed. If obstruction is encountered again, the door will come to a full stop. The doors shall remain stopped until obstruction is removed and operate signal is given, resetting the door to normal operation.
- F. Programmable Controller: Microprocessor controller shall be programmable and shall be designed for connection to a local configuration tool. Local configuration tool shall be a software driven handheld interface. The following parameters may be adjusted via the configuration tool.
 - 1. Operating speeds and forces as required to meet ANSI/BHMA A156.10.
 - 2. Adjustable and variable features as specified in 2.5, B., 2.
 - 3. Reduced opening position.
 - 4. Fail Safe/Secure control.
 - 5. Firmware update.
 - 6. Trouble Shooting
 - a. I/O Status.
 - b. Electrical component monitoring including parameter summary.

7. Software for local configuration tool shall be available as a free download from the sliding automatic entrance manufacturer's internet site. Software shall be compatible with the following operating system platforms: Palm®, Android®, and Windows Mobile®.

2.7 ACTIVATION AND SAFETY DEVICES

- A. Motion Sensors: Motion sensors shall be mounted on each side of door header to detect pedestrians in the activating zone, and to provide a signal to open doors in accordance with ANSI/BHMA A156.10. Units shall be programmable for bi-directional or uni-directional operation and shall incorporate K-band microwave frequency to detect all motion in both directions.
- B. Presence Sensors: Presence sensors shall be provided to sense people or objects in the threshold safety zone in accordance with ANSI/BHMA A156.10. Units shall be self-contained, fully adjustable, and shall function accordingly with motion sensors provided. The sensor shall be enabled simultaneously with the door-opening signal and shall emit an elliptical shaped infrared presence zone, centered on the doorway threshold line. Presence sensors shall be capable of selectively retuning to adjust for objects which may enter the safety zone; tuning out, or disregarding, the presence of small nuisance objects and not tuning out large objects regardless of the time the object is present in the safety zone. The door shall close only after all sensors detect a clear surveillance field.
- C. Photoelectric Beams: In addition to the threshold sensor include a minimum of two (2) doorway holding beams. Photoelectric beams shall be pulsed infrared type, including sender receiver assemblies for recessed mounting.
- D. Presence Sensor Monitoring: Sliding automatic entrances control system shall include a means to verify the functionality of all active presence sensors in accordance with ANSI/BHMA A156.10. A detected fault shall cause automatic operation to cease until the fault is corrected.

2.8 HARDWARE

- A. General: Provide units in sizes and types recommended by automatic entrance door and hardware manufacturers for entrances and uses indicated.
- B. Emergency Breakaway Feature: Provide release hardware that allows panel(s) to swing out in direction of egress to full 90 degrees from any position in sliding mode. Maximum force to open panel shall be 50 lbf (222 N) according to ANSI/BHMA A156.10. Interrupt powered operation of panel operator while in breakaway mode.
 1. Emergency breakaway feature shall include at least two adjustable detent devices mounted in each breakaway panel; one top mounted and one bottom mounted, to control panel breakaway force.
 2. Wind Resistant Damper: Provide factory installed concealed gas dampers in sliding or non-sliding breakaway panels to protect door panels from wind damage. Dampers shall be designed to slow panel movement after breakout.
- C. Panic Release Locking: Manufacturer's approved multi-point locking system with panic release hardware for Stanley Access Technologies Dura-Storm 3000 Impact Rated Doors and Dura-Storm 3000 – Non - Impact Rated Doors only as follows:
 1. Two-Point Locking: Provide locking components within sliding panel, including panic release hardware, that extend flush bolts into overhead carrier assembly and threshold of sliding leaf. Flush bolts shall be manually dogged, or disengaged, for normal operation. Lock cylinders shall be provided to allow for disengagement of flush bolts from the exterior.
 2. Cylinders: As specified in Division 8 Section "Door Hardware."

3. Panic release hardware shall be equal to or better than, Adams Rite G86-11-36.
- B. Control Switch: Provide manufacturer's standard rotary switch mounted on the interior jamb and door position switch to allow for full control of the automatic entrance door. Controls to include, but are not limited to:
 1. One-way traffic
 2. Reduced Opening
 3. Open/Closed/Automatic
- C. Power Switch: Sliding automatic entrances shall be equipped with a two position On/Off rocker switch to control power to the door.
- D. Sliding Weather Stripping: Manufacturer's standard replaceable components complying with AAMA 701; made of wool, polypropylene, or nylon woven pile with nylon-fabric or aluminum-strip backing.
 1. Provide double pile weather stripping on lead stiles of sliding panels.
 2. Provide single pile weather stripping between carrier and header, lead stiles of sidelights, and on pivot stiles of sliding panels.
- E. Weather Sweeps: Adjustable, dual brush, nylon brush sweep mounted to underside of door bottom.

2.9 FABRICATION

- A. General: Factory fabricates automatic entrance door assembly components to designs, sizes, and thickness indicated and to comply with indicated standards.
 1. Form aluminum shapes before finishing.
 2. Use concealed fasteners to greatest extent possible.
 - a. Where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration, use self-locking devices.
 - b. Reinforce members as required to receive fastener threads.
- B. Framing: Provide automatic entrances as prefabricated assemblies.
 1. Fabricate tubular and channel frame assemblies with manufacturer's standard mechanical or welded joints. Provide sub-frames and reinforcement as required for a complete system to support required loads.
 2. Perform fabrication operations in manner that prevents damage to exposed finish surfaces.
 3. Form profiles that are sharp, straight, and free of defects or deformations.
 4. Prepare components to receive concealed fasteners and anchor and connection devices.
 5. Fabricate components with accurately fitted joints with ends coped or mitered to produce hairline joints free of burrs and distortion.
- C. Doors: Factory fabricated and assembled in profiles indicated. Reinforce as required to support imposed loads and for installing hardware.
- D. Door Operators: Factory fabricated and installed in headers, including adjusting and testing.
- E. Welding: Comply with AWS A5.10/A5.10M - Specification for Bare Aluminum and Aluminum-Alloy Welding Electrodes and Rods.
- F. Glazing: Fabricate framing with minimum glazing edge clearances for thickness and type of glazing indicated.

- G. Hardware: Factory install hardware to the greatest extent possible; remove only as required for final finishing operation and for delivery to and installation at Project site.

2.10 ALUMINUM FINISHES

- A. General: Comply with NAAMM Metal Finishes Manual for Architectural and Metal Products for recommendations for applying and designing finishes. Finish designations prefixed by AA comply with system established by Aluminum Association for designing finishes.
- B. Provide Samples of all types "Standard" of finishes available to Architect and owner for final selection prior to fabrication for approval to include but not limited to the following:
 - 1. Class II, Clear Anodic Finish: AA-M12C22A31 Mechanical Finish: as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class II, clear coating 0.40 mils minimum complying with AAMA 611-98, and the following:
 - a. AAMA 607.1
 - b. Applicator must be fully compliant with all applicable environmental regulations and permits, including wastewater and heavy metal discharge.
 - 2. Class I, Color Anodic Finish: AA-M12C22A42/A44 Mechanical Finish: as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, integrally colored or electrolytically deposited color coating 0.70 mils minimum complying with AAMA 611-98, and the following:
 - a. Color: Dark Bronze.
 - b. AAMA 606.1
 - c. Applicator must be fully compliant with all applicable environmental regulations and permits, including wastewater and heavy metal discharge.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine conditions for compliance with requirements for installation tolerances, header support, and other conditions affecting performance of automatic entrances. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Do not install damaged components. Fit frame joints to produce joints free of burrs and distortion. Rigidly secure non-movement joints.
- B. Entrances: Install automatic entrances plumb and true in alignment with established lines and grades without warp or rack of framing members and doors. Anchor securely in place.
 - 1. Install surface-mounted hardware using concealed fasteners to greatest extent possible.
 - 2. Set headers, carrier assemblies, tracks, operating brackets, and guides level and true to location with anchorage for permanent support.
- C. Door Operators: Connect door operators to electrical power distribution system as specified in Division 26 Sections.
- D. Glazing: Performed under Division 8 Section "Glazing" in accordance with sliding automatic entrance manufacturer's instructions.

E. Sealants: Comply with requirements specified in Division 7 Section "Joint Sealants".

3.3 FIELD QUALITY CONTROL

A. Testing Services: Factory Trained Installer shall test and inspect each automatic entrance door to determine compliance of installed systems with applicable ANSI standards.

3.4 ADJUSTING

A. Adjust door operators, controls, and hardware for smooth and safe operation, for tight closure, and complying with requirements in ANSI/BHMA A156.10.

3.5 CLEANING AND PROTECTION

A. Clean glass and aluminum surfaces promptly after installation. Remove excess glazing and sealant compounds, dirt, and other substances. Repair damaged finish to match original finish. Comply with requirements in Division 8 Section "Glazing", for cleaning and maintaining glass.

END OF SECTION

**SECTION 08710
DOOR HARDWARE****PART 1 – GENERAL****1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 DESCRIPTION OF WORK

- A. This Section includes items known commercially as finish or door hardware that are required for swing, sliding, and folding doors, except special types of unique hardware specified in the same sections as the doors and door frames on which they are installed.
- B. This Section includes the following:
1. Hinges.
 2. Pivots.
 3. Spring hinges.
 4. Key control system.
 5. Lock cylinders and keys.
 6. Lock and latch sets.
 7. Bolts.
 8. Exit devices.
 9. Push/pull units.
 10. Closers.
 11. Overhead holders.
 12. Miscellaneous door control devices.
 13. Door trim units.
 14. Protection plates.
 15. Sliding door equipment.
 16. Bifold door hardware.
 17. Weatherstripping for exterior doors.
 18. Sound stripping for interior doors.
 19. Automatic drop seals (door bottoms).
 20. Astragals or meeting seals on pairs of doors.
 21. Thresholds.

1.03 RELATED SECTIONS

- A. Division 6 Section "Interior Architectural Woodwork" for cabinet hardware.
- B. Division 8 Section "Hollow Metal Doors and Frames" for silencers integral with hollow metal frames.
- C. Division 8 Section "Wood Doors" for factory prefabricating and factory premachining of doors for door hardware.
- D. Division 8 Section "Stile and Rail Wood Doors" for factory prefabricating and factory premachining of doors for hardware.

- E. Division 8 Section "Aluminum Entrances and Storefronts" for aluminum entrance door hardware, except cylinders.
- F. Division 17 – Building Security Systems.
- G. Products furnished but not installed under this Section include:
 - 1. Cylinders for locks on entrance doors.
 - 2. Final replacement cores and keys to be installed by Owner.

1.04 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification sections.
- B. Product data including manufacturers' technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
- C. Final hardware schedule coordinated with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
 - 1. Final Hardware Schedule Content: Based on hardware indicated, organize schedule into "hardware sets" indicating complete designations of every item required for each door or opening. Include the following information:
 - a. Type, style, function, size, and finish of each hardware item.
 - b. Name and manufacturer of each item.
 - c. Fastenings and other pertinent information.
 - d. Location of each hardware set cross referenced to indications on Drawings both on floor plans and in door and frame schedule.
 - e. Explanation of all abbreviations, symbols, and codes contained in schedule.
 - f. Mounting locations for hardware.
 - g. Door and frame sizes and materials.
 - h. Keying information.
 - 2. Submittal Sequence: Submit final schedule at earliest possible date particularly where acceptance of hardware schedule must precede fabrication of other work that is critical in the Project construction schedule. Include with schedule the product data, samples, shop drawings of other work affected by door hardware, and other information essential to the coordinated review of schedule.
 - 3. Keying Schedule: Submit separate detailed schedule indicating clearly how the Owner's final instructions on keying of locks has been fulfilled.
- D. Samples of each type of exposed hardware unit in finish indicated and tagged with full description for coordination with schedule. Submit samples prior to submission of final hardware schedule.
 - 1. Samples will be returned to the supplier. Units that are acceptable and remain undamaged through submittal, review, and field comparison process may, after final check of operation, be incorporated in the Work, within limitations of keying coordination requirements.
- E. Templates for doors, frames, and other work specified to be factory prepared for the installation of door hardware. Check shop drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

1.05 QUALITY ASSURANCE

- A. Single Source Responsibility: Obtain each type of hardware (latch and lock sets, hinges, closers, etc.) from a single manufacturer.
- B. Supplier Qualifications: A recognized architectural door hardware supplier, with warehousing facilities in the Project's vicinity, that has a record of successful in-service performance for supplying door hardware similar in quantity, type, and quality to that indicated for this Project and that employs an experienced architectural hardware consultant (AHC) who is available to Owner, Architect, and Contractor, at reasonable times during the course of the Work, for consultation.
 - 1. Require supplier to meet with Owner to finalize keying requirements and to obtain final instructions in writing.
- C. Fire-Rated Openings: Provide door hardware for fire-rated openings that complies with NFPA Standard No. 80 and requirements of authorities having jurisdiction. Provide only items of door hardware that are listed and are identical to products tested by UL, Warnock Hersey, FM, or other testing and inspecting organization acceptable to authorities having jurisdiction for use on types and sizes of doors indicated in compliance with requirements of fire-rated door and door frame labels.

1.06 PRODUCT HANDLING

- A. Tag each item or package separately with identification related to final hardware schedule, and include basic installation instructions with each item or package.
- B. Packaging of door hardware is responsibility of supplier. As material is received by hardware supplier from various manufacturers, sort and repackage in containers clearly marked with appropriate hardware set number to match set numbers of approved hardware schedule. Two or more identical sets may be packed in same container.
- C. Inventory door hardware jointly with representatives of hardware supplier and hardware installer until each is satisfied that count is correct.
- D. Deliver individually packaged door hardware items promptly to place of installation (shop or Project site).
- E. Provide secure lock-up for door hardware delivered to the Project, but not yet installed. Control handling and installation of hardware items that are not immediately replaceable so that completion of the Work will not be delayed by hardware losses both before and after installation.

1.07 MAINTENANCE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 - PRODUCTS**2.01 MANUFACTURERS**

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
1. Butts and Hinges:
 - a. Bommer Industries, Inc.
 - b. Hager Hinge Co.
 - c. McKinney Products Co.
 - d. H. Soss & Company.
 - e. Stanley Hardware, Div. Stanley Works.
 2. Pivots:
 - a. Glynn-Johnson Corp.
 - b. Hager Hinge Co.
 - c. Stanley Hardware, Div. Stanley Works.
 3. Key Control System:
 - a. Key Control Systems, Inc.
 - b. Telkee Inc.
 4. Cylinders and Locks:
 - a. Corbin & Russwin Architectural Hardware, Div. Black & Decker Corp.
 - b. Falcon Lock Co.
 - c. Sargent Manufacturing Company.
 - d. Schlage Lock, Div. Ingersoll-Rand Door Hardware Group.
 - e. Yale Security Inc.
 5. Bolts:
 - a. Hager Hinge Co.
 - b. H. B. Ives
 - c. Stanley Hardware, Div. Stanley Works.
 6. Exit/Panic Devices:
 - a. Adams Rite Manufacturing Co.
 - b. Arrow Lock Manufacturing Co.
 - c. Corbin & Russwin Architectural Hardware, Div. Black & Decker Corp.
 - d. Dor-O-Matic.
 - e. Sargent Manufacturing Company.
 - f. Von Duprin, Div. Ingersoll-Rand Door Hardware Group.
 - g. Yale Security Inc.
 7. Push/Pull Units:
 - a. Baldwin Hardware Corp.
 - b. Brookline Industries, Div. Yale Security Inc.
 - c. Corbin & Russwin Architectural Hardware, Div. Black & Decker Corp.
 - d. Hager Hinge Co.
 - e. Hiawatha, Inc.
 - f. H. B. Ives
 8. Overhead Closers:
 - a. Arrow Lock Manufacturing Co.
 - b. Corbin & Russwin Architectural Hardware, Div. Black & Decker Corp.
 - c. Dorma Door Controls International.
 - d. LCN, Div. Ingersoll-Rand Door Hardware Group.
 - e. Norton Door Controls, Div. Yale Security Inc.

- f. Rixson-Firemark, Div. Yale Security Inc.
 - g. Sargent Manufacturing Company.
 - h. Yale Security Inc.
9. Smoke-Activated Closers:
- a. Corbin & Russwin Architectural Hardware, Div. Black & Decker Corp.
 - b. Dor-O-Matic.
 - c. Dorma Door Controls International.
 - d. Norton Door Controls, Div. Yale Security Inc.
 - e. Rixson-Firemark, Div. Yale Security Inc.
 - f. Yale Security Inc.
10. Floor Closers:
- a. Dor-O-Matic.
 - b. Dorma Door Controls International.
 - c. Rixson-Firemark, Div. Yale Security Inc.
11. Door Control Devices:
- a. Baldwin Hardware Corp.
 - b. Corbin & Russwin Architectural Hardware, Div. Black & Decker Corp.
 - c. Glynn-Johnson Corp.
 - d. Hager Hinge Co.
 - e. H. B. Ives
12. Door Trim Units:
- a. Baldwin Hardware Corp.
 - b. Brookline Industries, Div. Yale Security Inc.
 - c. Hager Hinge Co.
 - d. H. B. Ives
13. Kick, Mop, and Armor Plates:
- a. Baldwin Hardware Corp.
 - b. Brookline Industries, Div. Yale Security Inc.
 - c. Corbin & Russwin Architectural Hardware, Div. Black & Decker Corp.
 - d. Hager Hinge Co.
 - e. Hiawatha, Inc.
 - f. H. B. Ives
14. Sliding Door Hardware Sets:
- a. Grant Hardware Co.
 - b. L. E. Johnson Products, Inc.
 - c. Stanley Hardware, Div. Stanley Works.
15. Sliding Pocket Door Sets:
- a. Grant Hardware Co.
 - b. L. E. Johnson Products, Inc.
 - c. Stanley Hardware, Div. Stanley Works.
16. Bifold Door Hardware:
- a. Grant Hardware Co.
 - b. L. E. Johnson Products, Inc.
 - c. Stanley Hardware, Div. Stanley Works.
17. Door Stripping and Seals:
- a. Hager Hinge Co.
 - b. National Guard Products, Inc.
 - c. Pemko Manufacturing Co., Inc.

- d. Reese Enterprises, Inc.
 - e. Sealeze Corp.
 - f. Zero International, Inc.
18. Thresholds:
- a. Hager Hinge Co.
 - b. National Guard Products, Inc.
 - c. Pemko Manufacturing Co., Inc.
 - d. Reese Enterprises, Inc.
 - e. Sealeze Corp.
 - f. Zero International, Inc.
19. Automatic Drop Seals:
- a. Hager Hinge Co.
 - b. National Guard Products, Inc.
 - c. Pemko Manufacturing Co., Inc.
 - d. Reese Enterprises, Inc.
 - e. Zero International, Inc.
20. Sound Stripping:
- a. National Guard Products, Inc.
 - b. Pemko Manufacturing Co., Inc.
 - c. Reese Enterprises, Inc.
 - d. Zero International, Inc.
21. Astragals:
- a. Hager Hinge Co.
 - b. National Guard Products, Inc.
 - c. Pemko Manufacturing Co., Inc.
 - d. Reese Enterprises, Inc.
 - e. Zero International, Inc.

2.02 SCHEDULED HARDWARE

- A. Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of finish hardware are indicated in the "Hardware Schedule" at the end of this Section. Products are identified by using hardware designation numbers of the following:
1. Manufacturer's Product Designations: The product designation and name of one manufacturer are listed for each hardware type required for the purpose of establishing minimum requirements. Provide either the product designated or, where more than one manufacturer is specified under the Article "Manufacturers" in Part 2 for each hardware type, the comparable product of one of the other manufacturers that complies with requirements.
 2. ANSI/BHMA designations used elsewhere in this Section or in schedules to describe hardware items or to define quality or function are derived from the following standards. Provide products complying with these standards and requirements specified elsewhere in this Section.
 - a. Butts and Hinges: ANSI/BHMA A156.1.
 - b. Bored and Preassembled Locks and Latches: ANSI/BHMA A156.2.
 - c. Exit Devices: ANSI/BHMA A156.3.
 - d. Door Controls - Closers: ANSI/BHMA A156.4.
 - e. Auxiliary Locks and Associated Products: ANSI/BHMA A156.5.
 - f. Architectural Door Trim: ANSI/BHMA A156.6.
 - g. Template Hinge Dimensions: ANSI/BHMA A156.7.
 - h. Door Controls - Overhead Holders: ANSI/BHMA A156.8.

- i. Interconnected Locks and Latches: ANSI/BHMA A156.12.
- j. Mortise Locks and Latches: ANSI/BHMA A156.13.
- k. Sliding and Folding Door Hardware: ANSI/BHMA A156.14.
- l. Closer Holder Release Devices: ANSI/BHMA A156.15.
- m. Auxiliary Hardware: ANSI/BHMA A156.16.
- n. Self-Closing Hinges and Pivots: ANSI/BHMA A156.17.
- o. Materials and Finishes: ANSI/BHMA A156.18.

2.03 MATERIALS AND FABRICATION

- A. Manufacturer's Name Plate: Do not use manufacturers' products that have manufacturer's name or trade name displayed in a visible location (omit removable nameplates) except in conjunction with required fire-rated labels and as otherwise acceptable to Architect.
 - 1. Manufacturer's identification will be permitted on rim of lock cylinders only.
- B. Base Metals: Produce hardware units of basic metal and forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness, but in no case of lesser (commercially recognized) quality than specified for applicable hardware units by applicable ANSI/BHMA A156 series standards for each type of hardware item and with ANSI/BHMA A156.18 for finish designations indicated. Do not furnish "optional" materials or forming methods for those indicated, except as otherwise specified.
- C. Base Metals: Produce hardware units of basic metal and forming method indicated using manufacturer's standard metal alloy, composition, temper, and hardness, but in no case of lesser (commercially recognized) quality than specified for applicable hardware units for finish designations indicated.
- D. Fasteners: Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation. Do not provide hardware that has been prepared for self-tapping sheet metal screws, except as specifically indicated.
- E. Furnish screws for installation with each hardware item. Provide Phillips flat-head screws except as otherwise indicated. Finish exposed (exposed under any condition) screws to match hardware finish or, if exposed in surfaces of other work, to match finish of this other work as closely as possible including "prepared for paint" surfaces to receive painted finish.
- F. Provide concealed fasteners for hardware units that are exposed when door is closed except to the extent no standard units of type specified are available with concealed fasteners. Do not use thru-bolts for installation where bolt head or nut on opposite face is exposed in other work unless their use is the only means of reinforcing the work adequately to fasten the hardware securely. Where thru-bolts are used as a means of reinforcing the work, provide sleeves for each thru-bolt or use sex screw fasteners.

2.04 HINGES, BUTTS, AND PIVOTS

- A. Templates: Except for hinges and pivots to be installed entirely (both leaves) into wood doors and frames, provide only template-produced units.
- B. Screws: Provide Phillips flat-head screws complying with the following requirements:
 - 1. For metal doors and frames install machine screws into drilled and tapped holes.
 - 2. For wood doors and frames install wood screws.

3. For fire-rated wood doors install #12 x 1-1/4-inch (32-mm), threaded-to-the-head steel wood screws.
 4. Finish screw heads to match surface of hinges or pivots.
- C. Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:
1. Out-Swing Exterior Doors: Nonremovable pins.
 2. Out-Swing Corridor Doors with Locks: Nonremovable pins.
 3. Interior Doors: Nonrising pins.
 4. Tips: Flat button and matching plug, finished to match leaves, except where hospital tip (HT) indicated.
- D. Number of Hinges: Provide number of hinges indicated but not less than 3 hinges per door leaf for doors 90 inches (2250 mm) or less in height and one additional hinge for each 30 inches (750 mm) of additional height.
1. Fire-Rated Doors: Not less than 3 hinges per door leaf for doors 86 inches (2150 mm) or less in height with same rule for additional hinges.

2.05 LOCK CYLINDERS AND KEYING

- A. Standard System: Except as otherwise indicated, provide new masterkey system for Project.
- B. Equip locks with cylinders for interchangeable-core pin tumbler inserts. Furnish only temporary inserts for the construction period, and remove these when directed.
1. Furnish final cores and keys for installation by Owner.
- C. Equip locks with high-security cylinders that comply with performance requirements for Grade 1 cylinders as listed in ANSI/BHMA A156.5 and that have been tested for pick and drill resistance requirements of UL 437 and are UL listed.
- D. Metals: Construct lock cylinder parts from brass or bronze, stainless steel, or nickel silver.
- E. Comply with Owner's instructions for masterkeying and, except as otherwise indicated, provide individual change key for each lock that is not designated to be keyed alike with a group of related locks.
1. Permanently inscribe each key with number of lock that identifies cylinder manufacturer's key symbol, and notation, "DO NOT DUPLICATE."
- F. Key Material: Provide keys of nickel silver only.
- G. Key Quantity: Furnish 3 change keys for each lock, 5 master keys for each master system, and 5 grandmaster keys for each grandmaster system.
1. Furnish one extra blank for each lock.
 2. Deliver keys to key control system manufacturer.
 3. Deliver keys to Owner.

2.06 KEY CONTROL SYSTEM

- A. Provide a key control system including envelopes, labels, tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet, all as recommended by system manufacturer, with capacity for 150 percent of the number of locks required for the Project.

1. Provide complete cross index system set up by key control manufacturer, and place keys on markers and hooks in the cabinet as determined by the final key schedule.
2. Provide hinged-panel type cabinet for wall mounting.
3. Provide multiple-drawer type cabinet.

2.07 LOCKS, LATCHES, AND BOLTS

- A. Strikes: Provide manufacturer's standard wrought box strike for each latch or lock bolt, with curved lip extended to protect frame, finished to match hardware set, unless otherwise indicated.
1. Provide flat lip strikes for locks with 3-piece, antifriction latchbolts as recommended by manufacturer.
 2. Provide extra long strike lips for locks used on frames with applied wood casing trim.
 3. Provide recess type top strikes for bolts locking into head frames, unless otherwise indicated.
 4. Provide dust-proof strikes for foot bolts, except where special threshold construction provides non-recessed strike for bolt.
 5. Provide roller type strikes where recommended by manufacturer of the latch and lock units.
 6. Provide standard (open) strike plates for interior doors of residential units where wood door frames are used.
- B. Lock Throw: Provide 5/8-inch (16-mm) minimum throw of latch on pairs of doors. Comply with UL requirements for throw of bolts and latch bolts on rated fire openings.
1. Provide 1/2-inch (13-mm) minimum throw of latch for other bored and preassembled types of locks and 3/4-inch (19-mm) minimum throw of latch for mortise locks. Provide 1-inch (25-mm) minimum throw for all dead bolts.
- C. Flush Bolt Heads: Minimum of 1/2-inch- (13-mm-) diameter rods of brass, bronze, or stainless steel with minimum 12-inch- (300-mm-) long rod for doors up to 84 inches (2100 mm) in height. Provide longer rods as necessary for doors exceeding 84 inches (2100 mm) in height.
- D. Exit Device Dogging: Except on fire-rated doors where closers are provided on doors equipped with exit devices, equip the units with keyed dogging device to keep the latch bolt retracted, when engaged.
- E. Rabbeted Doors: Where rabbeted door stiles are indicated, provide special rabbeted front on lock and latch units and bolts.

2.08 PUSH/PULL UNITS

- A. Exposed Fasteners: Provide manufacturer's standard exposed fasteners for installation, thru-bolted for matched pairs but not for single units.
- B. Concealed Fasteners: Provide manufacturer's special concealed fastener system for installation, thru-bolted for matched pairs but not for single units.

2.09 CLOSERS AND DOOR CONTROL DEVICES

- A. Size of Units: Except as otherwise specifically indicated, comply with the manufacturer's recommendations for size of door control unit depending on size of door, exposure to weather, and anticipated frequency of use.
 - 1. Where parallel arms are indicated for closers, provide closer unit one size larger than recommended for use with standard arms.
 - 2. Provide parallel arms for all overhead closers, except as otherwise indicated.
- B. Access-Free Manual Closers: Where manual closers are indicated for doors required to be accessible to the physically handicapped, provide adjustable units complying with ANSI A117.1 provisions for door opening force and delayed action closing.
- C. Combination Door Closers and Holders: Provide units designed to hold door in open position under normal usage and to release and close door automatically under fire conditions. Incorporate an integral electromagnetic holder mechanism designed for use with UL listed fire detectors, provided with normally closed switching contacts.
 - 1. Provide integral smoke detector device in combination door closers and holders complying with UL 228.
- D. Flush Floor Plates: Provide finished metal flush floor plates for floor closers except where thresholds are indicated and cover plate is specified to be an integral part of threshold. Finish floor plate to match hardware sets, unless otherwise indicated.
- E. Recessed Floor Plates: Provide recessed floor plates where no thresholds are indicated and floor closers are located in an area of resilient flooring, stone flooring, or terrazzo. Recess plates to receive an insert of the floor finish material of the normal thickness as indicated. Provide extended spindle on closer as may be necessary to accommodate thickness of floor finish.
 - 1. Where terrazzo floor finish includes metal divider or expansion strips, match exposed ring of recessed floor plate on closer with metal of floor strips.
- F. Provide grey resilient parts for exposed bumpers.
- G. Provide black resilient parts for exposed bumpers.

2.10 DOOR TRIM UNITS

- A. Fasteners: Provide manufacturer's standard exposed fasteners for door trim units consisting of either machine screws or self-tapping screws.
- B. Fabricate edge trim of stainless steel to fit door thickness in standard lengths or to match height of protection plates.
- C. Fabricate protection plates not more than 1-1/2 inches (38 mm) less than door width on hinge side and not more than 1/2 inch (13 mm) less than door width on pull side by height indicated.
 - 1. Metal Plates: Brass or bronze, 0.062 inch (U.S. 16 gage) (1.6 mm).

2.11 HARDWARE FOR INTERIOR SLIDING DOORS

- A. General: Provide manufacturer's standard hardware for interior sliding doors when not furnished as part of complete door package.
- B. Operating Hardware for Bypassing Doors: Provide manufacturer's complete set consisting of extruded aluminum overhead track, adjustable hangers (carriages), bumpers, and floor guides designed to accommodate the number, size, thickness, and weight of door leaves indicated. Provide flush pulls for each door leaf.
- C. Operating Hardware for Pocket Doors: Provide manufacturer's complete set consisting of extruded aluminum or galvanized steel overhead track, adjustable hangers (carriages), galvanized steel split-jambs and split-studs, wood nailers for head track, jambs and studs, galvanized steel brackets for assembly and attachment to floor and wall framing, bumpers, and nylon floor guides designed to accommodate the number (single and biparting), size, thickness, and weight of door leaves indicated. Provide flush pull and edge pull for each door leaf.

2.12 HARDWARE FOR BIFOLD DOORS

- A. General: Provide manufacturer's standard hardware for interior bifold doors when not furnished as part of complete door package.
- B. Operating Hardware: Provide manufacturer's complete sets consisting of overhead extruded aluminum track; captive nylon shoe or roller guides; rubber bumpers in track; and adjustable pivots, hinges, and door aligners all designed to accommodate the number, size, thickness, and weight of door leaves indicated.
 - 1. Provide light-duty sets designed for leaves weighing up to 25 lb (11.34 kg).
 - 2. Provide medium-duty sets designed for leaves weighing up to 35 lb (15.88 kg).
 - 3. Provide heavy-duty sets designed for leaves weighing up to 75 lb (34 kg).
 - 4. Provide extra-heavy-duty sets designed for leaves weighing up to 125 lb (56.7 kg) and 48 inches (1200 mm) in width with a minimum thickness of 1 inch (25 mm).
- C. Trim Hardware: Provide the following items as needed for operating bifold doors:
 - 1. Pulls: Manufacturer's standard pull, one per pair of leaves.
 - 2. Pulls: Single knob pull with dummy rose matching design and finish of knobs for swing doors, by manufacturer of locks and latches.

2.13 WEATHERSTRIPPING AND SEALS

- A. General: Provide continuous weatherstripping on exterior doors and smoke, light, or sound seals on interior doors where indicated or scheduled. Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.
- B. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strip is easily replaceable and readily available from stocks maintained by manufacturer.
- C. Weatherstripping at Jambs and Heads: Provide bumper-type resilient insert and metal retainer strips, surface applied unless shown as mortised or semimortised, and of following metal, finish, and resilient bumper material:

1. Extruded aluminum with color anodized finish as selected from manufacturer's standard color range, 0.062-inch (1.6-mm) minimum thickness of main walls and flanges.
 2. Sponge neoprene conforming to MIL R 6130, Class II (Closed Cell).
 - a. Grade A: 30 to 150 deg F (-1 to 65 deg C), oil-resistant and self-extinguishing.
 - b. Grade C: 67 to 170 deg F (19 to 77 deg C), low temperature.
 3. Expanded neoprene: Cellular rubber conforming to ASTM D 1056 Type 2 (closed-cell); Class B (low-swell, oil-resistant); Grade 2 (compression-deflection of 5 - 9 psi (35 - 60 kPa)); and self-extinguishing in following size:
 - a. 3/16 x 5/8 inch (5 x 16 mm).
 - b. 1/4 x 3/4 inch (6 x 19 mm).
 - c. 3/8 x 1-1/4 inches (10 x 32 mm).
 4. Solid neoprene conforming to MIL R 6855, Class II, Grade 40.
 - a. Flexible, hollow bulb or loop insert.
- D. Weatherstripping at Door Bottoms: Provide threshold consisting of contact-type resilient insert and metal housing of design and size shown and of following metal, finish, and resilient seal strip:
1. Extruded aluminum with color anodized finish as selected from manufacturer's standard color range, 0.062-inch (1.6-mm) minimum thickness of main walls and flanges.
 2. Solid neoprene wiper or sweep seal complying with MIL R 6855, Class II, Grade 40.

2.14 THRESHOLDS

- A. General: Except as otherwise indicated, provide standard metal threshold unit of type, size, and profile as shown or scheduled. All entry/exit doors to have ADA thresholds.
- B. Exterior Hinged or Pivoted Doors: Provide units not less than 4 inches (100 mm) wide, formed to accommodate change in floor elevation where indicated, fabricated to accommodate door hardware and to fit door frames, and as follows:
 1. For in-swinging doors provide units with interlocking lip and interior drain channel; include hook on bottom edge of door and drain pan.
 2. For out-swinging doors provide units with interlocking lip and with hook on bottom edge of door to act as weather bar.
 3. For out-swinging doors provide rabbeted type units with replaceable weatherstrip insert in stop.

2.15 HARDWARE FINISHES

- A. Match items to the manufacturer's standard color and texture finish for the latch and lock sets (or push-pull units if no latch or lock sets).
- B. Provide finishes as determined by the Interior Designer.
- C. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware.

- D. Provide protective lacquer coating on all exposed hardware finishes of brass, bronze, and aluminum, except as otherwise indicated. The suffix "-NL" is used with standard finish designations to indicate "no lacquer."
- E. The designations used in schedules and elsewhere to indicate hardware finishes are those listed in ANSI/BHMA A156.18, "Materials and Finishes," including coordination with the traditional U.S. finishes shown by certain manufacturers for their products.
- F. The designations used in schedules and elsewhere to indicate hardware finishes are the industry-recognized standard commercial finishes, except as otherwise noted.
 - 1. Rust-Resistant Finish: For iron and steel base metal required for exterior work and in areas shown as "High Humidity" areas (and also when designed with the suffix -RR), provide 0.2-mil- (0.005-mm-) thick copper coating on base metal before applying brass, bronze, nickel, or chromium plated finishes.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Mount hardware units at heights indicated in following applicable publications, except as specifically indicated or required to comply with governing regulations and except as otherwise directed by Architect.
 - 1. "Recommended Locations for Builders Hardware for Standard Steel Doors and Frames" by the Door and Hardware Institute.
 - 2. NWWDA Industry Standard I.S.1.7, "Hardware Locations for Wood Flush Doors."
- B. Install each hardware item in compliance with the manufacturer's instructions and recommendations. Where cutting and fitting is required to install hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation or application of surface protection with finishing work specified in the Division 9 Sections. Do not install surface-mounted items until finishes have been completed on the substrates involved.
- C. Set units level, plumb, and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
- D. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.
- E. Set thresholds for exterior doors in full bed of butyl-rubber or polyisobutylene mastic sealant complying with requirements specified in Division 7 Section "Joint Sealers."
- F. Weatherstripping and Seals: Comply with manufacturer's instructions and recommendations to the extent installation requirements are not otherwise indicated.

3.02 ADJUSTING, CLEANING, AND DEMONSTRATING

- A. Adjust and check each operating item of hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate freely and smoothly or as intended for the application made.
 - 1. Where door hardware is installed more than one month prior to acceptance or occupancy of a space or area, return to the installation during the week prior to

acceptance or occupancy and make final check and adjustment of all hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of hardware and doors. Adjust door control devices to compensate for final operation of heating and ventilating equipment.

- B. Clean adjacent surfaces soiled by hardware installation.
- C. Instruct Owner's personnel in the proper adjustment and maintenance of door hardware and hardware finishes.
- D. Six-Month Adjustment: Approximately six months after the date of Substantial Completion, the Installer, accompanied by representatives of the manufacturers of latchsets and locksets and of door control devices, and of other major hardware suppliers, shall return to the Project to perform the following work:
 1. Examine and re-adjust each item of door hardware as necessary to restore function of doors and hardware to comply with specified requirements.
 2. Consult with and instruct Owner's personnel in recommended additions to the maintenance procedures.
 3. Replace hardware items that have deteriorated or failed due to faulty design, materials, or installation of hardware units.
 4. Prepare a written report of current and predictable problems (of substantial nature) in the performance of the hardware.

3.03 HARDWARE SCHEDULE

- A. General: Provide hardware for each door to comply with requirements of hardware set numbers indicated in door schedule, and in the following schedule of hardware sets.

3.04 SUBCONTRACTOR COORDINATION

- A. Door and hardware suppliers shall work with security systems subcontractor to coordinate work and allow for installation of electronic systems either during or after construction.
- B. Any conflicts between door hardware and security systems shall be adjudicated by the General Contractor.

HARDWARE SCHEDULE

PUBLIC AREA DOORS

TYPE 1 – EACH DOOR SHALL HAVE (OFFICE/PRIVACY):

- 1 – ½ PAIR FULL MORTISE BUTT HINGES
- 1 ENTRY LOCKSET WITH LEVER HANDLES
- 1 CLOSER
- 1 SET WEATHERSTRIPPING
- 1 THRESHOLD

TYPE 2 – HANDICAP BATHROOM: (PRIVATE)

- 1 – 1/2 PAIR FULL MORTISE BUTT HINGES
- 1 PRIVACY LOCKSET WITH LEVER HANDLES
- 1 STOP

1 CLOSER

TYPE 3 – EACH DOOR SHALL HAVE (SERVICE ROOM):

- 1 – ½ PAIR FULL MORTISE BUTT HINGES
- 1 STOREROOM LOCKSET WITH LEVER HANDLES
- 1 CLOSER
- 1 SET WEATHERSTRIPPING
- 1 THRESHOLD

TYPE 4 – EACH DOOR SHALL HAVE (PUBLIC TOILETS):

- 1 – ½ PAIR FULL MORTISE BUTT HINGES
- 1 PUSH/PULL PLATE
- 1 CLOSER
- 1 SET WEATHERSTRIPPING

END OF SECTION

SECTION 08711
AUTOMATIC DOOR EQUIPMENT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications, apply to this section.

1.02 DESCRIPTION OF WORK

- A. Electric operated door equipment.
- B. Control system.

1.03 RELATED WORK

- A. Section 08710 - Hardware
- B. Section 16721 - Fire Alarm and Smoke Detection System: Electrical connection to activate door closers.

1.04 REFERENCES

- A. ANSI/BHMA A156.1 – Power Operated Pedestrian Door
- B. ANSI A117.1 – Specifications for Making Building and Facilities Accessible to and Usable by Physically Handicapped People.
- C. NFPA 101 – Life Safety Code
- D. UL 235 – Electric Door, Drapery, Gate, Louver and Window Operators and Systems.

1.05 SYSTEM DESCRIPTION

- A. Automatic Door Equipment: Electrically operated with photoelectric control device.
- B. Door: Single leaf swinging, double leaf swinging, double leaf double egress swinging.

1.06 PERFORMANCE

- A. Automatic door equipment to accommodate medium pedestrian traffic and weight of doors providing a minimum of 44" clear opening.
- B. Equipment: UL 235 listed.
- C. Provide fully adjustable operators for opening and closing speeds, checking speeds, hold open time and cancellation on activation of fire alarm and smoke detection system.

AUTOMATIC DOOR EQUIPMENT
SECTION 08711-1

1.07 QUALITY ASSURANCE

- A. Conform to applicable code for automatic release of control drive unit to permit manual opening of doors.
- B. Conform to applicable sections of Chapter 5 of NFPA 101.

1.08 REGULATORY REQUIREMENTS

- A. Conform to all applicable codes for automatic release of control drive unit to permit manual opening of doors.
- B. Conform to applicable sections of Chapter 5 of NFPA 101.

1.09 SUBMITTALS

- A. Submit shop drawings and product data under provisions of Section 01300.
- B. Indicate on shop drawings, layout, dimensions, head, jamb, and sill conditions, elevations, components, anchorage, recesses, materials and finishes.
- C. Identify installation tolerances required, assembly conditions, routing of service lines and conduit, and locations of operating components and boxes.
- D. Provide product data on system components, sizes, features, and finishes.

1.10 WARRANTY

- A. Provide five (5) year manufacturer's warranty under provisions of Section 01740.

1.11 MAINTENANCE

- A. Furnish complete service and maintenance of operating equipment for one (1) year from date of Substantial Completions.

1.12 MAINTENANCE MATERIALS

- A. Provide wrenches and tools required for maintenance of equipment.

PART 2 - GENERAL**2.01 ACCEPTABLE MANUFACTURERS**

- A. Besam. Full breakout
- B. Door-o-Matic Full breakout
- C. Horton Full breakout
- D. Substitutions: Under provisions of Section 01600.

2.02 MANUFACTURED DOOR UNIT

- A. Surface Applied Operator with connecting arms and linkage shall provide positive control of door through entire swing; units shall permit use of butt hung and center pivot doors.
1. Mounting: The operator header shall be mounted to the surface of the existing door frame or wall.
 2. Door Arms: Connecting hardware shall be a double arm arrangement that can either push the door or pull the door open to suit the job condition. When the operator mounting is on the pull side and adjacent wall is within 4" (102 mm) of the door frame, specify a parallel arm.
 3. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, non-staining, non-bleeding fasteners and accessories compatible with adjacent materials.
- B. HEADER CASE: Shall be a side access extruded aluminum case. Standard header size shall be 4" x 6" (102 mm x 152 mm) with optional 6" x 6" (152 mm x 152 mm).
- C. OPERATOR: The Electric Operating Mechanism shall be Series 7000: Operator shall be mounted and concealed in an extruded aluminum case for smooth and quiet operation. Maximum current draw shall not exceed 3.15 amps.
1. Opening Action: Shall be accomplished by a 1/15 HP D.C. permanent magnet motor working through reduction gears to the output shaft.
 2. Field Adjustable Spring Closing Action: shall be accomplished by a field replaceable spring. When the door is in the closing mode or fully closed, motor voltage shall not be required and will be off. The door can be manually operated with power on or off without damage to the operator.
 3. Independent Adjustable Closing and Latching Speed Control: The operator shall employ a rheostat module to allow for independent field adjustment of closing and latching speeds using the motor as a dynamic brake.
 4. Field Adjustable Open Stop: The operator shall provide a field adjustable open stop to accommodate opening angles from 80 to 135 degrees without the need for additional components.
 5. Consistent Cycle: The operator shall deliver an even, consistent open force across the entire transition from door fully closed to door open check. Additionally, the range of the force shall be field adjustable to accommodate a wide range of on-site conditions.
 6. Manual Use: The operator shall function as a manual door closer in the direction of swing with or without electrical power. The operator shall deliver an even, consistent open force across the entire transition from door fully closed to door fully open.
 7. Controller Protection: The controller shall incorporate the following features to ensure trouble free operation:
 - a. Automatic Reset upon power up.
 - b. Main fuse protection.
 - c. Electronic surge protection.
 - d. Internal power supply protection.
 - e. Resettable sensor supply fuse protection.
 8. Push Button Interface: The controller shall have push button switches with to allow for selection or change of the following parameters: carpet or timer logic, single or

dual door, activation options, normal back check or large back check, push-to-open assist on/off.

9. Soft Start/Stop: A "soft-start" "soft-stop" motor driving circuit shall be provided for smooth normal opening and recycling.
10. Control Switch: Automatic door operators shall be equipped with a three position function switch to control the operation of the door. Control switch shall provide three modes of operation, Automatic, Off, and Hold-Open.
11. Master Control: Shall incorporate the following features:
 - a. Adjustable time delay of 2 to 30 seconds (ANSI A156.19 requirement is 5 second minimum time delay).
 - b. Infinite adjustment to opening and open check speeds including adjusting the opening force without affecting the opening speed.
 - c. Immediate reversal of door motion without undue strain on the drive train. This will be accomplished by supplying stepped voltage to the motor. The door shall reverse when closing if an object stops the door.
 - d. Motor Protection Circuit: A locked door motor protection circuit will be supplied that will shut off current to the motor when the door is inadvertently locked or otherwise prevented from opening.

2.05 RELATED EQUIPMENT

- A. ACTIVATING DEVICE: Shall be located on each side of the opening as per ANSI Safety Standard A117 and shall be hardwired to door operator controls. Optional wireless radio control. Activating device shall be momentary contact microswitch assembly in one of the following configurations:
 1. PUSH PLATE: 6" diameter (152 mm) round or 4 ½" (114 mm) square, stainless steel switch. Wall mounted. Optional engravings shall be:
 - a. International symbol for accessibility and "Press To Open".
 - b. International symbol for accessibility only.
 - c. "Press To Open" only.

2.06 RELATED WORK REQUIREMENTS

- A. ELECTRICAL: To be provided under Division 16: 120 or 220 VAC, 60 cycle, 1 phase, 10 amps for doors with operators in pairs, 5 amps for single doors.

2.07 MATERIALS, FINISHES AND FABRICATION

- A. EXTRUDED ALUMINUM: ASTM B221, 6063-T5 alloy and temper, anodized: Structural Header Sections: Minimum 1/8" (3 mm) thickness.
- B. FINISHES (for all exposed aluminum surfaces): Shall be one of the following:
 1. Color as selected by the Architect.
- C. OPERATOR CONSTRUCTION: Electromechanical.

PART 3 - EXECUTION

AUTOMATIC DOOR EQUIPMENT SECTION 08711-4

05/15/2020

3.01 INSPECTION

- A. Verify that openings and recesses are ready to receive work and opening dimensions are as indicated on shop drawings.
- B. Verify that power supply is available to power operated devices.
- C. Beginning of installation means acceptance of substrate.

3.02 INSTALLATION

- A. Install equipment in accordance with manufacturer's instructions.
- B. Coordinate installation of components with related and adjacent work, level and plumb.

3.03 ADJUSTING AND CLEANING

- A. Clean exposed surfaces.
- B. Adjust door equipment for correct function and smooth operation.

3.04 DEMONSTRATION

- A. Demonstrate operation, operating components, adjustment features, and lubrication requirements to Owner.

3.05 PROTECTION

- A. Protect finished installation.

END OF SECTION

SECTION 08800
GLAZING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 DESCRIPTION OF WORK

- A. This Section includes glazing for the following products, including those specified in other Sections where glazing requirements are specified by reference to this Section:
 - 1. Window units.
 - 2. Sliding Glass Doors
 - 3. Glazed curtain walls.
 - 4. Entrances and other doors.
 - 5. Storefront construction.
 - 6. Fire-rated glass units

1.03 RELATED SECTIONS

- A. Division 8 Section "Hollow Metal Doors and Frames".
- B. Division 8 Section "Wood doors".
- C. Division 8 Section "Stile and Rail Wood Doors".
- D. Division 8 Section " Sliding Aluminum Framed Glass Doors".
- E. Division 8 Section " Aluminum Entrances and Storefronts".
- F. Division 8 Section "Aluminum Windows".
- G. Division 8 Section "Vinyl Windows".
- H. Division 8 Section "Aluminum French Doors".
- I. Division 8 Section "Automatic Entrance Doors".
- J. Division 8 Section "Glazed Aluminum Curtain Walls".

1.04 DEFINITIONS

- A. Manufacturer is used in this Section to refer to a firm that produces primary glass or fabricated glass as defined in the referenced glazing standard.
- B. Deterioration of Coated Glass: Defects developed from normal use that are attributed to the manufacturing process and not to causes other than glass breakage and practices for maintaining and cleaning coated glass contrary to manufacturer's directions. Defects include peeling, cracking, and other indications of deterioration in metallic coating.
- C. Deterioration of Laminated Glass: Defects developed from normal use that are attributed to the manufacturing process and not to glass breakage and practices for maintaining and cleaning laminated glass contrary to manufacturer's directions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated glass standard.

- D. Deterioration of Insulating Glass: Failure of the hermetic seal under normal use due to causes other than glass breakage and improper practices for maintaining, and cleaning insulating glass. Evidence of failure is the obstruction of vision by dust, moisture, or film on the interior surfaces of glass. Improper practices for maintaining and cleaning glass do not comply with the manufacturer's directions.

1.05 SYSTEM PERFORMANCE REQUIREMENTS

- A. General: Provide glazing systems that are produced, fabricated, and installed to withstand normal thermal movement, wind loading, and impact loading (where applicable), without failure including loss or glass breakage attributable to the following: defective manufacture, fabrication, and installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; and other defects in construction.
- B. Glass Design: Glass thicknesses indicated on Drawings are for detailing only. Confirm glass thicknesses by analyzing Project loads and in-service conditions. Provide glass lites for the various size openings in the thicknesses and strengths (annealed or heat-treated) to meet or exceed the following criteria:
1. Minimum glass thickness, nominally, of lites in exterior walls is 6 mm.
 2. Tinted and heat-absorbing glass thicknesses for each tint indicated are the same throughout Project.
 3. Minimum glass thicknesses of lites, whether composed of annealed or heat-treated glass, are selected so the worst-case probability of failure does not exceed the following:
 - a. 8 lites per 1000 for lites set vertically or not over 15 degrees off vertical and under wind action. Determine minimum thickness of monolithic annealed glass according to ASTM E 1300. For other than monolithic annealed glass, determine thickness per glass manufacturer's standard method of analysis including applying adjustment factors to ASTM E 1300 based on type of glass.
 - b. 1 lite per 1000 for lites set over 15 degrees off vertical and under action of wind or snow.
- C. Normal thermal movement results from the following maximum change (range) in ambient and surface temperatures acting on glass-framing members and glazing components. Base engineering calculation on materials' actual surface temperatures due to both solar heat gain and nighttime sky heat loss.
1. Temperature Change (Range): 120 F deg (67 C deg), ambient; 180 F deg (100 C deg), material surfaces.

1.06 SUBMITTALS

- A. General: Submit the following according to Conditions of Contract and Division 1 Specification Sections.
- B. Product data for each glass product and glazing material indicated.
- C. Samples for verification purposes of 12-inch (300 mm) square samples of each type of glass indicated except for clear monolithic glass products, and 12-inch (300 mm) long samples of each color required (except black) for each type of sealant or gasket exposed to view. Install

sealant or gasket sample between two strips of material representative in color of the adjoining framing system.

- D. Product certificates signed by glazing materials manufacturers certifying that their products comply with specified requirements.
 - 1. Separate certifications are not required for glazing materials bearing manufacturer's permanent labels designating type and thickness of glass, provided labels represent a quality control program of a recognized certification agency or independent testing agency acceptable to authorities having jurisdiction.
- E. Compatibility and adhesion test reports from sealant manufacturer indicating that glazing materials were tested for compatibility and adhesion with glazing sealants. Include sealant manufacturer's interpretation of test results relative to sealant performance and recommendations for primers and substrate preparation needed for adhesion.
- F. Compatibility test report from manufacturer of insulating glass edge sealant indicating that glass edge sealants were tested for compatibility with other glazing materials including sealants, glazing tape, gaskets, setting blocks, and edge blocks.
- G. Product test reports for each type of glazing sealant and gasket indicated, evidencing compliance with requirements specified.
- H. Maintenance data for glass and other glazing materials to include in Operating and Maintenance Manual specified in Division 1.
- I. Submit required documentation to show compliance with State of Florida Building Code requirements and Miami-Dade Notice of Approval.

1.07 QUALITY ASSURANCE

- A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below, except where more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.
 - 1. FGMA Publications: "FGMA Glazing Manual."
 - 2. AAMA Publications: AAMA TIR-A7 "Sloped Glazing Guidelines" and "Glass Design for Sloped Glazing."
 - 3. LSGA Publications: "LSGA Design Guide."
 - 4. SIGMA Publications: TM-3000 "Vertical Glazing Guidelines" and TB-3001 "Sloped Glazing Guidelines."
- B. Safety Glass: Products complying with ANSI Z97.1 and testing requirements of 16 CFR Part 1201 for Category II materials.
 - 1. Subject to compliance with requirements, provide safety glass permanently marked with certification label of Safety Glazing Certification Council (SGCC) or other certification agency acceptable to authorities having jurisdiction.
- C. Fire-Resistive Glazing Products for Door Assemblies: Products identical to those tested per ASTM E 152, labeled and listed by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.
- D. Fire-Resistive Glazing Products for Window Assemblies: Products identical to those tested per ASTM E 163, labeled and listed by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.

- E. Insulating Glass Certification Program: Provide insulating glass units permanently marked either on spacers or at least one component lite of units with appropriate certification label of inspecting and testing agency indicated below:
 - 1. Insulating Glass Certification Council (IGCC).
 - 2. Associated Laboratories, Inc. (ALI).
 - 3. National Certified Testing Laboratories (NCTL).
- F. Glazier Qualifications: Engage an experienced glazier who has completed glazing similar in material, design, and extent to that indicated for Project with a record of successful in-service performance.
- G. Single-Source Responsibility for Glass: Obtain glass from one source for each product indicated below:
 - 1. Primary glass of each (ASTM C 1036) type and class indicated.
 - 2. Heat-treated glass of each (ASTM C 1048) condition indicated.
 - 3. Laminated glass of each (ASTM C 1172) kind indicated.
 - 4. Insulating glass of each construction indicated.
- H. Single-Source Responsibility for Glazing Accessories: Obtain glazing accessories from one source for each product and installation method indicated.
- I. Preconstruction Compatibility and Adhesion Testing: Submit to sealant manufacturers, samples of each glass, gasket, glazing accessory, and glass-framing member that will contact or affect glazing sealants for compatibility and adhesion testing as indicated below:
 - 1. Use test methods standard with sealant manufacturer to determine if priming and other specific preparation techniques are required for rapid, optimum glazing sealants adhesion to glass and glazing channel substrates.
 - a. Perform tests under normal environmental conditions during installation.
 - 2. Submit not less than nine pieces of each type and finish of glass-framing members and each type, class, kind, condition, and form of glass (monolithic, laminated, insulating units) for adhesion testing, as well as one sample of each glazing accessory (gaskets, setting blocks and spacers) for compatibility testing.
 - 3. Schedule sufficient time to test and analyze results to prevent delay in the Work.
 - 4. Investigate materials failing compatibility or adhesion tests and get sealant manufacturer's written recommendations for corrective measures, including using special primers.
 - 5. Testing is not required when glazing sealant manufacturer can submit required preparation data that is acceptable to Architect and is based on previous testing of current sealant products for adhesion to and compatibility with submitted glazing materials.
- J. Pre-Installation Conference: Conduct conference at Project site to comply with requirements of Division 1 Section "Project Meetings."

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Protect glazing materials to comply with manufacturer's directions and as needed to prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.
 - 1. Where insulating glass units will be exposed to substantial altitude changes, comply with insulating glass fabricator's recommendations for venting and sealing to avoid hermetic seal ruptures.

1.09 PROJECT CONDITIONS

- A. Environmental Conditions: Do not proceed with glazing when ambient and substrate temperature conditions are outside the limits permitted by glazing materials manufacturer or when glazing channel substrates are wet from rain, frost, condensation, or other causes.
 - 1. Install liquid sealants at ambient and substrate temperatures above 40 deg F (4 deg C).

1.10 WARRANTY

- A. General: Warranties specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.
- B. Manufacturer's Warranty on Coated Glass Products: Submit written warranty signed by coated glass manufacturer agreeing to furnish replacements for those coated glass units that deteriorate as defined in "Definitions" article, f.o.b. point of manufacture, freight allowed Project site, within specified warranty period indicated below. Warranty covers only deterioration due to normal conditions of use and not to handling, installing, and cleaning practices contrary to glass manufacturer's published instructions.
 - 1. Warranty Period: Manufacturer's standard but not less than 5 years after date of Substantial Completion.
- C. Manufacturer's Warranty on Laminated Glass: Submit written warranty signed by insulating glass manufacturer agreeing to furnish replacements for those laminated glass units that deteriorate as defined in the "Definitions" article, f.o.b. point of manufacture, freight allowed Project site, within specified warranty period indicated below. Warranty covers only deterioration due to normal conditions of use and not to handling, installing, and cleaning practices contrary to glass manufacturer's published instructions.
 - 1. Warranty Period: Manufacturer's standard but not less than 5 years after date of Substantial Completion.
- D. Manufacturer's Warranty on Insulating Glass: Submit written warranty signed by manufacturer of insulating glass agreeing to furnish replacements for insulating glass units that deteriorate as defined in "Definitions" article, f.o.b. point of manufacture, freight allowed Project site, within specified warranty period indicated below. Warranty covers only deterioration due to normal conditions of use and not to handling, installing, protecting, and maintaining practices contrary to glass manufacturer's published instructions.
 - 1. Warranty Period: Manufacturer's standard but not less than 10 years after date of Substantial Completion.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, products manufactured by the following;
1. Viracon
 2. PPG Industries
 3. Guardian Industries
 4. Pilkington/ Libby Owens Ford
 5. Cardinal Glass Industries
 6. Oldcastle Glass
 7. Vetrotech Saint Gobain

2.02 PRIMARY FLOAT GLASS PRODUCTS

- A. Float Glass: ASTM C 1036, Type I (transparent glass, flat), Class as indicated below, and Quality q3 (glazing select).
1. Class 1 (clear) unless otherwise indicated.
 2. Class 2 (tinted, heat-absorbing, and light-reducing) where indicated.
 3. Class as indicated in each Product Data Sheet at end of this Section.
- B. Refer to Primary Clear Float Glass Product Data Sheet for Class 1 uncoated tinted glass for monolithic glazing.
- C. Refer to Primary Tinted Float Glass Product Data Sheet for tint color and nominal performance characteristics of Class 2 uncoated tinted glass for monolithic glazing relative to visible light transmittance, U-values, shading coefficient, and visible reflectance.
- D. Refer to coated glass product requirements for tint color and performance characteristics of coated tinted glass for monolithic glazing relative to visible light transmittance, U-values, shading coefficient, and visible reflectance.
- E. Refer to requirements for sealed insulating glass units for performance characteristics of assembled units composed of tinted glass, coated or uncoated, relative to visible light transmittance, U-values, shading coefficient, and visible reflectance.

2.03 HEAT-TREATED FLOAT GLASS PRODUCTS, GENERAL

- A. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed, unless otherwise indicated.
- B. Fabrication Process: By vertical (tong-held) or horizontal (roller-hearth) process, at manufacturer's option, except provide horizontal process where indicated as tongless or free of tong marks.

2.04 HEAT-TREATED FLOAT GLASS

- A. Uncoated, Clear, Heat-Treated Float Glass: ASTM C 1048, Condition A (uncoated surfaces), Type I (transparent glass, flat), Class 1 (clear), Quality q3 (glazing select), kind as indicated below.
1. Kind HS (heat strengthened) where indicated.

2. Kind FT (fully tempered) where indicated.
- B. Uncoated, Tinted, Heat-Treated Float Glass: ASTM C 1048, Condition A (uncoated surfaces), Type I (transparent glass, flat), Class 2 (tinted heat-absorbing and light-reducing), Quality q3 (glazing select), with tint color and performance characteristics for 6 mm thick glass matching those indicated for annealed primary tinted float glass; kind as indicated below:
1. Kind HS (heat strengthened) where indicated.
 2. Kind FT (fully tempered) where indicated.
- C. Coated, Clear, Heat-Treated Float Glass: ASTM C 1048, Condition C (other coated glass), Type I (transparent glass, flat), Class 1 (clear), Quality q3 (glazing select), with coating type and performance characteristics complying with requirements specified under coated glass products; kind as indicated below:
1. Kind HS (heat strengthened) where indicated.
 2. Kind FT (fully tempered) where indicated.
- D. Coated, Tinted, Heat-Treated Float Glass: ASTM C 1048, Condition C (other coated glass), Type I (transparent glass, flat), Class 2 (tinted heat-absorbing and light-reducing), Quality q3 (glazing select), with kind, coating type, and performance characteristics complying with requirements specified under coated glass products.
- E. Available Manufacturers: Subject to compliance with requirements, manufacturers offering heat-treated glass products that may be incorporated in the Work include, but are not limited to, the following companies.
1. AFG Industries, Inc.
 2. Artistic Glass Products Co.
 3. Cardinal IG.
 4. Saint-Gobain.
 5. Falconer Glass Industries.
 6. Guardian Industries Corp.
 8. PPG Industries, Inc.
 9. Spectrum Glass Products, Inc.
 10. Tempglass.
 11. Viracon, Inc.
 12. Fire Lite Glass Inc. mfg by Nippon Elec. Co.
 13. Oldcastle Glass

2.05 CERAMIC-COATED SPANDREL GLASS PRODUCTS

- A. Ceramic-Coated Spandrel Glass: ASTM C 1048, Condition B (spandrel glass, one-surface ceramic coated), Type I (transparent glass, flat), Class 1 (clear), Quality q3 (glazing select), and complying with requirements specified including those in Ceramic-Coated Spandrel Glass Product Data Sheet at the end of this Section.
- B. Fallout Resistance: Provide spandrel units identical to those passing fallout resistant test for spandrel glass specified in ASTM C 1048.

2.06 COATED MONOLITHIC GLASS PRODUCTS

- A. General: Performance characteristics designated for coated monolithic glass products are nominal values based on manufacturer's published test data for glass products 6 mm thick, unless otherwise indicated. Comply with requirements specified including those for primary

and heat-treated float glass products as they relate to properties of glass to which coatings are applied.

1. U-values are expressed as Btu/hr x sq. ft. x deg F (W/sq. m x K).
 2. Provide heat-treated coated float glass of kind indicated or, if not otherwise indicated, Kind HS (heat strengthened) where recommended by manufacturer to comply with system performance requirements specified and Kind FT (fully tempered) where coated safety glass is designated or required.
 3. Provide Kind HS (heat-strengthened) coated float glass except provide Kind FT (fully tempered) products where coated safety glass is designated or required.
- B. Pyrolytically Coated Glass Products: Float glass with solar-reflective metallic oxide coating applied pyrolytically either during initial manufacture or during heat treatment, complying with requirements specified in Pyrolytically Coated Monolithic Glass Product Data Sheet at the end of this Section.
- C. Sputter-Coated Glass Products: Float glass with metallic oxide or metallic nitride coating deposited by magnetic sputtering process after manufacture and heat treatment (if any), complying with requirements specified in Sputter-Coated Monolithic Glass Product Data Sheet at the end of this Section.
- D. Coated, Heat-Treated Spandrel Glass: Class of glass, tint (if any), and type, color, and location of coating matching that specified for vision lites in Coated Monolithic Glass Product Data Sheet and complying with the following:
1. Kind HS (heat strengthened).
 2. Kind FT (fully tempered).
 3. Fallout Resistance: Provide spandrel units identical to those passing ASTM C 1048 fallout resistance test for spandrel glass.
 4. Factory apply manufacturer's standard opacifier of the following material to second surface of lites with resulting products complying with GTA Specification No. 89-1-6.
 - a. Manufacturer's standard opacifier material.

2.07 PATTERNED GLASS PRODUCTS

- A. Patterned Glass: ASTM C 1036, Type II (patterned and wired glass, flat), Class 1 (clear), Form 3 (patterned), Quality q8 (glazing), Finish f1 (patterned one side), of pattern indicated in Rolled Glass Product Data Sheet at end of this Section.
- B. Tempered Patterned Glass: ASTM C 1048, Kind FT (fully tempered), Type II (patterned glass, flat), Class 1 (clear), Form 3 (patterned), Quality q8 (glazing), Finish f1 (patterned one side), of pattern in Patterned Glass Product Data Sheet at the end of this Section.

2.08 LAMINATED GLASS PRODUCTS

- A. Laminated Glass Products: Comply with ASTM C 1172 for kinds of laminated glass indicated and other requirements specified, including those in Laminated Glass Product Data Sheet at the end of this Section. Refer to primary and heat-treated glass requirements relating to properties of glass products comprising laminated glass products.
- B. Interlayer: Interlayer material as indicated below, in clear or colors, and of thickness indicated with a proven record of no tendency to bubble, discolor, or lose physical and mechanical properties after laminating glass lites and installation.
1. Interlayer Material: Polyvinyl butyral sheets.

2. Available Products: Subject to compliance with requirements, the plastic interlayer products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Polyvinyl Butyral Interlayer:
 - 1) Saflex, Monsanto Co.
 - 2) Butacite, E. I. du Pont de Nemours & Co., Inc.
- C. Laminating Process: Fabricate laminated glass to produce glass free of foreign substances and air or glass pockets as follows:
 1. Laminate lites with polyvinyl butyral interlayer in autoclave with heat plus pressure.
 2. Laminate lites with urethane acrylate resin by exposing assembled units to ultraviolet light after pumping interlayer material into space between lites.

2.09 INSULATING GLASS PRODUCTS

- A. Sealed Insulating Glass Units: Preassembled units consisting of organically sealed lites of glass separated by dehydrated air spaces complying with ASTM E 774 and with other requirements indicated, including those in Insulating Glass Product Data Sheet at the end of this Section.
 1. For properties of individual glass lites making up units, refer to requirements specified elsewhere in this Section applicable to types, classes, kinds, and conditions of glass products comprising lites of insulating glass units.
 2. Provide heat-treated, coated float glass of kind indicated or, if not otherwise indicated, Kind HS (heat strengthened) where recommended by manufacturer to comply with system performance requirements specified and Kind FT (fully tempered) where safety glass is designated or required.
 3. Performance characteristics designated for coated insulating glass are nominal values based on manufacturer's published test data for units with lites 6 mm thick and nominal 1/2-inch (13 mm) dehydrated space between lites, unless otherwise indicated.
 4. U-values are expressed as Btu/hr x sq. ft. x deg F (W/sq. m x K).
 5. Shall comply with ASTM E 2190 Standard Specification for Insulating Glass Unit Performance and Evaluation. Units shall be certified for compliance by the IGCC in accordance with the above ASTM test method

2.10 FIRE-RESISTIVE GLAZING PRODUCTS

- A. Fire-Resistive, Ceramic Glazing Material: Proprietary product in the form of clear flat sheets of 3/16 inch (5 mm) nominal thickness, weighing 2.5 psf (4.7 kg/sq m), permanently labeled with appropriate marks of testing and inspecting agency, acceptable to authorities having jurisdiction, showing product complies with fire-resistive installation indicated, and as follows:
 1. Polished on both surfaces, transparent with visible light transmission of 76.9 percent.
 2. Unpolished on both surfaces, transparent.
 3. Patterned (textured) on one surface, translucent.
 4. Product: Subject to compliance with requirements, provide the following product manufactured by Nippon Electric Glass Co., Ltd. and distributed by Technical Glass Products:
 - a. Premium FireLite.

- b. Standard FireLite.
- c. Patterned FireLite.

2.11 ELASTOMERIC GLAZING SEALANTS

- A. General: Provide products of type indicated, complying with the following requirements:
 - 1. Compatibility: Select glazing sealants and tapes of proven compatibility with other materials they will contact, including glass products, seals of insulating glass units, and glazing channel substrates, under conditions of installation and service, as demonstrated by testing and field experience.
 - 2. Suitability: Comply with sealant and glass manufacturer's recommendations for selecting glazing sealants and tapes that are suitable for applications indicated and conditions existing at time of installation.
 - 3. Colors: Provide color of exposed joint sealants to comply with the following:
 - a. Provide selections made by Architect from manufacturer's full range of standard colors for products of type indicated.
- B. Elastomeric Glazing Sealant Standard: Provide manufacturer's standard chemically curing, elastomeric sealants of base polymer indicated that comply with ASTM C 920 requirements indicated on each Elastomeric Glazing Sealant Product Data Sheet at the end of this Section, including those referencing ASTM classifications for Type, Grade, Class and Uses.
 - 1. Additional Movement Capability: Where additional movement capability is specified in Elastomeric Glazing Sealant Product Data Sheet, provide products, when tested for adhesion and cohesion under maximum cyclic movement per ASTM C 719, with the capability to withstand the specified percentage change in the joint width existing at time of installation and remain in compliance with other requirements of ASTM C 920 for uses indicated.
- C. Glazing Sealant for Fire-Resistant Glazing Products: Identical to product used in test assembly to obtain fire-resistive rating.

2.12 GLAZING TAPES

- A. Back-Bedding Mastic Glazing Tape: Preformed, butyl-based elastomeric tape with a solids content of 100 percent, nonstaining and nonmigrating in contact with nonporous surfaces, with or without spacer rod as recommended by tape and glass manufacturers for application indicated, packaged on rolls with a release paper backing, and complying with AAMA 800 for products indicated below:
 - 1. AAMA 804.1.
 - 2. AAMA 806.1.
 - 3. AAMA 807.1.
- B. Expanded Cellular Glazing Tape: Closed-cell, polyvinyl chloride foam tape, factory coated with adhesive on both surfaces, packaged on rolls with release liner protecting adhesive, and complying with AAMA 800 for product 810.5.
- C. Available Products: Subject to compliance with requirements, glazing tape that may be incorporated in the Work include, but is not limited to, the following:
 - 1. Back-Bedding Mastic Glazing Tape Without Spacer Rod:
 - a. PTI 303 Glazing Tape (shimless), Protective Treatments, Inc.
 - b. S-M 5700 Poly-Glaze Tape Sealant, Schnee-Morehead, Inc.
 - c. Tremco 440 Tape, Tremco Inc.

- d. Extru-Seal, Pecora Corp.
 - e. PTI 606 Architectural Sealant Tape, Protective Treatments, Inc.
 - f. Dyna-Seal, Pecora Corp.
 - g. PTI 626 Architectural Sealant Tape, Protective Treatments, Inc.
 - h. S-M 5710 H.P Poly-Glaze Tape Sealant, Schnee-Morehead, Inc.
 - i. SST-800 Tape, Tremco, Inc.
2. Back-Bedding Mastic Glazing Tape With Spacer Rod:
- a. PTI 303 Glazing Tape (with shim), Protective Treatments, Inc.
 - b. Pre-shimmed Tremco 440 Tape, Tremco, Inc.
 - c. PTI 606 Architectural Sealant Tape, Protective Treatments, Inc.
3. Expanded Cellular Glazing Tape:
- a. Norseal V-980 Closed-Cell Glazing Tape, Norton Company.

2.13 MISCELLANEOUS GLAZING MATERIALS

- A. General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials involved for glazing application indicated, and with a proven record of compatibility with surfaces contacted in installation.
- B. Cleaners, Primers and Sealers: Type recommended by sealant or gasket manufacturer.
- C. Setting Blocks: Elastomeric material with a Shore A durometer hardness of 85 plus or minus 5.
- D. Spacers: Elastomeric blocks or continuous extrusions with a Shore A durometer hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
- E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side-walking).
- F. Plastic Foam Joint Fillers: Preformed, compressible, resilient, nonstaining, nonextruding, nonoutgassing, strips of closed-cell plastic foam of density, size, and shape to control sealant depth and otherwise contribute to produce optimum sealant performance.
- G. Perimeter Insulation for Fire-Resistive Glazing: Identical to product used in test assembly to obtain fire-resistive rating.

2.14 FABRICATION OF GLASS AND OTHER GLAZING PRODUCTS

- A. Fabricate glass and other glazing products in sizes required to glaze openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with recommendations of product manufacturer and referenced glazing standard as required to comply with system performance requirements.
- B. Clean cut or flat grind vertical edges of butt-glazed monolithic lites in a manner that produces square edges with slight kerfs at junctions with indoor and outdoor faces.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine glass framing, with glazier present, for compliance with the following:
 - 1. Manufacturing and installation tolerances, including those for size, squareness, offsets at corners.
 - 2. Presence and functioning of weep system.
 - 3. Minimum required face or edge clearances.
 - 4. Effective sealing between joints of glass-framing members.
- B. Do not proceed with glazing until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings that are not firmly bonded to substrates.

3.03 GLAZING, GENERAL

- A. Comply with combined recommendations of manufacturers of glass, sealants, gaskets, and other glazing materials, except where more stringent requirements are indicated, including those in referenced glazing publications.
- B. Glazing channel dimensions as indicated on Drawings provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances. Adjust as required by Project conditions during installation.
- C. Protect glass from edge damage during handling and installation as follows:
 - 1. Use a rolling block in rotating glass units to prevent damage to glass corners. Do not impact glass with metal framing. Use suction cups to shift glass units within openings; do not raise or drift glass with a pry bar. Rotate glass lites with flares or bevels on bottom horizontal edges so edges are located at top of opening, unless otherwise indicated by manufacturer's label.
 - 2. Remove damaged glass from Project site and legally dispose of off site. Damaged glass is glass with edge damage or other imperfections that, when installed, weaken glass and impair performance and appearance.
- D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction sealant-substrate testing.
- E. Install elastomeric setting blocks in sill rabbets, sized and located to comply with referenced glazing standard, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- F. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- G. Provide spacers for glass sizes larger than 50 united inches (1250 mm) (length plus height) as follows:
 - 1. Locate spacers inside, outside, and directly opposite each other. Install correct size and spacing to preserve required face clearances, except where gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and comply with system performance requirements.

- 2. Provide 1/8-inch (3 mm) minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.
- H. Provide edge blocking to comply with requirements of referenced glazing publications, unless otherwise required by glass manufacturer.
- I. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.
- J. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.
- K. Square cut wedge-shaped gaskets at corners and install gaskets in manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

3.04 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 in one continuous length. Do not stretch tapes to make them fit opening.
- C. Where framing joints are vertical, cover these joints by applying tapes to heads and sills first and then to jambs. Where framing joints are horizontal, cover these joints by applying tapes to jambs and 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. Do not remove release paper from tape until just before each lite is installed.
- F. Apply heel bead of elastomeric sealant.
- G. 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.
- H. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.05 PROTECTION AND CLEANING

- A. Protect exterior glass from breakage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface. Remove nonpermanent labels, and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations including weld splatter. If, despite such protection, contaminating substances do come into contact with glass, remove them immediately as recommended by glass manufacturer.

- C. 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 build-up of dirt, scum, alkali deposits, or stains, and remove as recommended by glass manufacturer.
- D. Remove and replace glass that is broken, chipped, cracked, abraded, or damaged in any way, including natural causes, accidents and vandalism, during construction period.
- E. Wash glass on both faces in each area of Project not more than 4 days prior to date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended by glass manufacturer.

3.06 PROJECT SCHEDULE

All products shall comply with ASTM Standards and requirements in Part 2 above.

DELETE -The following schedule should be edited to suite the project. The first "architect recommended" insulated glazing system consists of a Light Gray colored glass with a high performance glazing panel that meets and exceeds code minimums at a slight premium over the standard recommended and darker glazing panel.

DELETE - (FIRST CHOICE – LIGHT GRAY "RECOMMENDED" HIGH VISIBILITY CODE COMPLIANT SYSTEM) DELETE NOT USED ITEMS BELLOW

PRODUCT DATA SHEET 1 - INSULATING LOW-E VISION GLASS

*(This insulated glass panel is equal to a PPG (Solar Ban) SB-70XL or a Guardian SNX-62/29 on Gray Glass.) *KEEP IN FOR COST CONTROL**

- A. Insulating Light Gray Low – E Vision Glass:
 - 1. 1" VNE30-63 as manufactured by Viracon.
 - a. Exterior Glass Ply: ¼" Optigray HS
 - b. Coating: VNE-63 on #2 Surface
 - c. Airspace: ½" Black Finish
 - d. Interior Glass Ply: ¼" Clear HS
 - 2. Performance Requirements
 - a. Visible Light Transmittance: - 44%
 - b. Exterior (Vis-Out) Reflectance: 7%
 - c. Winter U-Value: 0.29
 - d. Summer U-Value: .26
 - e. Solar Heat Gain Coefficient: 0.23
 - f. Light to Solar Gain Ratio: 1.91

PRODUCT DATA SHEET 2 – INSULATING LOW-E SPANDREL GLASS

(This insulated glass panel is equal to a PPG (Solar Ban) SB-70XL or a Guardian SNX-62/29 on Gray Glass.)

- A. Insulating Light Gray Low –E Spandrel Glass:
 - 1. 1" VNE30-63 w/ V9933 Warm Gray Spandrel as manufactured by Viracon.
 - a. Exterior Glass Ply: ¼" Optigray HS
 - b. Coating: VNE-63 on #2 Surface
 - c. Airspace: ½" Black Finish
 - d. Interior Glass Ply: ¼" Clear HS with V933 Warm Gray Spandrel #4
 - 2. Performance Requirements
 - a. Winter U-Value: 0.29

- b. Summer U-Value: .26

PRODUCT DATA SHEET 3 – INSULATING IMPACT-RATED VISION GLASS

(This insulated glass panel is equal to a PPG (Solar Ban) SB-70XL or a Guardian SNX-62/29 on Gray Glass.)

- A. Insulating Laminated Light Gray Low –E Vision Glass:
1. 1 5/16" VNE30-63 as manufactured by Viracon.
 - a. Exterior Glass Ply: ¼" Optigray HS
 - b. Coating: VNE-63 on #2 Surface
 - c. Airspace: ½" Black
 - d. Interior Ply #1: ¼" Clear HS
 - e. Interlayer: .090 PVB (or as required per framing test report)
 - f. Interior Ply #2: ¼" Clear HS
 2. Performance Requirements
 - a. Visible Light Transmittance: - 43%
 - b. Exterior (Vis-Out) Reflectance: 7%
 - c. Winter U-Value: 0.29
 - d. Summer U-Value: .26
 - e. Solar Heat Gain Coefficient: 0.23
 - f. Light to Solar Gain Ratio: 1.87

PRODUCT DATA SHEET 4 - INSULATING IMPACT-RATED SPANDREL GLASS

(This insulated glass panel is equal to a PPG (Solar Ban) SB-70XL or a Guardian SNX-62/29 on Gray Glass.)

- A. Insulating Laminated Light Gray Low –E Spandrel Glass:
1. 1 5/16" VNE30-63 as manufactured by Viracon.
 - a. Exterior Glass Ply: ¼" Optigray HS
 - b. Coating: VNE-63 on #2 Surface
 - c. Airspace: ½" Black Finish
 - d. Interior Glass Ply 1: ¼" Clear HS
 - e. Interlayer: .090 PVB (or as required by framing test report)
 - f. Interior Glass Ply 2: ¼" Clear HS with V933 Warm Gray Spandrel #6
 2. Performance Requirement
 - a. Winter U-Value: .29
 - b. Summer U-Value: .26

PRODUCT DATA SHEET 5 – LAMINATED IMPACT – RATED VISION GLASS

(This insulated glass panel is equal to a PPG (Solar Ban) SB-70XL or a Guardian SNX-62/29 on Gray Glass.)

- A. Laminated Light Gray Low –E Vision Glass:
1. 1" VLE30-70 as manufactured by Viracon.
 - a. Exterior Glass Ply: ¼" Optigray HS
 - b. Coating: VLE-70 #2 Surface
 - c. Interlayer: .090 PVB (or as required by framing test report)
 - d. Interior Glass Ply: ¼" Clear HS
 2. Performance Requirements
 - a. Visible Light Transmittance: - 48%
 - b. Exterior (Vis-Out) Reflectance: 8%
 - c. Winter U-Value: .95
 - d. Summer U-Value: .87
 - e. Solar Heat Gain Coefficient: .42
 - f. Light to Solar Heat Gain: 1.14

PRODUCT DATA SHEET 6 – LAMINATED IMPACT – RATED SPANDREL GLASS

(This insulated glass panel is equal to a PPG (Solar Ban) SB-70XL or a Guardian SNX-62/29 on Gray Glass.)

- A. Laminated Light Gray Low – E Spandrel Glass:
 - 1. 1" VLE30-70 as manufactured by Viracon.
 - a. Exterior Glass Ply: ¼" Optigray HS
 - b. Coating: VLE-70 #2 Surface
 - c. Interlayer: .090 PVB (or as required by framing test report)
 - d. Interior Glass Ply: ¼" Clear HS with V933 Warm Gray Spandrel #4
 - 2. Performance Requirements
 - a. Winter U-Value: .95
 - b. Summer U-Value: .87

DELETE - *The second insulated glazing system consists of a Dark Gray colored glass with a tinted glazing panel that meets FBC energy code minimums using a standard, darker glazing panel.*

DELETE - (SECOND CHOICE – DARK GRAY "STANDARD" CODE MINIMUM SYSTEM)

PRODUCT DATA SHEET 1 - INSULATING LOW-E VISION GLASS

*(This is equal to a PPG (Solar Ban) SB-60 or Guardian SN-68 on Gray Glass.) *KEEP IN FOR COST CONTROL**

- A. Insulating Gray Low – E Vision Glass:
 - 1. 1" VE3-2M as manufactured by Viracon.
 - a. Exterior Glass Ply: ¼" Gray HS
 - b. Coating: VE-2M on #2 Surface
 - c. Airspace: ½" Black Finish
 - d. Interior Glass Ply: ¼" Clear HS
 - 2. Performance Requirements
 - a. Visible Light Transmittance: - 35%
 - b. Exterior (Vis-Out) Reflectance: 6%
 - c. Winter U-Value: 0.29
 - d. Summer U-Value: .26
 - e. Solar Heat Gain Coefficient: 0.24
 - f. Light to Solar Gain Ratio: 1.46

PRODUCT DATA SHEET 2 – INSULATING LOW-E SPANDREL GLASS

(This is equal to a PPG (Solar Ban) SB-60 or Guardian SN-68 on Gray Glass.)

- A. Insulating Gray Low –E Spandrel Glass:
 - 1. 1" VE3-2M w/ V933 Warm Gray Spandrel as manufactured by Viracon.
 - a. Exterior Glass Ply: ¼" Gray HS
 - b. Coating: VE-2M on #2 Surface
 - c. Airspace: ½" Black Finish
 - d. Interior Glass Ply: ¼" Clear HS with V933 Warm Gray Spandrel #4
 - 2. Performance Requirements
 - a. Winter U-Value: 0.29
 - b. Summer U-Value: .26

PRODUCT DATA SHEET 3 – INSULATING IMPACT-RATED VISION GLASS

(This is equal to a PPG (Solar Ban) SB-60 or Guardian SN-68 on Gray Glass.)

- A. Insulating Laminated Gray Low –E Vision Glass:
 - 1. 1 5/16" VE3-2M as manufactured by Viracon.
 - a. Exterior Glass Ply: ¼" Gray HS
 - b. Coating: VE-2M on #2 Surface

- c. Airspace: ½" Black
- d. Interior Ply #1: ¼" Clear HS
- e. Interlayer: .090 PVB (or as required per framing test report)
- f. Interior Ply #2: ¼" Clear HS
- 2. Performance Requirements
 - a. Visible Light Transmittance: - 33%
 - b. Exterior (Vis-Out) Reflectance: 6%
 - c. Winter U-Value: .29
 - d. Summer U-Value: .26
 - e. Solar Heat Gain Coefficient: 0.24
 - f. Light to Solar Gain Ratio: 1.38

PRODUCT DATA SHEET 4 - INSULATING IMPACT-RATED SPANDREL GLASS

(This is equal to a PPG (Solar Ban) SB-60 or Guardian SN-68 on Gray Glass.)

- A. Insulating Laminated Gray Low –E Spandrel Glass:
 - 1. 1 5/16" VE3-2M with V933 Warm Gray Spandrel as manufactured by Viracon.
 - a. Exterior Glass Ply: ¼" Gray HS
 - b. Coating: VE-2M on #2 Surface
 - c. Airspace: ½" Black Finish
 - d. Interior Glass Ply 1: ¼" Clear HS
 - e. Interlayer: .090 PVB (or as required by framing test report)
 - f. Interior Glass Ply 2: ¼" Clear HS with V933 Warm Gray Spandrel #6
 - 2. Performance Requirement
 - a. Winter U-Value: .29
 - b. Summer U-Value: .26

PRODUCT DATA SHEET 5 – LAMINATED IMPACT – RATED VISION GLASS

(This is equal to a PPG (Solar Ban) SB-60 or Guardian SN-68 on Gray Glass.)

- A. Laminated Gray Low –E Vision Glass:
 - 1. 1" VLE3-70 as manufactured by Viracon.
 - a. Exterior Glass Ply: ¼" Gray HS
 - b. Coating: VLE-70 #2 Surface
 - c. Interlayer: .090 PVB (or as required by framing test report)
 - d. Interior Glass Ply: ¼" Clear HS
 - 2. Performance Requirements
 - a. Visible Light Transmittance: - 34%
 - b. Exterior (Vis-Out) Reflectance: 6%
 - c. Winter U-Value: .96
 - d. Summer U-Value: .87
 - e. Solar Heat Gain Coefficient: .39
 - f. Light to Solar Heat Gain: .87

PRODUCT DATA SHEET 6 – LAMINATED IMPACT – RATED SPANDREL GLASS

(This is equal to a PPG (Solar Ban) SB-60 or Guardian SN-68 on Gray Glass.)

- A. Laminated Gray Low – E Spandrel Glass:
 - 1. 1" VLE3-70 with V933 Warm Gray Spandrel as manufactured by Viracon.
 - a. Exterior Glass Ply: ¼" Gray HS
 - b. Coating: VLE-70 #2 Surface
 - c. Interlayer: .090 PVB (or as required by framing test report)
 - d. Interior Glass Ply: ¼" Clear HS with V933 Warm Gray Spandrel #4
 - 2. Performance Requirements
 - a. Winter U-Value: .96

- b. Summer U-Value: .87

KEEP THE FOLOWING SELECTIONS FOR INTERIOR GAZING AS REQUIRED AND ADD OTHER SPECIALIZED GASS REQUIREMENTS ON A PER PROJECT BASIS

PRODUCT DATA SHEET 7 – LAMINATED GLASS NO. 7 (INTERIOR WINDOWS & DOORS)

- A. Laminated Glass: 9/16" nominal thickness consisting of ¼" heat strengthened tinted exterior light, ¼" heat strengthened clear interior light, bonded with 0.090" polyvinyl butyral sheet.

PRODUCT DATA SHEET 8 – FIRE-RATED GLASS NO. 8

- A. Underwriters Laboratories label fire-rated glass.
- B. Fire Rated Glass: Glass shall be equal to FireLite Nt as supplied by Technical Glass Products, Kirkland, Washington, 1-800-426-0279, 1-800-451-9857 fax, e-mail sales @fireglass.com, web site www.fireglass.com.
1. Properties:
 - a. Thickness 3/16" Firelite
 - b. Film: 3M Scotchshield Ultra Film.
 - c. Weight: 2.4 pounds per square foot.
 - d. Approximate Visible Transmission: 88 percent.
 - e. Approximate Visible Reflection: 7 percent.
 - f. Hardness: 700 (Vicker's scale).
 - g. Fire Rating: 20 minutes or as noted on the drawings
 - h. Impact Safety Resistance: ANSI Z97.1 and CPSC 16CFR1201 (Cat. I & II).
 - i. Positive Pressure Test: passes UL 10C
 - j. Surface Finish: Standard (unpolished).
- C. Maximum Sheet Size: 48 inches by 96 inches.
- D. Labeling: Permanently label each piece of fire rated glazing with the UL logo and fire rating.
- E. Fire Rating: Fire rating listed and labeled by UL for fire rating scheduled at opening locations on drawings, when tested in accordance with UL9, 10B and 10C and NFPA 257.

PRODUCT DATA SHEET 9 – INSULATING GLASS NO. 9 (EXTERIOR WINDOWS & DOORS)

- A. Insulating Gray Low – E Vision Glass: Manufacturer's standard insulating glazing system in conformance with Florida Building Code 5th Edition (2014) Energy Conservation Chapter 4 [CE] Commercial Energy Efficiency, Table C402.3 for climate zone indicated., 7/8" thick. Comprised of:
1. 3/16" annealed exterior glass, tint on surface #2
 2. 11/32" air gap filled with argon gas
 3. 1/8" clear annealed glass
 4. 0.090" PVB interlayer
 5. 1/8" clear annealed glass interior
- B. NFRC Requirements – Provide for Climate Zone 2, windows and exterior door lights capable of complying with the following totals:
1. U-Factor: Windows Fixed Fenetration 0.50, Operable 0.65, Entrance Door 0.83 minimum performance requirement.
 2. Solar Heat Gain Coefficient (SHGC): 0.25 in accordance with NFRC 200.
 - 3.. Visible Transmittance (VT): 0.66 in accordance with NFRC 200.

PRODUCT DATA SHEET 10 – INSULATING IMPACT-RATED GLASS NO. 10

(EXTERIOR STOREFRONT WINDOWS & DOORS)

- A. Insulating Gray Low – E Vision Glass: Manufacturer’s standard insulating glazing system in conformance with Florida Building Code 6th Edition (2017) Energy Conservation Chapter 4 [CE] Commercial Energy Efficiency, Table C402.3 for climate zone indicated., 7/8” thick.
Comprised of:
1. Properties:
 - a. 3/16” annealed exterior glass, tint on surface #2
 - b. 11/32” air gap filled with argon gas
 - c. 1/8” clear annealed glass
 - d. 0.090” PVB interlayer
 - e. 1/8” clear annealed glass interior
- B. NFRC Requirements – Provide for Climate Zone 2, windows and exterior door lights capable of complying with the following totals:
1. Properties:
 - a. U-Factor: Windows Fixed Fenetration 0.50, Operable 0.65, Entrance Door 0.83 minimum performance requirement.
 - b.. Solar Heat Gain Coefficient (SHGC): 0.25 in accordance with NFRC 200.
 - c. Visible Transmittance (VT): 0.66 in accordance with NFRC 200.

END OF SECTION

**SECTION 09111
METAL STUD FRAMING SYSTEM**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications, apply to this section.

1.02 DESCRIPTION OF WORK

- A. Formed metal stud framing
- B. Framing accessories

1.03 RELATED SECTIONS

- A. Section 06001 – Carpentry Work: Rough wood blocking within stud framing.
- B. Section 07900 – Joint Sealers
- C. Section 09220 – Portland Cement Plaster
- D. Section 09260 – Gypsum Board Systems

1.04 REFERENCES

- A. ASTM A525 – General Requirements for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.
- B. ANSI/ASTM A591 – Steel Sheet, Cold-Rolled, Electrolytic Zinc-Coated.
- C. ASTM C645 – Non-Load (Axial) Bearing Steel Studs, Runners (Track) and Rigid Furring Channels for Screw Application of Gypsum Board.
- D. ASTM C754 – Installation of Steel Framing Members to Receive Screw Attached Gypsum Wallboard, Backing Board, or Water Resistant Backing Board.
- E. FS TT-P-645 – Primer, Paint, Zinc-Chromate, Alkyd Type.
- F. GA 203 – Installation of Screw-Type steel Framing Members to Receive Gypsum Board.

1.05 SYSTEM DESCRIPTION

- A. Metal stud framing system for exterior walls, with exterior with gypsum board.
- B. Maximum Allowable Deflection: 1/270 span.
- C. Design system to accommodate construction tolerances, deflection of building structural members, and clearances of intended openings.

**METAL STUD FRAMING SYSTEM
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1.06 SUBMITTALS

- A. Submit product data under provisions of Section 01300.

1.07 QUALITY ASSURANCE

- A. Perform Work in accordance with ASTM C754.

PART 2 - PRODUCTS**2.01 MANUFACTURERS**

- A. Dale/Incor.
- B. Dietrich
- C. Marino Ware, Inc.
- D. Approved equal

2.02 STUD FRAMING MATERIALS

- A. Studs: ASTM A525, galvanized to G90 coating class, non-load bearing rolled steel, channel shaped, punched for utility access, as follows.
 - 1. Width: As shown on drawings
 - 2. Thickness: Interior walls – 25 gauge, 4" and 6"
Exterior masonry – 20 gauge, 1 1/2"
Exterior roof – 20 gauge 4"
 - 1. Width: As shown on drawings. All plumbing (and vents) walls are to be minimum 6" width. Coordinate exact locations with plumbing drawings.
 - 2. Thickness: Interior walls – 25 gauge, 3 5/8" and 6" up to 12' length, 20 gauge beyond 12' .
Exterior masonry – 25 gauge, 1 5/8"
*Exterior walls – see plans
 - 3. Spacing 16" o.c.
- B. Runners: Of same material and finish as studs, bent leg retainer notched to receive studs.
- C. Furring and Bracing Members: Of same material and finish as studs, thickness to suit purpose.
- D. Shaft Wall Studs: 2 1/2" "C-T" Metal Studs
- E. Fasteners: Self-drilling, self-tapping screws.

PART 3 - EXECUTION**3.01 EXAMINATION**

- A. Verify that conditions are ready to receive work.
- B. Verify field measurements are as shown on Drawings.
- C. Verify that rough-in utilities are in proper location.
- D. Beginning of installation means installer accepts existing conditions.

3.02 ERECTION

- A. Align and secure top and bottom runners. Place two (2) beads of sealant between runners and substrate per UL fire rated partition requirements.
- B. Fit runners under and above openings; secure intermediate studs at spacing of wall studs.
- C. Install studs vertically as shown on drawings.
- D. Construct corners using minimum three (3) studs.
- E. Double studs at wall openings, door and window jambs, and not more than two (2) inches each side of openings.
- F. Brace stud framing system and make rigid.
- G. Coordinate erection of studs with requirements of door and window frame supports and attachments.
- H. Align stud web openings.
- I. Coordinate installation of bucks, anchors, and fire retardant blocking with electrical and mechanical work to be placed in or behind stud framing.
- J. Blocking: Secure fire retardant wood blocking to studs and install for support of plumbing fixtures, wall cabinets, toilet accessories and hardware.
- K. Refer to Drawings for indication of partitions extending to ceiling only and for partitions extending through ceiling to structure above. Maintain clearance under structural building members to avoid deflection transfer to studs.
- L. Coordinate placement of mineral fiber sound insulation in multiple stud spaces made inaccessible after stud framing erection.

3.03 CEILING FRAMING INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Coordinate location of hangers with other work.
- C. Install ceiling framing independent of walls, columns, above-ceiling work.

**METAL STUD FRAMING SYSTEM
SECTION 09111-3**

- D. Reinforce openings in ceilings suspension system which interrupt main carrying channels or furring channels, with lateral channel bracing. Extend bracing minimum 24 inches past each end of opening.
- E. Laterally brace entire suspension system.

3.04 TOLERANCES

- A. Maximum Variation from True Position: 1/8 inch.
- B. Maximum Variation of any Member from Plane: 1/8 inch.

END OF SECTION

**SECTION 09220
PORTLAND CEMENT STUCCO**

PART 1 - GENERAL**1.01 RELATED DOCUMENTS**

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications, apply to this section.

1.02 DESCRIPTION OF WORK

- A. Portland cement stucco system
- B. Special rendered surface finish

1.03 RELATED WORK

- A. Section 04200 – Unit Masonry
- B. Section 06100 – Rough Carpentry

1.04 REFERENCES

- A. ANSI/ASTM C91 – Masonry Cement
- B. ASTM C150 – Portland Cement
- C. ANSI/ASTM C206 – Finishing Hydrated Lime
- D. ANSI/ASTM C207 - Hydrated Lime for Masonry Purposes
- E. ANSI/ASTM C631 – Bonding Compounds for Interior Plastering
- F. ANSI/ASTM C897 – Aggregate for Job-Mixed Portland Cement-Based Plasters
- G. ANSI/ASTM C926 – Application of Portland Cement-Based Plaster
- H. FS HH-I-521 - Insulation Blankets, Thermal (Mineral Fiber for Ambient Temperatures).

1.05 QUALITY ASSURANCE

- A. Applicator: Company specializing in cement plaster work with three (3) years documented experience.
- B. Apply cement plaster in accordance with ASTM C 926.

1.06 REGULATORY REQUIREMENTS

- A. Conform to all applicable codes for fire rated assemblies in conjunction with Section 09260 as follows:
 - 1. Fire Rated Partitions: Listed assembly by UL as shown on drawings.
 - 2. Fire Rated Ceilings and Soffits: Listed assembly by UL as shown on drawings.

1.07 SUBMITTALS

- A. Provide product data on plaster materials, characteristics and limitations of products specified.

PART 2 - PRODUCTS**2.01 ACCEPTABLE MANUFACTURERS**

- A. Basis of Design – Parex USA
- B. Sto Corp
- C. Florida Stucco Corporation
- D. Rinker Materials Corporation
- E. Substitutions: Per Section 01631

2.02 PLASTER BASE COAT MATERIALS

- A. Cement: ASTM C150, Normal – Type 1 Portland, Grey color.
- B. Lime: ANSI/ASTM C207, Type S
- C. Aggregate: In accordance with ANSI/ASTM C897
- D. Water: Clean, fresh, potable and free of mineral or organic matter which can affect plaster.
- E. Bonding Agent: ANSI/ASTM C631; type recommended for bonding plaster to concrete masonry surfaces.

2.03 CEMENT PLASTER MIXES

- A. Mix and proportion cement plaster in accordance with manufacturer's instructions.
- B. Mix only as much plaster as can be used in three (3) hours.
- C. Mix materials dry, to uniform color and consistency before adding water.
- D. Protect mixtures from frost, contamination, and evaporation
- E. Do not re-temper mixes after initial set has occurred.

2.04 RIGID BOARD SHAPES

- A. Molded polystyrene Board Insulation: Rigid Cellular Thermal insulation formed by the expansion of polystyrene resin beads or granules in a closed mold, complying with ASTM C578.

2.05 ACCESSORIES

- A. Plastic accessories for exterior stucco: ASTM C1063 fabricated from plastic or plastic and paper in combination shall be manufactured from rigid PVC, ABS, PETG, high impact polystyrene or polycarbonate plastic.
 - 1. Basis of Design – Vinyl Corp.

PART 3 - EXECUTION**3.01 INSPECTION**

- A. Verify that surfaces and site conditions are ready to receive work.
- B. Grounds and blocking: Verify items within walls for other Sections of Work have been installed.
- C. Mechanical and Electrical: Verify services within walls have been tested and approved.
- D. Beginning of Installation means acceptance of existing conditions.

3.02 PREPARATION

- A. Protect surfaces near the Work of this Section from damage or disfiguration.

3.03 CONTROL AND EXPANSION JOINTS

- A. Locate exterior control joints every ten (10) feet or 100 square feet.
- B. Establish control and expansion joints by Brooksville with specified PVC joint device.

3.04 STUCCO

- A. Apply plaster in accordance with ASTM C926 & manufacturer's instructions.
- B. Apply scratch coat, brown coat, and a finish coat to 5/8 inch over self-furring masonry.
- C. Apply brown coat immediately following initial set of scratch coat.
- D. After curing, dampen base coat prior to applying finish coat.
- E. Apply finish coat to a smooth and consistent finish texture to match sample panel.
- E. Apply finish coat to a smooth and consistent finish texture. See Schedule section below for stucco finishes and locations.
- F. Avoid excessive working of surface. Delay trowelling as long as possible to avoid drawing excess fines to surface.
- G. Hand Machine apply aggregate surfacing to full surface coverage.
- H. Moist cure finish coat for minimum period of 48 hours.
- I. Apply stucco over foam or pressure treated wood at built-up areas

3.05 TOLERANCES

- A. Maximum Variation from True Flatness: 1/8 inch in 10 feet.

3.06 FINISHES SCHEDULE

- A. Field – medium, {heavy, smooth} texture
 - 1. Parex USA Sand Coarse DPR Acrylic Finish
- B. Bands – sand texture
 - 1. Parex USA Sand Fine DPR Acrylic Finish

END OF SECTION

**SECTION 09256
TILING**

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
1. Ceramic wall tile, quarry tile, porcelain paver tile.
 2. Stone thresholds.
 3. Crack isolation membrane.
 4. Sound-suppression membrane (at elevated living units only).
- B. Related Sections:
1. Division 07 Section "Joint Sealants" for sealing of expansion, contraction, control, and isolation joints in tile surfaces.
 2. Division 09 Section "Gypsum Board" for glass-mat, water-resistant backer board.

1.3 DEFINITIONS

- A. General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.
- B. ANSI A108 Series: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI A108.1C, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.8, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.12, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, and ANSI A108.17, which are contained in "American National Standard Specifications for Installation of Ceramic Tile."
- C. Module Size: Actual tile size plus joint width indicated.
- D. Face Size: Actual tile size, excluding spacer lugs.

1.4 PERFORMANCE REQUIREMENTS

- A. Dynamic Static Coefficient of Friction (DCOF): For tile installed on walkway surfaces, provide products with the following values as determined by testing identical products per DCOF Acutest; and as indicated by current code local ordinances and authorities having jurisdiction, whichever is most stringent.
1. Dry & Level – Interior: N/A
 2. Wet & Level – Interior: >0.42
 3. Exterior Applications, Pool Decking & Other Wet Areas w/ Minimal Footwear: >0.60
 4. Ramps & Inclines: >0.65

1.5 SUBMITTALS

- A. Product Data: For each type of product indicated.

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- B. Shop Drawings: Show locations of each type of tile and tile pattern. Show widths, details, and locations of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.
- C. Samples for Verification:
 - 1. Full-size units of each type and composition of tile and for each color and finish required. For ceramic mosaic tile in color blend patterns, provide full sheets 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. Make samples at least 12 inches, but not fewer than 4 tiles. Use grout of type and in color or colors approved for completed Work.
 - 3. Full-size units of each type of trim and accessory for each color and finish required.
 - 4. Stone thresholds in 6-inch lengths.
 - 5. Metal edge strips in 6-inch lengths.
- D. Master Grade Certificates: For each shipment, type, and composition of tile, signed by tile manufacturer and Installer.
- E. Product Certificates: For each type of product, signed by product manufacturer.
- F. Material Test Reports: For each tile-setting and -grouting product and special purpose tile.

1.6 QUALITY ASSURANCE

- A. Source Limitations for Tile: Obtain tile of each type and color or finish from one source or producer.
 - 1. Obtain tile of each type and color or finish from same production run and of consistent quality in appearance and physical properties for each contiguous area.
- B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from one manufacturer and each aggregate from one source or producer.
- C. Source Limitations for Other Products: Obtain each of the following products specified in this Section from a single manufacturer for each product:
 - 1. Stone thresholds.
 - 2. Crack isolation membrane.
 - 3. Joint sealants.
 - 4. Sound-suppression membrane.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirements in ANSI A137.1 for labeling tile packages.
- B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.
- C. Store aggregates where grading and other required characteristics can be maintained and

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contamination can be avoided.

- D. Store liquid materials in unopened containers and protected from freezing.
- E. Handle tile that has temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

1.8 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

1.9 EXTRA MATERIALS

- 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.
 - 2. Grout: Furnish quantity of grout equal to 3 percent of amount installed for each type, composition, and color indicated.

PART 2 - PRODUCTS

2.1 PRODUCTS, GENERAL

- A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.
 - 1. Provide tile complying with Standard grade requirements unless otherwise 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 TCA installation methods specified in tile installation schedules, and other requirements specified.
- C. Factory Blending: For tile exhibiting color variations within ranges, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.
- D. Mounting: For factory-mounted tile, provide back- or edge-mounted tile assemblies as standard with manufacturer unless otherwise indicated.
 - 1. Where tile is indicated for installation in wet areas, do not use back- or edge-mounted tile assemblies unless tile manufacturer specifies in writing that this type of mounting is suitable for installation indicated and has a record of successful in-service performance.
- E. Factory-Applied Temporary Protective Coating: Where indicated under tile type, protect exposed surfaces of tile against adherence of mortar and grout by precoating with continuous film of petroleum paraffin wax, applied hot. Do not coat unexposed tile surfaces.

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2.2 TILE PRODUCTS

- A. Refer to interior design documents for selection of tiles and accessories.

2.3 THRESHOLDS

- A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.
- B. Marble Thresholds: ASTM C 503, with a minimum abrasion resistance of 10 per ASTM C 1353 or ASTM C 241 and with honed finish.
 - 1. Description: Uniform, fine- to medium-grained white stone with gray veining.
 - 2. Description: Match Architect's sample.

2.4 CRACK ISOLATION MEMBRANE

- A. General: Manufacturer's standard product that complies with ANSI A118.12 for high performance and is recommended by the manufacturer for the application indicated. 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, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Schluter Systems L.P.; KERDI.
- C. Sound-Suppression Membranes: manufacturer's standard product which complied with requirements in the current code, local ordinances and authorities having jurisdiction, whichever is most stringent.
 - 1. Products: Provide product from one of the following:
 - a. Acousticork Products.
 - b. Maxxon's – Acousti Matt II.

2.5 SETTING MATERIALS

- A. Latex-Portland Cement Mortar (Thin Set): ANSI A118.4.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Boiardi Products; a QEP company.
 - b. Bonsal American; an Oldcastle company.
 - c. Bostik, Inc.
 - d. C-Cure.
 - e. Custom Building Products.
 - f. Jamo, Inc.
 - g. Laticrete International, Inc.
 - h. MAPEI Corporation.
 - i. Mer-Kote Products, Inc.
 - j. Southern Grouts & Mortars, Inc.
 - k. Summitville Tiles, Inc.
 - l. TEC, a subsidiary of H.B. Fuller Company.
 - 2. Provide prepackaged, dry-mortar mix containing dry, redispersible, vinyl acetate or acrylic additive to which only water must be added at Project site.

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3. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.4.
- B. Water-Cleanable, Tile-Setting Epoxy: ANSI A118.3, with a VOC content of 65 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Atlas Minerals & Chemicals, Inc.
 - b. Bonsal American; an Oldcastle company.
 - c. Bostik, Inc.
 - d. C-Cure.
 - e. Custom Building Products.
 - f. Jamo Inc.
 - g. Laticrete International, Inc.
 - h. MAPEI Corporation.
 - i. Mer-Kote Products, Inc.
 - j. Southern Grouts & Mortars, Inc.
 - k. Summitville Tiles, Inc.
 - l. TEC; a subsidiary of H. B. Fuller Company.
 2. Provide product capable of withstanding continuous and intermittent exposure to temperatures of up to **140 deg F (60 deg C)** and **212 deg F (100 deg C)**, respectively, and certified by manufacturer for intended use.

2.6 GROUT MATERIALS

- A. Standard Cement Grout: ANSI A118.6.
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Boiardi Products; a QEP company.
 - b. Bonsal American; an Oldcastle company.
 - c. Bostik, Inc.
 - d. C-Cure.
 - e. Custom Building Products.
 - f. Jamo Inc.
 - g. Laticrete International, Inc.
 - h. MAPEI Corporation.
 - i. Southern Grouts & Mortars, Inc.
 - j. Summitville Tiles, Inc.
 - k. TEC; a subsidiary of H. B. Fuller Company.

2.7 ELASTOMERIC SEALANTS

- A. General: Provide sealants, primers, backer rods, and other sealant accessories that comply with the following requirements and with the applicable requirements in Division 07 Section "Joint Sealants."
1. Use sealants that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 2. Use primers, backer rods, and sealant accessories recommended by sealant manufacturer.

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- B. Colors: Provide colors of exposed sealants to match colors of grout in tile adjoining sealed joints unless otherwise indicated.
- C. One-Part, Mildew-Resistant Silicone Sealant: ASTM C 920; Type S; Grade NS; Class 25; Uses NT, G, A, and, as applicable to nonporous joint substrates indicated, O; formulated with fungicide, intended for sealing interior ceramic tile joints and other nonporous substrates that are subject to in-service exposures of high humidity and extreme temperatures.
 - 1. Products: Subject to compliance with requirements available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Dow Corning Corporation; Dow Corning 786.
 - b. GE Silicones; a division of GE Specialty Materials; Sanitary 1700.
 - c. Laticrete International, Inc.; Latacil Tile & Stone Sealant.
 - d. Pecora Corporation; Pecora 898 Sanitary Silicone Sealant.
 - e. Tremco Incorporated; Tremsil 600 White.

2.8 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. Temporary Protective Coating: Either product indicated below that is formulated to protect exposed surfaces of tile against adherence of mortar and grout; compatible with tile, mortar, and grout products; and easily removable after grouting is completed without damaging grout or tile.
 - 1. Petroleum paraffin wax, fully refined and odorless, containing at least 0.5 percent oil with a melting point of 120 to 140 deg F per ASTM D 87.
 - 2. Grout release in form of manufacturer's standard proprietary liquid coating that is specially formulated and recommended for use as temporary protective coating for tile.
- C. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.
- D. Grout Sealer: Manufacturer's standard silicone product for sealing grout joints and that does not change color or appearance of grout.

2.9 MIXING MORTARS AND GROUT

- A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.
- B. Add materials, water, and additives in accurate proportions.
- C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

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- A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.
 - 1. Verify that substrates for setting tile are firm, dry, clean, free of coatings that are incompatible with tile- setting materials including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.
 - 2. Verify that concrete substrates for tile floors installed with adhesives comply with surface finish requirements in ANSI A108.01 for installations indicated.
 - a. Verify that surfaces that received a steel trowel finish have been mechanically scarified.
 - b. Verify that protrusions, bumps, and ridges have been removed by sanding or grinding.
 - 3. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed.
 - 4. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.
- 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 thin-set 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.
- D. Field-Applied Temporary Protective Coating: If indicated under tile type or needed to prevent grout from staining or adhering to exposed tile surfaces, precoat them with continuous film of temporary protective coating, taking care not to coat unexposed tile surfaces.

3.3 TILE INSTALLATION

- A. Comply with TCA's "Handbook for Ceramic Tile Installation" for TCA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 Series "Specifications for Installation of Ceramic Tile" that are referenced in TCA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.

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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 composed of tiles 8 by 8 inches or larger.
 - f. Tile floors composed 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. 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.
 1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so joints between sheets are not apparent in finished work.
 2. Where adjoining tiles on floor, base, walls, or trim are specified or indicated to be same size, align joints.
 3. Where tiles are specified or indicated to be whole integer multiples of adjoining tiles on floor, base, walls, or trim, align joints unless otherwise indicated.
- E. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:
 1. Ceramic Mosaic Tile: 1/16 inch.
 2. Quarry Tile: 1/4 inch.
 3. Paver Tile: 1/4 inch
 4. Glazed Wall Tile: 1/16 inch.
 5. Decorative Thin Wall Tile: 1/16 inch.
- F. Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.
- G. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.
 1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.
 2. Prepare joints and apply sealants to comply with requirements in Division 07 Section "Joint Sealants."
- H. Stone Thresholds: Install stone thresholds in same type of setting bed as adjacent floor unless otherwise indicated.

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1. At locations where mortar bed (thickset) would otherwise be exposed above adjacent floor finishes, set thresholds in latex-portland cement mortar (thin set).
 2. Do not extend or crack isolation membrane under thresholds set in latex-portland cement mortar. Fill joints between such thresholds and adjoining tile set on crack isolation membrane with elastomeric sealant.
- I. Grout Sealer: Apply grout sealer to cementitious grout joints in tile floors according to grout-sealer manufacturer's written instructions. As soon as grout sealer has penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.

3.4 CRACK ISOLATION MEMBRANE INSTALLATION

- A. Install crack isolation membrane to comply with ANSI A108.17 and manufacturer's written instructions to produce membrane of uniform thickness and bonded securely to substrate.
- B. Do not install tile or setting materials over crack isolation membrane until membrane has cured.

3.5 SOUND-SUPPRESSION MEMBRANE INSTALLATION

- A. Install sound-suppression membrane to comply with current membrane and tile manufacturer's instructions including all accessories.

3.6 CLEANING AND PROTECTING

- A. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
 1. Remove epoxy and latex-portland cement grout residue from tile as soon as possible.
 2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.
 3. Remove temporary protective coating by method recommended by coating manufacturer and that is acceptable to tile and grout manufacturer. Trap and remove coating to prevent drain clogging.
- B. Protect installed tile work with Kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.
- C. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.
- D. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

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3.7 INTERIOR TILE INSTALLATION SCHEDULE

- A. Interior Floor Installations, Concrete Subfloor:
 - 1. Tile Installation F125A: Thin-set mortar on crack isolation membrane and sound-suppression membrane; TCA F125A.
 - a. Tile Type:
 - b. Thin-Set Mortar: Latex- portland cement mortar.
 - c. Grout: Standard sanded cement grout.

- B. Interior Wall Installations, Metal Studs or Furring:
 - 1. Tile Installation W243: Thin-set mortar on gypsum board; TCA W243.
 - a. Thin-Set Mortar: Latex portland cement mortar.
 - b. Grout: Standard sanded cement grout.

 - 2. Tile Installation W245: Thin-set mortar on coated glass-mat, water-resistant gypsum backer board; TCA W245.
 - a. Thin-Set Mortar: Latex-portland cement mortar.
 - b. Grout: Standard sanded cement grout.

END OF SECTION

**SECTION 09290
GYPSUM BOARD ASSEMBLIES**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 DESCRIPTION OF WORK

- A. This Section includes the following:
 - 1. Non-load-bearing steel framing members for gypsum board assemblies.
 - 2. Gypsum board assemblies attached to steel framing.
 - 3. Gypsum board bonded adhesively to interior concrete and masonry substrates.
 - 4. Cementitious backer units installed with gypsum board assemblies.
 - 5. Glass-mat, water-resistant gypsum backing board installed with gypsum board assemblies.

1.03 RELATED SECTIONS

- A. Division 5 Section "Cold-Formed Metal Framing" for load-bearing steel framing.
- B. Division 6 Section "Rough Carpentry" for wood framing and furring, and gypsum sheathing applied over wood framing.
- C. Division 7 Section "Firestopping" for firestopping systems and fire-resistance-rated joint sealants.
- D. Division 9 Section "Gypsum Board Shaft-Wall Assemblies" for framing, gypsum panels, and other components forming shaft wall assemblies.
- E. Division 9 Section "Tile" for cementitious backer units installed as substrates for ceramic tile.

1.04 DEFINITIONS

- A. Gypsum Board Construction Terminology: Refer to ASTM C 11 and GA-505 for definitions of terms for gypsum board assemblies not defined in this Section or in other referenced standards.

1.05 ASSEMBLY PERFORMANCE REQUIREMENTS

- A. Sound Transmission Characteristics: For gypsum board assemblies with STC ratings, provide materials and construction identical to those of assemblies whose STC ratings were determined according to ASTM E 90 and classified according to ASTM E 413 by a qualified independent testing agency.
- B. Fire Resistance: Provide gypsum board assemblies with fire-resistance ratings indicated.

1.06 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product Data for each type of product specified.
- C. Shop Drawings showing locations, fabrication, and installation of control and expansion joints including plans, elevations, sections, details of components, and attachments to other units of Work.
- D. Product certificates signed by manufacturers of gypsum board assembly components certifying that their products comply with specified requirements.

1.07 QUALITY ASSURANCE

- A. Single-Source Responsibility for Steel Framing: Obtain steel framing members for gypsum board assemblies from a single manufacturer, unless otherwise indicated.
- B. Single-Source Responsibility for Panel Products: Obtain each type of gypsum board and other panel products from a single manufacturer.
- C. Single-Source Responsibility for Finishing Materials: Obtain finishing materials from either the same manufacturer that supplies gypsum board and other panel products or from a manufacturer acceptable to gypsum board manufacturer.
- D. Fire-Test-Response Characteristics: Where fire-resistance-rated gypsum board assemblies are indicated, provide gypsum board assemblies that comply with the following requirements:
 - 1. Fire-Resistance Ratings: As indicated by GA File Numbers in GA-600 "Fire Resistance Design Manual" or design designations in UL "Fire Resistance Directory" or in the listing of another testing and inspecting agency acceptable to authorities having jurisdiction.
 - 2. Gypsum board assemblies indicated are identical to assemblies tested for fire resistance according to ASTM E 119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.
 - 3. Deflection and Firestop Track: Top runner provided in fire-resistance-rated assemblies indicated is labeled and listed by UL, Warnock Hersey, or another testing and inspecting agency acceptable to authorities having jurisdiction.
- E. Mockups: Prior to finishing gypsum board assemblies, construct mockups of at least 100 sq. ft. (9 sq. m) in surface area to demonstrate aesthetic effects of finishes as well as qualities of materials and execution. Simulate finished lighting conditions for review of in-place unit of Work.
 - 1. Construct mockups for each of the following applications:
 - a. Wall surfaces indicated to receive non-textured paint finishes.
 - b. Ceiling surfaces indicated to receive non-textured paint finishes.
 - c. Surfaces indicated to receive textured paint finishes.
 - d. Surfaces indicated to receive textured finishes and textured finishes specified in this Section.
 - 2. Build mockups to comply with the following requirements, using materials indicated for final unit of Work.
 - a. Locate mockups on-site in the location and of the size indicated or, if not indicated, as directed by Architect.

- b. Notify Architect one week in advance of the dates and times when mockups will be constructed.
- c. Demonstrate the proposed range of aesthetic effects and workmanship.
- d. Obtain Architect's approval of mockups before start of final unit of Work.
- e. Retain and maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 - 1) When directed, demolish and remove mockups from Project site.
 - 2) Approved mockups in an undisturbed condition at the time of Substantial Completion may become part of the completed Work.
- f. Gypsum board used on exterior walls to be mold resistant.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original packages, containers, or bundles bearing brand name and identification of manufacturer or supplier.
- B. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes. Neatly stack gypsum panels flat to prevent sagging.

1.09 PROJECT CONDITIONS

- A. Environmental Conditions, General: Establish and maintain environmental conditions for applying and finishing gypsum board to comply with ASTM C 840 requirements or gypsum board manufacturer's recommendations, whichever are more stringent.
- B. Room Temperatures: For non-adhesive attachment of gypsum board to framing, maintain not less than 40 deg F (4 deg C). For adhesive attachment and finishing of gypsum board, maintain not less than 50 deg F (10 deg C) for 48 hours before application and continuously after until dry. Do not exceed 95 deg F (35 deg C) when using temporary heat sources.
- C. Ventilation: Ventilate building spaces as required to dry joint treatment materials. Avoid drafts during hot, dry weather to prevent finishing materials from drying too rapidly.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - 1. Steel Framing and Furring:
 - a. Clark Steel Framing, Inc.
 - b. Dale Industries, Inc.
 - c. Dietrich Industries, Inc.
 - d. Marino/Ware (formerly Marino Industries Corp.).
 - e. National Gypsum Co.; Gold Bond Building Products Division.
 - f. Unimast, Inc.
 - 2. Grid Suspension Assemblies:
 - a. Armstrong World Industries, Inc.
 - b. Chicago Metallic Corp.
 - c. USG Interiors, Inc.
 - d. Worthington Steel Company (formerly National Rolling Mills).

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3. Gypsum Board and Related Products:
 - a. Domtar Gypsum.
 - b. Georgia-Pacific Corp.
 - c. National Gypsum Co.; Gold Bond Building Products Division.
 - d. United States Gypsum Co.

- B. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work where proprietary gypsum wallboard is indicated include, but are not limited to, the following:
 1. Gyprock Fireguard C Gypsum Board; Domtar Gypsum.
 2. Firestop Type C; Georgia-Pacific Corp.
 3. Fire-Shield G; National Gypsum Co.; Gold Bond Building Products Division.
 4. SHEETROCK Brand Gypsum Panels, FIRECODE C Core; United States Gypsum Co.
 5. SHEETROCK Brand Gypsum Panels, ULTRACODE Core; United States Gypsum Co.

2.02 STEEL FRAMING COMPONENTS FOR SUSPENDED AND FURRED CEILINGS

- A. General: Provide components complying with ASTM C 754 for conditions indicated.

- B. Cast-in-Place and Post installed Anchors in Concrete: Anchors of type indicated below, fabricated from corrosion-resistant materials, with holes or loops for attaching hanger wires, and with capability to sustain, without failure, a load equal to 5 times that imposed by ceiling construction, as determined by testing according to ASTM E 488 conducted by a qualified independent testing agency.
 1. Cast-in-place type designed for attachment to concrete forms.

- C. Powder-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hangers of type indicated, and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling construction, as determined by testing according to ASTM E 1190 conducted by a qualified independent testing agency.

- D. Wire Ties: ASTM A 641 (ASTM A 641M), Class 1 zinc coating, soft temper, 0.062 inch (1.6 mm) thick.

- E. Wire Hangers: ASTM A 641 (ASTM A 641M), Class 1 zinc coating, soft temper, 0.162-inch (4.1-mm) diameter.

- F. Hanger Rods: Mild steel and zinc coated or protected with rust-inhibitive paint.

- G. Flat Hangers: Mild steel and zinc coated or protected with rust-inhibitive paint.

- H. Angle-Type Hangers: Angles with legs not less than 7/8 inch (22.2 mm) wide, formed from 0.0635-inch- (1.6-mm-) thick galvanized steel sheet complying with ASTM A 653, G 90 (ASTM A 653M, Z 180) coating designation, with bolted connections and 5/16-inch (8-mm) diameter bolts.

- I. Channels: Cold-rolled steel, 0.0598-inch (1.5-mm) minimum thickness of base (uncoated) metal and 7/16-inch- (11.1-mm-) wide flanges, and as follows:
 1. Carrying Channels: 1-1/2 inches (38.1 mm) deep, 475 lb. /1000 feet (70 kg/100 m), unless otherwise indicated.

2. Furring Channels: 3/4 inch (19.1 mm) deep, 300 lb. /1000 feet (45 kg/100 m), unless otherwise indicated.
 3. Finish: ASTM A 653, G 60 (ASTM A 653M, Z 180) hot-dip galvanized coating for framing for exterior soffits and where indicated.
- J. Grid Suspension System for Interior Ceilings: ASTM C 645, manufacturer's standard direct-hung grid suspension system composed of main beams and cross-furring members that interlock to form a modular supporting network.

2.03 STEEL FRAMING FOR WALLS AND PARTITIONS

- A. General: Provide steel framing members complying with the following requirements:
1. Protective Coating: Manufacturer's standard corrosion-resistant coating.
- B. Steel Studs and Runners: ASTM C 645, with flange edges of studs bent back 90 degrees and doubled over to form 3/16-inch- (5-mm-) wide minimum lip (return), and complying with the following requirements for minimum thickness of base (uncoated) metal and for depth:
1. Thickness: 0.0179 inch (0.45 mm), unless otherwise indicated.
 2. Thickness: 0.027 inch (0.7 mm) where indicated.
 3. Thickness: 0.0329 inch (0.84 mm) as follows:
 - a. For head runner, sill runner, jamb, and cripple studs at door and other openings.
 - b. In locations to receive cementitious backer units.
 - c. Where indicated.
 4. Depth: 3-5/8 inches (92.1 mm), unless otherwise indicated.
 5. Depth: 6 inches (152.4 mm) where indicated at plumbing walls.
 6. Depth: 2-1/2 inches (63.5 mm) where indicated.
 7. Depth: 1-5/8 inch (41.3 mm) where indicated.
- C. Deflection Track: Manufacturer's top runner complying with the requirements of ASTM C 645 and with 2-inch- (50.8-mm-) deep flanges.
- D. Furring Brackets: Serrated-arm type, adjustable, fabricated from corrosion-resistant steel sheet complying with ASTM C 645, minimum thickness of base (uncoated) metal of 0.0329 inch (0.84 mm), designed for screw attachment to steel studs and steel rigid furring channels used for furring.
- E. Z-Furring Members: Manufacturer's standard Z-shaped furring members with slotted or non-slotted web, fabricated from steel sheet complying with ASTM A 653 (ASTM A 653M) or ASTM A 568 (ASTM A 568M); with a minimum base metal (uncoated) thickness of 0.0179 inch (0.45 mm), face flange of 1-1/4 inch (31.8 mm), wall-attachment flange of 7/8 inch (22.2 mm), and of depth required to fit insulation thickness indicated.
- F. Fasteners for Metal Framing: Provide fasteners of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel framing and furring members securely to substrates involved; complying with the recommendations of gypsum board manufacturers for applications indicated.

2.04 GYPSUM BOARD PRODUCTS

- A. General: Provide gypsum board of types indicated in maximum lengths available that will minimize end-to-end butt joints in each area indicated to receive gypsum board application.
1. Widths: Provide gypsum board in widths of 48 inches (1219 mm).
- B. Gypsum Wallboard: ASTM C 36 and as follows:
1. Type: Regular for vertical surfaces, unless otherwise indicated.
 2. Type: Type X where required for fire-resistance-rated assemblies.
 3. Type: Sag-resistant type for ceiling surfaces.
 4. Type: Proprietary type as required for specific fire-resistance-rated assemblies.
 5. Edges: Tapered.
 6. Thickness: 1/2 inch (12.7 mm), unless otherwise indicated.
 7. Thickness: 5/8 inch (15.9 mm) where indicated.
- C. Gypsum Board Base Layer(s) for Multilayer Applications: Gypsum wallboard, ASTM C 36, and as follows:
1. Type: Regular for vertical surfaces, unless otherwise indicated.
 2. Type: Type X where indicated or required for fire-resistance-rated wall assemblies.
 3. Type: Type C where indicated or required for fire-resistance-rated ceiling assemblies.
 4. Type: Sag-resistant for ceiling surfaces, unless otherwise indicated.
 5. Type: Proprietary type matching that indicated for face layer and as required for specific fire-resistance-rated assemblies.
 6. Edges: Manufacturer's standard.
 7. Thickness: 1/2 inch (12.7 mm), unless otherwise indicated.
 8. Thickness: 5/8 inch (15.9 mm) where indicated.
- D. Water-Resistant Gypsum Backing Board: ASTM C 630 and as follows:
1. Type: Regular, unless otherwise indicated.
 2. Type: Type X where required for fire-resistance-rated assemblies and where indicated.
 3. Thickness: 5/8 inch (15.9 mm), unless otherwise indicated.
 4. Thickness: 1/2 inch (12.7 mm) where indicated.
- E. Glass-Mat, Water-Resistant Gypsum Backing Board: ASTM C 1178, of type and thickness indicated below:
1. Type and Thickness: Regular, 1/2 inch (12.7 mm) thick, unless otherwise indicated.
 2. Type and Thickness: Type X, 5/8 inch (15.9 mm) thick, where required for fire-resistance-rated assemblies and where indicated.
 3. Available Product: Subject to compliance with requirements, a product that may be incorporated in the Work includes, but is not limited to, "Dens-Shield Tile Backer" manufactured by Georgia-Pacific Corp.

2.05 CEMENTITIOUS BACKER UNITS

- A. Provide cementitious backer units complying with ANSI A118.9, of thickness and width indicated below, and in maximum lengths available to minimize end-to-end butt joints.

1. Thickness: 1/2 inch (12.7 mm), unless otherwise indicated.
 2. Thickness: 5/8 inch (15.9 mm), where indicated.
 3. Width: Manufacturer's standard width, but not less than 32 inches (813 mm).
- B. Available Products: Subject to compliance with requirements, cementitious backer units that may be incorporated in the Work include, but are not limited to, the following:
1. The Original Wonderboard; Custom Building Products.
 2. Wonderboard Multi + Board; Custom Building Products.
 3. DomCrete Cementitious Tile-Backer Board; Domtar Gypsum.
 4. Util-A-Crete Concrete Backer Board; FinPan, Inc.
 5. DUROCK Cement Board; United States Gypsum Co.

2.06 TRIM ACCESSORIES

- A. Accessories for Interior Installation: Corner bead, edge trim, and control joints complying with ASTM C 1047 and requirements indicated below:
1. Material: Formed metal or plastic, with metal complying with the following requirement:
 - a. Steel sheet zinc coated by hot-dip process or rolled zinc.
 2. Shapes indicated below by reference to Fig. 1 designations in ASTM C 1047:
 - a. Corner bead on outside corners, unless otherwise indicated.
 - b. LC-bead with both face and back flanges; face flange formed to receive joint compound. Use LC-beads for edge trim, unless otherwise indicated.
 - c. L-bead with face flange only; face flange formed to receive joint compound. Use L-bead where indicated.
 - d. U-bead with face and back flanges; face flange formed to be left without application of joint compound. Use U-bead where indicated.
 - e. One-piece control joint formed with V-shaped slot and removable strip covering slot opening.
- B. Accessory for Curved Edges: Corner bead formed of metal, plastic, or metal combined with plastic, with either notched or flexible flanges that are bendable to curvature radius.
- C. Accessories for Exterior Installations: Corner bead, edge trim, and control joints formed from steel sheet zinc coated by hot-dip process or rolled zinc complying with ASTM C 1047, in shapes indicated below by reference to Fig. 1 designations in ASTM C 1047.
1. Corner bead on outside corners, unless otherwise indicated.
 2. Edge trim complying with shape LC-bead per Fig. 1, unless otherwise indicated.
 3. One-piece control joint formed from rolled zinc with V-shaped slot and removable strip covering slot opening.

2.07 JOINT TREATMENT MATERIALS

- A. General: Provide joint treatment materials complying with ASTM C 475 and the recommendations of both the manufacturers of sheet products and of joint treatment materials for each application indicated.

- B. Joint Tape for Gypsum Board: Paper reinforcing tape, unless otherwise indicated.
 - 1. Use pressure-sensitive or staple-attached, open-weave, glass-fiber reinforcing tape with compatible joint compound where recommended by manufacturer of gypsum board and joint treatment materials for application indicated.
- C. Joint Tape for Cementitious Backer Units: As recommended by cementitious backer unit manufacturer.
- D. Setting-Type Joint Compounds for Gypsum Board: Factory-packaged, job-mixed, chemical-hardening powder products formulated for uses indicated.
 - 1. Where setting-type joint compounds are indicated as a taping compound only or for taping and filling only, use formulation that is compatible with other joint compounds applied over it.
 - 2. For prefilling gypsum board joints, use formulation recommended by gypsum board manufacturer.
 - 3. For filling joints and treating fasteners of water-resistant gypsum backing board behind base for ceramic tile, use formulation recommended by gypsum board manufacturer.
 - 4. For topping compound, use sandable formulation.
- E. Drying-Type Joint Compounds for Gypsum Board: Factory-packaged vinyl-based products complying with the following requirements for formulation and intended use.
 - 1. Ready-Mixed Formulation: Factory-mixed product.
 - a. Taping compound formulated for embedding tape and for first coat over fasteners and face flanges of trim accessories.
 - b. Topping compound formulated for fill (second) and finish (third) coats.
 - c. All-purpose compound formulated for both taping and topping compounds.
- F. Joint Compound for Cementitious Backer Units: Material recommended by cementitious backer unit manufacturer.

2.08 ACOUSTICAL SEALANT

- A. Acoustical Sealant for Exposed and Concealed Joints: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834 and the following requirements:
 - 1. Product is effective in reducing airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
- B. Acoustical Sealant for Concealed Joints: Manufacturer's standard nondrying, nonhardening, nonskinning, nonstaining, gunnable, synthetic-rubber sealant recommended for sealing interior concealed joints to reduce transmission of airborne sound.
- C. Available Products: Subject to compliance with requirements, acoustical sealants that may be incorporated in the Work include, but are not limited to, the following:
 - 1. Acoustical Sealant for Exposed and Concealed Joints:
 - a. PL Acoustical Sealant; ChemRex, Inc.; Contech Brands.
 - b. AC-20 FTR Acoustical and Insulation Sealant; Pecora Corp.
 - c. SHEETROCK Acoustical Sealant; United States Gypsum Co.

2. Acoustical Sealant for Concealed Joints:
 - a. BA-98; Pecora Corp.
 - b. Tremco Acoustical Sealant; Tremco, Inc.

2.09 MISCELLANEOUS MATERIALS

- A. General: Provide auxiliary materials for gypsum board construction that comply with referenced standards and recommendations of gypsum board manufacturer.
- B. Laminating Adhesive: Special adhesive or joint compound recommended for laminating gypsum panels.
- C. Spot Grout: ASTM C 475, setting-type joint compound recommended for spot-grouting hollow metal door frames.
- D. Fastening Adhesive for Wood: ASTM C 557.
- E. Fastening Adhesive for Metal: Special adhesive recommended for laminating gypsum panels to steel framing.
- F. Steel drill screws complying with ASTM C 1002 for the following applications:
 1. Fastening gypsum board to steel members less than 0.033 inch (0.84 mm) thick.
- G. Steel drill screws complying with ASTM C 954 for fastening gypsum board to steel members from 0.033 to 0.112 inch (0.84 to 2.84 mm) thick.
- H. Steel drill screws of size and type recommended by unit manufacturer for fastening cementitious backer units.
- I. Gypsum Board Nails: ASTM C 514.
- J. Asphalt-Saturated Organic Felt: ASTM D 226, Type I (No. 15 asphalt felt), nonperforated.
- K. Foam Gaskets: Closed-cell vinyl foam adhesive-backed strips that allow fastener penetration without foam displacement, 1/8 inch (3.2 mm) thick, in width to suit metal stud size indicated.
- L. Sound-Attenuation Blankets: Unfaced mineral-fiber blanket insulation produced by combining mineral fibers of type described below with thermosetting resins to comply with ASTM C 665 for Type I (blankets without membrane facing).
 1. Mineral-Fiber Type: Fibers manufactured from glass, slag wool, or rock wool.
- M. Thermal Insulation: Material indicated below, of thickness and width to fill voids formed by Z-furring members:
 1. Unfaced Mineral-Fiber Blanket Insulation: Unfaced mineral-fiber blanket insulation produced by combining mineral fibers with thermosetting resins to comply with ASTM C 665 for Type I (blankets without membrane facing).

2.10 TEXTURE FINISHES

- A. Available products: Subject to compliance with requirements, products that may be incorporated into the work include, but are not limited to, the following:

1. Polystyrene Aggregate Finish:
 - a. United States Gypsum Company; Sheetrock brand Tuf-Tex wall and ceiling texture.
 - b. National Gypsum Company; Proformwall and ceiling spray.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrates to which gypsum board assemblies attach or abut, installed hollow metal frames, cast-in-anchors, and structural framing, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of assemblies specified in this Section. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Ceiling Anchorages: Coordinate installation of ceiling suspension systems with installation of overhead structural assemblies to ensure that inserts and other provisions for anchorages to building structure have been installed to receive ceiling hangers that will develop their full strength and at spacing required to support ceilings.
 1. Furnish concrete inserts and other devices indicated to other trades for installation well in advance of time needed for coordination with other construction.
- B. Do not use power actuated nailers into post tensioned slab.
- C. All structural anchors are to be approved by KEM Engineers.

3.03 INSTALLING STEEL FRAMING, GENERAL

- A. Steel Framing Installation Standard: Install steel framing to comply with ASTM C 754 and with ASTM C 840 requirements that apply to framing installation.
- B. Install supplementary framing, blocking, and bracing at terminations in gypsum board assemblies to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction. Comply with details indicated and with recommendations of gypsum board manufacturer or, if none available, with United States Gypsum Co.'s "Gypsum Construction Handbook."
- C. Isolate steel framing from building structure at locations indicated to prevent transfer of loading imposed by structural movement. Comply with details shown on Drawings.
 1. Where building structure abuts ceiling perimeter or penetrates ceiling.
 2. Where partition framing and wall furring abut structure, except at floor.
 - a. Provide slip- or cushioned-type joints as detailed to attain lateral support and avoid axial loading.
 - b. Install deflection track top runner to attain lateral support and avoid axial loading.
 - c. Install deflection and firestop track top runner at fire-resistance-rated assemblies where indicated.
 - 1) Attach jamb studs at openings to tracks using manufacturer's standard stud clip.

- D. Do not bridge building control and expansion joints with steel framing or furring members. Independently frame both sides of joints with framing or furring members as indicated.

3.04 INSTALLING STEEL FRAMING FOR SUSPENDED AND FURRED CEILINGS

- A. Screw furring members to wood framing.
- B. Suspend ceiling hangers from building structural members and as follows:
 - 1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or ceiling suspension system. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 - 2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with the location of hangers required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.
 - 3. Secure wire hangers by looping and wire-tying, either directly to structures or to inserts, eyescrews, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause them to deteriorate or otherwise fail.
 - 4. Secure flat, angle, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eyescrews, or other devices and fasteners that are secure and appropriate for structure as well as for type of hanger involved, and in a manner that will not cause them to deteriorate or otherwise fail.
 - 5. Do not support ceilings directly from permanent metal forms. Furnish cast-in-place hanger inserts that extend through forms.
 - 6. Do not attach hangers to steel deck tabs.
 - 7. Do not attach hangers to steel roof deck. Attach hangers to structural members.
 - 8. Do not connect or suspend steel framing from ducts, pipes, or conduit.
- C. Sway-brace suspended steel framing with hangers used for support.
- D. Install suspended steel framing components in sizes and at spacings indicated, but not less than that required by the referenced steel framing installation standard.
 - 1. Wire Hangers: 48 inches (1219 mm) o.c.
 - 2. Carrying Channels (Main Runners): 48 inches (1219 mm) o.c.
 - 3. Furring Channels (Furring Members): 16 inches (406 mm) o.c.
- E. Installation Tolerances: Install steel framing components for suspended ceilings so that cross-furring or grid suspension members are level to within 1/8 inch in 12 feet (3 mm in 3.6 m) as measured both lengthwise on each member and transversely between parallel members.
- F. Wire-tie or clip furring members to main runners and to other structural supports as indicated.
- G. Grid Suspension System: Attach perimeter wall track or angle where grid suspension system meets vertical surfaces. Mechanically join main beam and cross-furring members to each other and butt-cut to fit into wall track.

- H. For exterior soffits, install cross-bracing and additional framing to resist wind uplift according to details on Drawings.

3.05 INSTALLING STEEL FRAMING FOR WALLS AND PARTITIONS

- A. Install runners (tracks) at floors, ceilings, and structural walls and columns where gypsum board stud assemblies abut other construction.
1. Where studs are installed directly against exterior walls, install asphalt felt strips or foam gaskets between studs and wall.
- B. Installation Tolerances: Install each steel framing and furring member so that fastening surfaces do not vary more than 1/8 inch (3 mm) from the plane formed by the faces of adjacent framing.
- C. Extend partition framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings. Continue framing over frames for doors and openings and frame around ducts penetrating partitions above ceiling to provide support for gypsum board.
1. Cut studs 1/2 inch (13 mm) short of full height to provide perimeter relief.
 2. For STC-rated and fire-resistance-rated partitions that extend to the underside of floor/roof slabs and decks or other continuous solid structural surfaces to obtain ratings, install framing around structural and other members extending below floor/roof slabs and decks, as needed, to support gypsum board closures needed to make partitions continuous from floor to underside of solid structure.
- D. Terminate partition framing at suspended ceilings where indicated.
- E. Install steel studs and furring in sizes and at spacings indicated.
1. Single-Layer Construction: Space studs 16 inches (610 mm) o.c., unless otherwise indicated.
 2. Cementitious Backer Unit Construction: Space studs 16 inches (406 mm) o.c., unless otherwise indicated.
 3. Cementitious Backer Unit Construction: Space studs 406 mm o.c., unless otherwise indicated.
- F. Install steel studs so flanges point in the same direction and leading edge or end of each gypsum board panel can be attached to open (unsupported) edges of stud flanges first.
- G. For curved partitions, install steel framing as follows:
1. Cut top and bottom runners through leg and web at 2-inch (50-mm) intervals for arc length. In cutting lengths of runners, allow for uncut straight lengths of not less than 12 inches (300 mm) at ends of arcs.
 2. Bend runners to uniform curve of radius indicated and locate straight lengths so they are tangent to arcs.
 3. Support outside (cut) leg of runners by clinching a 1-inch- (25-mm-) high-by-0.0209-inch- (0.55-mm-) thick steel sheet strip to inside of cut legs using metal lock fasteners.
 4. Attach runners to structural elements at floor and ceiling with fasteners located 2 inches (50 mm) from ends and spaced 24 inches (610 mm) o.c.
 5. Attach runners to structural elements at floor and ceiling with fasteners located 50 mm from ends and spaced 600 mm o.c.

6. Attach runners to suspended ceilings with toggle bolts or hollow wall anchors located 2 inches (50 mm) from ends and spaced 16 inches (406 mm) o.c. in between where attached to suspended ceilings.
 7. Attach runners to suspended ceilings with toggle bolts or hollow wall anchors located 50 mm from ends and spaced 400 mm o.c. in between where attached to suspended ceilings.
 - a. Screw runners directly to suspension grid of suspended acoustical tile ceilings where runners intersect grid.
 8. Position studs vertically with open sides facing in same direction and engaging floor and ceiling runners. Begin and end each arc with a stud and space intermediate studs equally along arcs at stud spacing recommended by gypsum board manufacturer for radii indicated. Attach studs to runners with 3/8-inch- (9.5-mm-) long pan head framing screws. On straight lengths at ends of arcs, place studs 6 inches (150 mm) o.c. with last stud left free standing.
- H. Frame door openings to comply with GA-219, and with applicable published recommendations of gypsum board manufacturer, unless otherwise indicated. Attach vertical studs at jambs with screws either directly to frames or to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.
1. Install 2 studs at each jamb, unless otherwise indicated.
 2. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch (12.7-mm) clearance from jamb stud to allow for installation of control joint.
 3. Extend jamb studs through suspended ceilings and attach to underside of floor or roof structure above.
- I. Frame openings other than door openings to comply with details indicated or, if none indicated, as required for door openings. Install framing below sills of openings to match framing required above door heads.
- J. Install thermal insulation as follows:
1. Erect insulation vertically and hold in place with Z-furring members spaced 24 inches (610 mm) o.c.
 2. Except at exterior corners, securely attach narrow flanges of furring members to wall with concrete stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches (600 mm) o.c.
 3. At exterior corners, attach wide flange of furring members to wall with short flange extending beyond corner; on adjacent wall surface, screw attach short flange of furring channel to web of attached channel. Start from this furring channel with standard width insulation panel and continue in regular manner. At interior corners, space second member no more than 12 inches (300 mm) from corner and cut insulation to fit.
 4. Until gypsum board is installed, hold insulation in place with 10-inch (250-mm) staples fabricated from 0.0625-inch (1.6-mm) diameter tie wire and inserted through slot in web of member.
- K. Install polyethylene vapor retarder where indicated to comply with the following requirements:
1. Extend vapor retarder to extremities of areas to be protected from vapor transmission. Secure in place with mechanical fasteners or adhesives. Extend vapor retarder to cover miscellaneous voids in insulated substrates, including those filled with loose mineral-fiber insulation.

2. Seal vertical joints in vapor retarders over framing by lapping not less than 2 wall studs. Fasten vapor retarders to framing at top, end, and bottom edges, at perimeter of wall openings, and at lap joints; space fasteners 16 inches (400 mm) o.c.
3. Seal joints in vapor retarders caused by pipes, conduits, electrical boxes, and similar items penetrating vapor retarders with vapor retarder tape.
4. Repair any tears or punctures in vapor retarder immediately before concealing it with the installation of gypsum board or other construction.

3.06 APPLYING AND FINISHING GYPSUM BOARD, GENERAL

- A. Gypsum Board Application and Finishing Standards: Install and finish gypsum panels to comply with ASTM C 840 and GA-216.
- B. Install sound-attenuation blankets, where indicated, prior to installing gypsum panels unless blankets are readily installed after panels have been installed on one side.
- C. Install ceiling board panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in the central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
- D. Install gypsum panels with face side out. Do not install imperfect, damaged, or damp panels. Butt panels together for a light contact at edges and ends with not more than 1/16 inch (1.5 mm) of open space between panels. Do not force into place.
- E. Locate both edge or end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Avoid joints other than control joints at corners of framed openings where possible.
- F. Attach gypsum panels to steel studs so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.
- G. Attach gypsum panels to framing provided at openings and cutouts.
- H. Do not attach gypsum panels across the flat grain of wide-dimension lumber, including floor joists and headers. Instead, float gypsum panels over these members using resilient channels or provide control joints to counteract wood shrinkage.
- I. Spot grout hollow metal door frames for solid-core wood doors, hollow metal doors, and doors over 32 inches (813 mm) wide. Apply spot grout at each jamb anchor clip and immediately insert gypsum panels into frames.
- J. Form control and expansion joints at locations indicated and as detailed, with space between edges of adjoining gypsum panels, as well as supporting framing behind gypsum panels.
- K. Cover both faces of steel stud partition framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases that are braced internally.
 1. Except where concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. (0.7 sq. m) in area.
 2. Fit gypsum panels around ducts, pipes, and conduits.

3. Where partitions intersect open concrete coffers, concrete joists, and other structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by coffers, joists, and other structural members; allow 1/4- to 3/8-inch- (6.4- to 9.5-mm-) wide joints to install sealant.
- L. Isolate perimeter of nonload-bearing gypsum board partitions at structural abutments, except floors, as detailed. Provide 1/4- to 1/2-inch- (6.4- to 12.7-mm-) wide spaces at these locations and trim edges with U-bead edge trim where edges of gypsum panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- M. Floating Construction: Where feasible, including where recommended by manufacturer, install gypsum panels over wood framing, with floating internal corner construction.
- N. Where STC-rated gypsum board assemblies are indicated, seal construction at perimeters, behind control and expansion joints, openings, and penetrations with a continuous bead of acoustical sealant including a bead at both faces of the partitions. Comply with ASTM C 919 and manufacturer's recommendations for location of edge trim and closing off sound-flanking paths around or through gypsum board assemblies, including sealing partitions above acoustical ceilings.
- O. Space fasteners in gypsum panels according to referenced gypsum board application and finishing standard and manufacturer's recommendations.
 1. Space screws a maximum of 12 inches (304.8 mm) o.c. for vertical applications.
- P. Space fasteners in panels that are tile substrates a maximum of 8 inches (203.2 mm) o.c.

3.07 GYPSUM BOARD APPLICATION METHODS

- A. Single-Layer Application: Install gypsum wallboard panels as follows:
 1. On ceilings, apply gypsum panels prior to wall/partition board application to the greatest extent possible and at right angles to framing, unless otherwise indicated.
 2. On partitions/walls, apply gypsum panels vertically (parallel to framing), unless otherwise indicated, and provide panel lengths that will minimize end joints.
 3. On partitions/walls, apply gypsum panels horizontally (perpendicular to framing), unless parallel application is required for fire-resistance-rated assemblies. Use maximum-length panels to minimize end joints.
 - a. Stagger abutting end joints not less than one framing member in alternate courses of board.
 - b. At stairwells and other high walls, install panels horizontally.
 4. On Z-furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.
- B. Wall Tile Substrates: For substrates indicated to receive thin-set ceramic tile and similar rigid applied wall finishes, comply with the following:
 1. Install cementitious backer units to comply with ANSI A108.11 at showers, tubs, and where indicated.
 2. Install cementitious backer units to comply with ANSI A108.11 at locations indicated to receive wall tile.
 3. Install glass-mat, water-resistant gypsum backing board panels to comply with manufacturer's installation instructions at showers, tubs, and where indicated. Install with 1/4-inch (6.4-mm) open space where panels abut other construction or penetrations.

4. Install glass-mat, water-resistant gypsum backing board panels to comply with manufacturer's installation instructions at locations indicated to receive wall tile. Install with 1/4-inch (6.4-mm) open space where panels abut other construction or penetrations.
 5. Install water-resistant gypsum backing board panels at showers, tubs, and where indicated. Install with 1/4-inch (6.4-mm) open space where panels abut other construction or penetrations.
 6. Install gypsum wallboard panels with tapered edges taped and finished to produce a flat surface except at showers, tubs, and other locations indicated to receive water-resistant panels.
- C. Multilayer Application on Ceilings: Apply gypsum board indicated for base layers prior to applying base layers on walls/partitions; apply gypsum wallboard face layers in same sequence. Offset face-layer joints one framing member, 16 inches (400 mm) minimum, from parallel base-layer joints. Apply base layers at right angles to framing members, unless otherwise indicated.
- D. Multilayer Application on Partitions/Walls: Apply gypsum board indicated for base layers and gypsum wallboard face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints. Stagger joints on opposite sides of partitions.
1. On Z-furring members, apply base layer vertically (parallel to framing) and face layer either vertically (parallel to framing) or horizontally (perpendicular to framing) with vertical joints offset at least one furring member. Locate edge joints of base layer over furring members.
- E. Acoustical Tile Base: Where gypsum panels form the base for adhesively applied acoustical tile, install gypsum wallboard panels with tapered edges taped and finished to produce a flat surface.
- F. Single-Layer Fastening Methods: Apply gypsum panels to supports as follows:
1. Fasten with screws.
- G. Multilayer Fastening Methods: Apply base layers of gypsum panels and face layer to base layers as follows:
1. Fasten both base layers and face layers separately to supports with screws.
 2. Fasten base layers with screws and face layer with adhesive and supplementary fasteners.
 3. Fasten base layers to wood supports with nails and face layer with adhesive and supplementary fasteners.
- H. Direct-Bonding to Substrate: Where gypsum panels are indicated as directly adhered to a substrate (other than studs, joists, furring members, or base layer of gypsum board), comply with gypsum board manufacturer's recommendations, and temporarily brace or fasten gypsum panels until fastening adhesive has set.
- I. Exterior Soffits and Ceilings: Apply exterior gypsum soffit board panels perpendicular to supports, with end joints staggered over supports.
1. Install with 1/4-inch (6.4-mm) open space where panels abut other construction or structural penetrations.
 2. Fasten with corrosion-resistant screws.

- J. For curved partitions, install gypsum panels as follows:
1. Select gypsum panel lengths and cut them as required to produce one unbroken panel covering each curved surface plus 12-inch- (300-mm-) long straight sections at ends of curves and tangent to them.
 2. Wet gypsum panels on surfaces that will become compressed when panels are installed over a curve and where curve radius prevents using dry panels. Comply with gypsum board manufacturer's recommendations relative to curve radii, wetting methods, stacking panels after wetting, and other preparations that precede installing wetted gypsum panels.
 3. Apply gypsum panels horizontally with wrapped edges perpendicular to studs. On convex sides of partitions, begin installation at one end of curved surface and fasten gypsum panels to studs as they are wrapped around the curve. On concave side, start fastening panels to stud at center of curve and work outward to panel ends. Fasten panels to framing with screws spaced 12 inches (300 mm) o.c.
 4. For double-layer construction, apply gypsum board base layer horizontally and fasten to studs with screws spaced 16 inches (400 mm) o.c. Center gypsum board face layers over joints in base layer and fasten to studs with screws spaced 12 inches (300 mm) o.c.
 5. Allow wetted gypsum panels to dry before applying joint treatment.

3.08 INSTALLING TRIM ACCESSORIES

- A. General: For trim accessories with back flanges, fasten to framing with the same fasteners used to fasten gypsum board. Otherwise, fasten trim accessories according to accessory manufacturer's directions for type, length, and spacing of fasteners.
- B. Install corner bead at external corners.
- C. Install edge trim where edge of gypsum panels would otherwise be exposed. Provide edge trim type with face flange formed to receive joint compound, except where other types are indicated.
1. Install LC-bead where gypsum panels are tightly abutted to other construction and back flange can be attached to framing or supporting substrate.
 2. Install L-bead where edge trim can only be installed after gypsum panels are installed.
 3. Install U-bead where indicated.
 4. Install aluminum trim and other accessories where indicated.
- D. Install control joints at locations indicated or per Gypsum mfg. recommendations.
- E. Install control joints according to ASTM C 840 and manufacturer's recommendations and in specific locations approved by Architect for visual effect.

3.09 FINISHING GYPSUM BOARD ASSEMBLIES

- A. General: Treat gypsum board joints, interior angles, flanges of corner bead, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration.
- B. Prefill open joints, rounded or beveled edges, and damaged areas using setting-type joint compound.

- C. Apply joint tape over gypsum board joints, except those with trim accessories having flanges not requiring tape.
- D. Apply joint tape over gypsum board joints and to flanges of trim accessories as recommended by trim accessory manufacturer.
- E. Base for Acoustical Tile: Where gypsum board is indicated as a base for adhesively applied acoustical tile, install joint tape and a 2-coat compound treatment, without sanding.
- F. Finish water-resistant gypsum backing board forming base for ceramic tile to comply with ASTM C 840 and gypsum board manufacturer's directions for treatment of joints behind tile.
- G. Finish glass-mat, water-resistant gypsum backing board to comply with gypsum board manufacturer's directions.
- H. Finish cementitious backer units to comply with unit manufacturer's directions.
- I. Gypsum board finish levels.
 - 1. Level 4: Embed tape and apply first, second and finish coats of joint compound to tape, fasteners, and trim flanges at panel surfaces that will be exposed to view, unless otherwise indicated. Sand between each layer application.

3.10 APPLYING TEXTURE FINISHES

- A. Surface preparation and primer: Prepare and apply primer to gypsum panels and other surfaces receiving texture finishes. Apply primer to surfaces that are clean, dry and smooth.
- B. Texture Finish Application: Mix and apply finish using powered spray equipment to provide a uniform texture, light orange peel texture, free of starved spots or other evidence of thin application or of application patterns.
- C. Prevent texture finishes from coming in contact with surfaces not indicated to receive texture finish by covering them with masking agents, polyethylene film, or other means. If, despite the precautions, texture finishes contact these surfaces, immediately remove droppings and overspray to prevent damage according to texture finish MFR's recommendations.

3.10 FIELD QUALITY CONTROL

- A. Above-Ceiling Observation: Architect will conduct an above-ceiling observation prior to installation of gypsum board ceilings and report any deficiencies in the Work observed. Do not proceed with installation of gypsum board to ceiling support framing until deficiencies have been corrected.
 - 1. Notify Architect one week in advance of the date and the time when the Project, or part of the Project, will be ready for an above-ceiling observation.
 - 2. Prior to notifying Architect, complete the following in areas to receive gypsum board ceilings:
 - a. Installation of 80 percent of lighting fixtures, powered for operation.
 - b. Installation, insulation, and leak and pressure testing of water piping systems.
 - c. Installation of air duct systems.
 - d. Installation of air devices.
 - e. Installation of mechanical system control air tubing.
 - f. Installation of ceiling support framing.

3.12 CLEANING AND PROTECTION

- A. Promptly remove any residual joint compound from adjacent surfaces.
- B. Provide final protection and maintain conditions, in a manner acceptable to Installer, that ensure gypsum board assemblies are without damage or deterioration at the time of Substantial Completion.

END OF SECTION

**SECTION 09311
CERAMIC TILE AND MARBLE**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications, apply to this section.

1.02 DESCRIPTION OF WORK

- A. This section includes the provision and installation of all materials, equipment and incidentals necessary and/or required for a complete installation of the following items as specified herein, including, but not limited to, the following:
 - 1. Ceramic tile floor and base finish using the thin-set application method.
 - 2. Ceramic tile wall finish.
 - 3. Edge strip at door openings

1.03 RELATED SECTIONS

- A. Section 03300 – Cast-in-Place Concrete
- B. Section 09260 – Gypsum Board Systems

1.04 REFERENCES

- A. ANSI/TCA A108.4 – Installation of Ceramic Tile with Water Resistant Organic Adhesive.
- B. ANSI/TCA A108.5 – Ceramic Tile Installed with Dry-Set Portland Cement Mortar or Latex Portland Cement Mortar.
- C. ANSI/TCA A108.6 – Ceramic Tile Installed with Chemical Resistant, Water Cleanable Tile-Setting and Grouting Epoxy.
- D. ANSI/TCA A118.1 – Dry-Set Portland Cement Mortar.
- E. ANSI/TCA A118.3 – Chemical Resistant, Water Cleanable Tile-Setting and Grouting Epoxy.
- F. ANSI/TCA A136.1 – Organic Adhesives for Installation of Ceramic Tile, Type 1 and Type 2.
- G. ANSI/TCA A137.1 – Specifications for Ceramic Tile.
- H. TCA (Tile Council of America) – Handbook for Ceramic Tile Installation.

1.05 SUBMITTALS

- A. Submit shop drawings under provisions of Section 01300.
- B. Submit product data and samples under provisions of Section 01300.

- C. Submit manufacturer's certificate under provisions of section 01400 that products meet or exceed specified requirements.
- D. Submit maintenance data under provisions of Section 01700. Include recommended cleaning and stain removal methods, cleaning materials and polishing waxes.
- E. Submit two samples, 12 X 12 inch in size illustrating color and pattern for each material.

1.06 QUALITY ASSURANCE

- A. Conform to ANSI/TCA A137.1
- B. Conform to TCA Handbook for Ceramic Tile Installation ANSI/TCA A108.4.
- C. Installer Qualifications: Engage an experienced installer who has completed tile installations similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.
- D. Source Limitations for Tile: Obtain each color, grade, finish, type, composition, and variety of tile from one source with resources to provide products from the same production run for each contiguous area of consistent quality in appearance and physical properties without delaying the Work.
- E. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from a single manufacturer and each aggregate from one source or producer.
- F. Source Limitations for Other Products: Obtain each of the following products specified in this Section from one source and by a single manufacturer for each product:
 - 1. Stone thresholds.
 - 2. Cementitious backer units.
 - 3. Joint sealants.
 - 4. Waterproofing.
- G. Mockups: Before installing tile, construct mockups for each form of construction and finish required to verify selections made under Sample submittals and to demonstrate aesthetic effects and qualities of materials and execution. Build mockups to comply with the following requirements, using materials indicated for completed Work.
 - 1. Locate mockups in the location and of the size indicated or, if not indicated, as directed by Architect.
 - 2. Notify Architect 7 days in advance of the dates and times when mockups will be constructed.
 - 3. Demonstrate the proposed range of aesthetic effects and workmanship.
 - 4. Obtain Architect's approval of mockups before proceeding with final unit of Work.
 - 4. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 - a. When directed, demolish and remove mockups from Project site.
 - b. Approved mockups in an undisturbed condition at the time of Substantial Completion may become part of the completed work.

1.07 EXTRA MATERIALS

- A. Deliver extra materials to Owner. Furnish extra materials described below that match products installed, are packaged with protective covering for storage, and are identified with labels describing contents.
1. Attic Stock – Specify a minimum of 50 SF or 10% whichever is greater, of attic stock of each type and of each color of ceramic tile used. Except for borders and accents where 5% of each type is required.

1.08 PERFORMANCE STANDARDS

- A. Static Coefficient of Friction: Tile installed on walkway surfaces shall have the following values as determined by testing identical products per ASTM C1028.
1. Level Surfaces: Minimum 0.6 wet.
 2. Step Treads: Minimum 0.6 wet.
 3. Ramp Surfaces: Minimum 0.8 wet.
- B. Traffic Level Performance: floor tiles to meet **[extra heavy] [heavy] [moderate] [light] [residential]** traffic level performance passing ASTM C627, cycles 1 through [14] [12] [10], as described in TTMAC Tile Specification Guide 09300.
1. Extra Heavy: Passes cycles 1 through 14.
 2. Heavy: Passes cycles 1 through 12.
 3. Moderate: Passes cycles 1 through 10.
 4. Light: Passes cycles 1 through 6.
 5. Residential: Passes cycles 1 through 3.
- C. Exterior Tiles provided for Work in this Section to be frost resistant in accordance with CAN/CGSB 75.1 and shall have a moisture absorption rating of 3.0% or less.

PART 2 - PRODUCTS**2.01 MANUFACTURERS – TILE**

- A. American Olean
- B. Dal-Tile Corporation
- C. Crossville Tile, Inc.
- D. Mediterranea
- E. Ceramic Matrix
- F. Trinity Tile
- G. Olympia Tile & Stone
- H. Atlas
- I. Approved Equal

2.02 PRODUCTS - GENERAL

- A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1, "Specifications for Ceramic Tile," for types, compositions, and other characteristics indicated.

1. Provide tile complying with Standard Grade requirements, unless otherwise indicated.
 2. For facial dimensions of tile, comply with requirements relating to tile sizes specified in Part 1 "Definitions" Article.
- B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI standards referenced in "Setting Materials" and "Grouting Materials" articles.
- C. Colors, Textures, and Patterns: Where manufacturer's standard products are indicated for tile, grout, and other products requiring selection of colors, surface textures, patterns, and other appearance characteristics, provide specific products or materials complying with the following requirements:
1. Match Architect's samples.
 2. Match colors, textures, and patterns indicated by referencing manufacturer's standard designations for these characteristics.
 3. Provide Architect's selections from manufacturer's full range of colors, textures, and patterns for products of type indicated.
 4. Provide tile trim and accessories that match color and finish of adjoining flat tile.
- D. Factory Blending: For tile exhibiting color variations within the ranges selected during Sample submittals, blend tile in the factory and package so tile units taken from one package show the same range in colors as those taken from other packages and match approved Samples.
- J. Mounting: Where factory-mounted tile is required, provide back or edge-mounted tile assemblies as standard with manufacturer, unless another mounting method is indicated.
1. Where tile is indicated for installation in swimming pools, on exteriors, or in wet areas, do not use back- or edge-mounted tile assemblies unless tile manufacturer specifies in writing that this type of mounting is suitable for these kinds of installations and has a record of successful in-service performance.
- E. Factory-Applied Temporary Protective Coating: Where indicated under tile type, protect exposed surfaces of tile against adherence of mortar and grout by precoating them with a continuous film of petroleum paraffin wax, applied hot. Do not coat unexposed tile surfaces.

2.03 TILE MATERIAL

- A. Ceramic Floor and Wall Tile: ANSI/TCA A137.1, conforming to the following:
- | | |
|---------|---|
| Size | See interior design finish schedule |
| Surface | 12 x 12 Unglazed Floor, 4 x 4 Glazed Wall |
| Surface | Unglazed Floor, Glazed Wall |
| Color | As selected |
- B. Base: Match floor tile for moisture absorption, surface finish and color; 4-1/4 inch long x 4 inch high; bull-nosed top edge, coved internal corner.
- C. Window stools: 5/8inch marble.

2.04 WATERPROOFING FOR THIN-SET TILE INSTALLATIONS

- A. General: Provide products that comply with ANSI A118.10 and the descriptions in this Article.
- B. Polyethylene-Sheet Waterproofing: Manufacturer's standard proprietary product consisting of composite sheets, 60 inches (152 mm) wide by a nominal thickness of 0.030 inches (0.76

mm), composed of an inner layer of non-plasticized, chlorinated polyethylene sheet faced on both sides with laminated, high-strength, nonwoven polyester material, designed for embedding in latex-portland cement mortar and as the substrate for latex-portland cement mortar setting bed.

- C. PVC-Sheet Waterproofing: Manufacturer's standard proprietary product consisting of composite sheets, 60 inches (152 mm) wide by a nominal thickness of 0.040 inches (1.01 mm), composed of an inner membrane of 2 layers of PVC sheet heat-fused together and to facings of bondable nonwoven polyester, designed for embedding in latex-portland cement mortar and as the substrate for latex-portland cement mortar setting bed.
- D. Latex-Rubber Waterproofing: Manufacturer's standard factory-packaged, job-mixed, proprietary, 2-part formulation consisting of liquid-latex rubber and powder for trowel application and glass-fiber-fabric reinforcing.
- E. Acrylic-Latex Waterproofing: Manufacturer's standard proprietary product consisting of one-part acrylic-latex additive and flexible cementitious fiber mortar, factory packaged for job-mixing and trowel application.
- F. Urethane Waterproofing and Tile-Setting Adhesive: Manufacturer's standard proprietary product consisting of 1-part liquid-applied urethane in a consistency suitable for trowel application and intended for use as both waterproofing and tile-setting adhesive in a 2-step process.
- G. Available Products: Subject to compliance with requirements, products which may be incorporated into the Work include, but are not limited to, the following:
 - 1. Polyethylene-Sheet Waterproofing:
 - a. Nobleseal TS; Noble Company (The).
 - 2. PVC-Sheet Waterproofing:
 - a. Composeal Gold; Compotite Corporation.
 - 3. Latex-Rubber Waterproofing:
 - a. Trowel & Seal Waterproof Membrane; Custom Building Products.
 - b. Laticrete 9235 Waterproof Membrane; Laticrete International, Inc.
 - c. S-9000; Summitville Tiles, Inc.
 - 4. Acrylic-Latex Waterproofing:
 - a. PRP 315; Mapei Corporation.
 - 5. Urethane Waterproofing and Tile-Setting Adhesive:
 - a. Hydroment Ultra-Set; Bostik.
 - b. Deck-Seal 1000; Southern Grouts & Mortars, Inc.

2.05 SETTING MATERIALS

- A. Portland Cement Mortar Installation Materials: Provide materials complying with ANSI A108.1A and as specified below:
 - 1. Cleavage Membrane: Asphalt felt, ASTM D 226, Type I (No. 15), or polyethylene sheeting ASTM D 4397, 4.0 mils (0.1 mm) thick.
 - 2. Reinforcing Wire Fabric: Galvanized, welded wire fabric, 2 by 2 inches (50.8 by 50.8 mm) by 0.062-inch (1.57-mm) diameter; comply with ASTM A 185 and ASTM A 82, except for minimum wire size.
 - 3. Expanded Metal Lath: Provide diamond-mesh lath complying with ASTM C 847 for requirements indicated below:

- a. Base Metal and Finish for Interior Applications: Fabricate lath from uncoated or zinc-coated (galvanized) steel sheet, with uncoated steel sheet painted after fabrication into lath.
 - b. Base Metal and Finish for Exterior Applications: Fabricate lath from zinc-coated (galvanized) steel sheet.
 - c. Configuration over Studs and Furring: Flat.
 - d. Configuration over Solid Surfaces: Self-furring.
 - e. Weight: 2.5 lb/sq. yd. (1.4 kg/sq. m).
 - f. Weight: 3.4 lb/sq. yd. (1.8 kg/sq. m).
4. Latex additive (water emulsion) described below, serving as replacement for part or all of gaging water, of type specifically recommended by latex additive manufacturer for use with job-mixed portland cement and aggregate mortar bed.
- a. Latex Additive: Manufacturer's standard.
 - b. Latex Additive: Styrene butadiene rubber.
 - c. Latex Additive: Acrylic resin.
- B. Dry-Set Portland Cement Mortar: ANSI A118.1.
6. For wall applications, provide nonsagging, latex-portland cement mortar complying with ANSI A118.4 for mortar of this type defined in Section F-2.1.2.
- C. Latex-Portland Cement Mortar: ANSI A118.4, composed as follows:
1. Prepackaged Dry-Mortar Mix: Factory-prepared mixture of portland cement; dry, redispersible, ethylene vinyl acetate additive; and other ingredients to which only water needs to be added at Project site.
 - d. For wall applications, provide nonsagging, latex-portland cement mortar complying with ANSI A118.4 for mortar of this type defined in Section F-2.1.2.
 2. Mixture of Dry-Mortar Mix and Latex Additive: Mixture of prepackaged dry-mortar mix and liquid-latex additive complying with the following requirements:
 - a. Latex Additive: Styrene butadiene rubber.
 - b. Latex Additive: Acrylic resin.
 - c. For wall applications, provide nonsagging, latex-portland cement mortar complying with ANSI A118.4 for mortar of this type defined in Section F-2.1.2.
- D. Medium-Bed, Latex-Portland Cement Mortar: Provide materials composed as follows, with physical properties equaling or exceeding those required for thin-set mortars based on testing of medium-bed specimens according to ANSI A118.4:
1. Prepackaged Dry-Mortar Mix: Factory-prepared mixture of portland cement; dry, redispersible, ethylene vinyl acetate additive; and other ingredients to which only water needs to be added at Project site.
 2. Mixture of Dry-Mortar Mix and Latex Additive: Mixture of prepackaged dry-mortar mix and liquid-latex additive complying with the following requirements:
 - a. Latex Additive: Styrene butadiene rubber.
 - b. Latex Additive: Acrylic resin.
- E. Conductive Dry-Set Mortar: ANSI A118.2.
- F. Chemical-Resistant, Water-Cleanable, Ceramic Tile-Setting and -Grouting Epoxy: ANSI A118.3.
1. Provide product capable of resisting continuous and intermittent exposure to

temperatures of up to 140 deg F (60 deg C) and 212 deg F (100 deg C), respectively, as certified by mortar manufacturer for intended use.

- G. Water-Cleanable, Tile-Setting Epoxy Adhesive: ANSI A118.3.
- H. Chemical-Resistant Furan Mortar: ANSI A118.5, with carbon filler, unless otherwise indicated.
- I. Modified-Epoxy Emulsion Mortar: ANSI A118.8.
- J. Organic Adhesive: ANSI A136.1, Type I.

2.06 GROUTING MATERIALS

- A. Sand-Portland Cement Grout: ANSI A108.10, composed of white or gray cement and white or colored aggregate as required to produce color indicated.
- B. Commercial Portland Cement Grout (Sanded Grout): ANSI A118.6, color as indicated, for joints 1/8 inch (3.2 mm) or wider.
- C. Dry-Set Grout: ANSI A118.6, color as indicated.
- D. Latex-Portland Cement Grout: ANSI A118.6 for materials described in Section H-2.4, composed as follows:
 - 1. Factory-Prepared, Dry-Grout Mixture: Factory-prepared mixture of portland cement; dry, redispersible, ethylene vinyl acetate additive; and other ingredients to produce the following:
 - a. Unsanded grout mixture for joints 1/8 inch (3.2 mm) and narrower.
 - b. Sanded grout mixture for joints 1/8 inch (3.2 mm) and wider.
 - 2. Mixture of Dry-Grout Mix and Latex Additive: Mixture of factory-prepared, dry-grout mix and latex additive complying with the following requirements:
 - a. Unsanded Dry-Grout Mix: Dry-set grout complying with ANSI A118.6 for materials described in Section H-2.3, for joints 1/8 inch (3.2 mm) and narrower.
 - b. Sanded Dry-Grout Mix: Commercial portland cement grout complying with ANSI A118.6 for materials described in Section H-2.1, for joints 1/8 inch (3.2 mm) and wider.
 - c. Latex Additive: Styrene butadiene rubber.
 - d. Latex Additive: Acrylic resin.
- E. Chemical-Resistant Epoxy Grout: ANSI A118.3, color as indicated.
 - 1. Provide product capable of resisting continuous and intermittent exposure to temperatures of up to 140 deg F (60 deg C) and 212 deg F (100 deg C), respectively, as certified by mortar manufacturer for intended use.
- F. Chemical-Resistant Furan Grout: ANSI A118.5.
- G. Grout for Pregrouted Tile Sheets: Same silicone rubber used in factory to pregrout tile sheets.

2.07 ELASTOMERIC SEALANTS

- A. General: Provide manufacturer's standard chemically curing, elastomeric sealants of base

polymer and characteristics indicated that comply with applicable requirements of Division 7 Section "Joint Sealants."

- B. Colors: Provide colors of exposed sealants to match colors of grout in tile adjoining sealed joints, unless otherwise indicated.
- C. One-Part, Mildew-Resistant Silicone Sealant: ASTM C 920; Type S; Grade NS; Class 25; Uses NT, G, A, and, as applicable to nonporous joint substrates indicated, O; formulated with fungicide, intended for sealing interior ceramic tile joints and other nonporous substrates that are subject to in-service exposures of high humidity and temperature extremes.
- D. Multipart, Pourable Urethane Sealant for Use T: ASTM C 920; Type M; Grade P; Class 25; Uses T, M, A, and, as applicable to joint substrates indicated, O.
- E. Chemical-Resistant Sealants: For chemical-resistant floors, provide sealants compatible with chemical-resistant mortars and grouts, approved for use indicated by manufacturers of both mortar/grout and sealant and with chemical-resistance properties equivalent to mortar/grout.
- F. Available Products: Subject to compliance with requirements, products which may be incorporated into the Work include, but are not limited to, the following:
 - 1. One-Part, Mildew-Resistant Silicone Sealants:
 - a. Dow Corning 786; Dow Corning Corporation.
 - b. Sanitary 1700; GE Silicones.
 - c. Pecora 898 Sanitary Silicone Sealant; Pecora Corp.
 - d. Rhodorsil 6B White; Rhone-Poulenc, Inc.
 - e. Tremsil 600 White; Tremco, Inc.
 - 2. Multipart, Pourable Urethane Sealants:
 - a. Chem-Calk 550; Bostik.
 - b. Vulkem 245; Mameco International, Inc.
 - c. NR-200 Urexpan; Pecora Corp.
 - d. THC-900; Tremco, Inc.

2.08 CEMENTITIOUS BACKER UNITS

- A. Provide cementitious backer units complying with ANSI A118.9, of thickness and width indicated below, and in maximum lengths available to minimize end-to-end butt joints.
 - 1. Thickness: 1/2 inch (12.7 mm), unless otherwise indicated.
 - 2. Thickness: 5/8 inch (15.9 mm), where indicated.
 - 3. Width: 48 inches (1219 mm).
- B. Products: Subject to compliance with requirements, provide one of the following products:
 - 1. The Original Wonderboard; Custom Building Products.
 - 2. Wonderboard Multi + Board; Custom Building Products.
 - 3. DomCrete Cementitious Tile-Backer Board; Domtar Gypsum.
 - 4. DUROCK Cement Board; United States Gypsum Co.

2.09 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: White-zinc-alloy terrazzo strips, 1/8 inch (3.2 mm) wide at top edge with integral provision for anchorage to mortar bed or substrate, unless otherwise indicated.
- C. Temporary Protective Coating: Provide product indicated below that is formulated to protect exposed surfaces of tile against adherence of mortar and grout; is compatible with tile, mortar, and grout products; and is easily removable after grouting is completed without damaging grout or tile.
 - 1. Petroleum paraffin wax, fully refined and odorless, containing at least 0.5 percent oil with a melting point of 120 to 140 deg F (49 to 60 deg C) per ASTM D 87.
 - 2. Grout release in form of manufacturer's standard proprietary liquid coating that is specially formulated and recommended for use as a temporary protective coating for tile.
- D. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.

2.10 MIXING MORTARS AND GROUT

- A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.
- B. Add materials, water, and additives in accurate proportions.
- C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

2.11 ADHESIVE MATERIALS

- A. Organic adhesive: ANSI/TCA A136.1, Type 2 silicone, rubber or latex thinset bond type.

2.12 MANUFACTURERS – TILE AND GROUT

- A. L & M Construction Chemicals
- B. Custom Building Products/Polyblend
- C. U.S. Grout
- D. Master Builders
- E. Approved Equal

2.13 ACCESSORIES

- A. Thresholds: Marble with beveled edges.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting

performance of installed tile.

1. Verify that substrates for setting tile are firm; dry; clean; free from oil, waxy films, and curing compounds; and within flatness tolerances required by referenced ANSI A108 series of tile installation standards for installations indicated.
 2. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed before installing tile.
 3. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust latter in consultation with Architect.
- B. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Remove coatings, including curing compounds, and other substances that contain soap, wax, oil, or silicone and are incompatible with tile-setting materials by using a terrazzo or concrete grinder, a drum sander, or a polishing machine equipped with a heavy-duty wire brush.
- B. Provide concrete substrates for tile floors installed with dry-set or latex-portland cement mortars that comply with flatness tolerances specified in referenced ANSI A108 series of tile installation standards for installations indicated.
1. Use trowelable leveling and patching compounds per tile-setting material manufacturer's written instructions to fill cracks, holes, and depressions.
 2. Remove protrusions, bumps, and ridges by sanding or grinding.
- C. Blending: For tile exhibiting color variations within the ranges selected during Sample submittals, verify that tile has been blended in the factory and packaged so tile units taken from one package show the same range in 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.
- D. Field-Applied Temporary Protective Coating: Where indicated under tile type or needed to prevent adhesion or staining of exposed tile surfaces by grout, protect exposed surfaces of tile against adherence of mortar and grout by pre-coating them with a continuous film of temporary protective coating indicated below, taking care not to coat unexposed tile surfaces:
1. Petroleum paraffin wax, applied hot.
 2. Grout release.
 3. Petroleum paraffin wax or grout release.

3.03 INSTALLATION, GENERAL

- A. ANSI Tile Installation Standards: Comply with parts of ANSI A108 series of tile installation standards in "Specifications for Installation of Ceramic Tile" that apply to types of setting and grouting materials and to methods indicated in ceramic tile installation schedules.
- B. TCA Installation Guidelines: TCA's "Handbook for Ceramic Tile Installation." Comply with TCA installation methods indicated in ceramic tile installation schedules.
- C. Extend tile work into recesses and under or behind equipment and fixtures to form a complete covering without interruptions, unless otherwise indicated. Terminate work neatly at

obstructions, edges, and corners without disrupting pattern or joint alignments.

- D. 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.
- E. Jointing Pattern: Lay tile in grid pattern, unless otherwise indicated. Align joints when adjoining tiles on floor, base, walls, and trim are the same size. Lay out tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths, unless otherwise indicated.
 - 1. For tile mounted in sheets, make joints between tile sheets the same width as joints within tile sheets so joints between sheets are not apparent in finished work.
- F. Lay out tile wainscots to next full tile beyond dimensions indicated.
- G. Expansion Joints: Locate expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.
 - 1. Locate joints in tile surfaces directly above joints in concrete substrates.
 - 2. Prepare joints and apply sealants to comply with requirements of Division 7 Section "Joint Sealants."
- H. Grout tile to comply with the requirements of the following tile installation standards:
 - 1. For ceramic tile grouts (sand-portland cement, dry-set, commercial portland cement, and latex-portland cement grouts), comply with ANSI A108.10.
 - 2. For chemical-resistant epoxy grouts, comply with ANSI A108.6.
 - 3. For chemical-resistant furan grouts, comply with ANSI A108.8.
- I. At showers, tubs, and where indicated, install cementitious backer units and treat joints to comply with ANSI A108.11 and manufacturer's written instructions for type of application indicated.

3.04 WATERPROOFING INSTALLATION

- A. Install waterproofing to comply with waterproofing manufacturer's written instructions to produce a waterproof membrane of uniform thickness bonded securely to substrate.
- B. Do not install tile over waterproofing until waterproofing has cured and been tested to determine that it is watertight.

3.05 INSTALLATION – THINSET METHOD

- A. Install adhesive, tile and grout. Handbook for Ceramic Tile Installation, Handbook Number F113-12 for slab-on-grade and F122-12 for all above grade slabs.
- B. Request tile pattern from Architect/Engineer. Do not interrupt tile pattern around openings.
- C. Place thresholds edge strips at exposed tile edges as indicated on Drawings.
- D. Apply clear sealer to grout joints.

3.06 INSTALLATION – MUD SETTING BED METHOD

(Use Dry-Set method whenever possible, interior and exterior natural stone, especially) - RM

- A. Install adhesive, tile and grout. Handbook for Ceramic Tile Installation, Handbook Number F114-12 for slab-on-grade and F121-12 for all above grade slabs.
- B. Request tile pattern from Architect/Engineer. Do not interrupt tile pattern around openings.
- C. Place thresholds edge strips at exposed tile edges as indicated on Drawings.
- D. Apply clear sealer to grout joints.

END OF SECTION

SECTION 09511
ACOUSTICAL PANEL CEILINGS

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 DESCRIPTION OF WORK

- A. This Section includes ceilings composed of acoustical panels and exposed suspension systems.

1.03 RELATED SECTIONS

- A. Division 9 Section "Gypsum Wall Board."

1.04 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product data for each type of product specified.
- C. Coordination drawings for reflected ceiling plans drawn accurately to scale and coordinating penetrations and ceiling-mounted items. Show the following:
1. Ceiling suspension system members.
 2. Method of attaching suspension system hangers to building structure.
 3. Ceiling-mounted items including light fixtures; air outlets and inlets; speakers; sprinklers; and special moldings at walls, column penetrations, and other junctures of acoustical ceilings with adjoining construction.
 4. Minimum Drawing Scale: 1/4 inch = 1 foot.
- D. Samples for initial selection in the form of manufacturer's color charts consisting of actual acoustical panels or sections of panels and sections of suspension system members showing the full range of colors, textures, and patterns available for each ceiling assembly indicated.
- E. Samples for verification of each type of exposed finish required, prepared on samples of size indicated below. Where finishes involve normal color and texture variations, include sample sets showing the full range of variations expected.
1. 6-inch- (150-mm-) square samples of each acoustical panel type, pattern, and color.
 2. Full-size samples of each acoustical panel type, pattern, and color.
 3. Set of 12-inch- (300-mm-) long samples of exposed suspension system members, including moldings, for each color and system type required.
- F. Qualification data for firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

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- G. Product test reports from a qualified independent testing agency that are based on its testing of current products for compliance of acoustical panel ceilings and components with requirements.
- H. Research reports or evaluation reports of the model code organization acceptable to authorities having jurisdiction that show compliance of acoustical panel ceilings and components with the building code in effect for the Project.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who has completed acoustical panel ceilings similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.
- B. Fire-Test-Response Characteristics: Provide acoustical panel ceilings that comply with the following requirements:
 - 1. Fire-response tests are performed by a qualified testing and inspecting agency. Qualified testing and inspecting agencies include Underwriters Laboratories (UL), Warnock Hersey, or another agency that is acceptable to authorities having jurisdiction and that performs testing and follow-up services.
 - 2. Surface-burning characteristics of acoustical panels comply with ASTM E 1264 for Class A materials as determined by testing identical products per ASTM E 84.
 - 3. Acoustical panel ceilings indicated are identical in materials and construction to those tested for fire resistance per ASTM E 119.
 - 4. Fire-resistance-rated, acoustical panel ceilings are indicated by design designations listed in the UL "Fire Resistance Directory," in the Warnock Hersey "Certification Listings," or in the listing of another qualified testing and inspecting agency.
 - 5. Products are identified with appropriate markings of applicable testing and inspecting agency.
- C. Single-Source Responsibility for Ceiling Units: Obtain each type of acoustical ceiling panel from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying the Work.
- D. Single-Source Responsibility for Suspension System: Obtain each type of suspension system from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying the Work.
 - 1. Obtain both acoustical panels and suspension system from the same manufacturer.
- E. Preinstallation Conference: Conduct conference at Project site to comply with requirements of Division 1 Section "Project Meetings."

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical panels and suspension system components to Project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination, and other causes.
- B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.
- C. Handle acoustical panels carefully to avoid chipping edges or damaging units in any way.

1.07 PROJECT CONDITIONS

- A. Space Enclosure and Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weatherproof, wet-work in spaces is completed and dry, work above ceilings is complete, and ambient temperature and humidity conditions are being maintained at the levels indicated for Project when occupied for its intended use.

1.08 COORDINATION

- A. Coordinate layout and installation of acoustical panels and suspension system components with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system components (if any), and partition assemblies (if any).

1.09 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed, are packaged with protective covering for storage, and are identified with labels clearly describing contents.
1. Acoustical Ceiling Units: Furnish quantity of full-size units equal to 2.0 percent of amount installed.
 2. Exposed Suspension System Components: Furnish quantity of each exposed component equal to 2.0 percent of amount installed.

PART 2 - PRODUCTS**2.01 PRODUCTS**

- A. Available Products: Subject to compliance with requirements, acoustical panels that may be incorporated in the Work include, but are not limited to, the following:
1. Non-Fire-Resistance-Rated, Water-Felted, Mineral-Base Panels:
 - a. Type A
 - (1) Cirrus tegular, 2'-0" x 2'-0" x 3/4" model number 584; Armstrong World Industries, Inc.
 - (2) Eclipse Clima Plus, model # 76775, USG Corporation

2.02 ACOUSTICAL PANELS, GENERAL

- A. Acoustical Panel Standard: Provide manufacturer's standard panels of configuration indicated that comply with ASTM E 1264 classifications as designated by types, patterns, acoustical ratings, and light reflectances, unless otherwise indicated.
1. Mounting Method for Measuring Noise Reduction Coefficient (NRC): Type E-400 [plenum mounting in which face of test specimen is 15-3/4 inches (400 mm) away from the test surface] per ASTM E 795.
 2. Test Method for Ceiling Attenuation Class (CAC): Where acoustical panel ceilings are specified to have a CAC, provide units identical to those tested per ASTM E 1414 by a qualified testing agency.
- B. Acoustical Panel Colors and Patterns: Match appearance characteristics indicated for each product type.
1. Where appearance characteristics of acoustical panels are indicated by reference to ASTM E 1264 pattern designations and not to manufacturers' proprietary product designations, provide products selected by Architect from each manufacturer's full

range of products that comply with requirements indicated for type, pattern, color, light reflectance, acoustical performance, edge detail, and size.

- C. Panel Characteristics: Comply with requirements indicated on each Acoustical Panel Ceiling Product Data Sheet at the end of this Section, including those referencing ASTM E 1264 classifications.

2.03 METAL SUSPENSION SYSTEMS, GENERAL

- A. Metal Suspension System Standard: Provide manufacturer's standard metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable ASTM C 635 requirements.
- B. Finishes and Colors: Provide manufacturer's standard factory-applied finish for type of system indicated.
 - 1. High-Humidity Finish: Comply with ASTM C 635 requirements for "Coating Classification for Severe Environment Performance" where high-humidity finishes are indicated.
- C. Attachment Devices: Size for 5 times the design load indicated in ASTM C 635, Table 1, Direct Hung unless otherwise indicated.
 - 1. Cast-In-Place and Postinstalled Anchors in Concrete: Anchors of type and material indicated below, with holes or loops for attachment of hangers of type indicated and with capability to sustain, without failure, a load equal to 5 times that imposed by ceiling construction, as determined by testing per ASTM E 488, conducted by a qualified testing agency.
 - a. Type: Cast-in-place anchors.
 - b. Type: Expansion anchors.
 - c. Corrosion Protection: Stainless-steel components complying with ASTM F 593 and ASTM F 594, Group 1 alloy 304 or 316 for bolts; alloy 304 or 316 for anchor.
 - 2. Powder-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attachment of hangers of type indicated, and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling construction, as determined by testing per ASTM E 1190, conducted by a qualified testing agency.
- D. Wire Hangers, Braces, and Ties: Provide wires complying with the following requirements:
 - 1. Zinc-Coated Carbon Steel Wire: ASTM A 641 (ASTM A 641M), Class 1 zinc coating, soft temper.
 - 2. Nickel-Copper Alloy Wire: ASTM B 164, nickel-copper alloy UNS N04400.
 - 3. Size: Select wire diameter so that its stress at 3 times the hanger design load (ASTM C 635, Table 1, Direct Hung) will be less than the yield stress of wire, but provide not less than 0.106-inch- (2.69-mm-) diameter wire.
- E. Hanger Rods: Mild steel, zinc coated, or protected with rust-inhibitive paint.
- F. Flat Hangers: Mild steel, zinc coated, or protected with rust-inhibitive paint.
- G. Angle Hangers: Angles with legs not less than 7/8 inch (22 mm) wide, formed with 0.0396-inch-(1-mm) thick galvanized-steel sheet complying with ASTM A 446, G 90

(ASTM A 446M, Z 275) Coating Designation, with bolted connections and 5/16-inch- (8-mm) diameter bolts.

- H. Sheet-Metal Edge Moldings and Trim: Type and profile indicated, or if not indicated, manufacturer's standard moldings for edges and penetrations that fit acoustical panel edge details and suspension systems indicated; formed from sheet metal of same material and finish as that used for exposed flanges of suspension system runners.
1. For lay-in panels with reveal edge details, provide stepped-edge molding that forms reveal of same depth and width as that formed between edge of panel and flange at exposed suspension member.
 2. For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.
 3. For narrow-face suspension systems, provide suspension system and manufacturer's standard edge moldings that match width and configuration of exposed runners.
 4. Baked-Enamel Finish: AA-C12C42R1x [Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: acid chromate-fluoride-phosphate conversion coating; Organic Coating: as specified below). Apply baked enamel according to paint manufacturer's specifications for cleaning, conversion coating, and applying organic coating.
 - a. Organic Coating: Manufacturer's standard thermosetting coating system with a minimum dry film thickness of 0.8 to 1.2 mil ((0.0203 to 0.0305 mm]).
 - b. Color: As selected by Architect from manufacturer's standard colors.
 - c. Color: Match color of finish on flanges of suspension system surfaces.
 - d. Color: Match Architect's sample.
 5. Available Manufacturers: Subject to compliance with requirements, manufacturers offering aluminum accessories that may be incorporated in the Work include, but are not limited to, the following:
 - a. Fry Reglet Corporation.
 - b. Gordon, Inc.
 - c. MM Systems, Inc.
- I. Hold-Down Clips for Non-Fire-Resistance-Rated Ceilings: For interior ceilings composed of acoustical panels weighing less than 1 lb per sq. ft. (4.88 kg per sq. m), provide hold-down clips spaced 24 inches (610 mm) o.c. on all cross tees.
- J. Impact Clips: Where indicated, provide manufacturer's standard impact-clip system design to absorb impact forces against acoustical panels.

2.04 NON-FIRE-RESISTANCE-RATED, DIRECT-HUNG SUSPENSION SYSTEMS

- A. Narrow-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from prepainted or electrolytic zinc-coated, cold-rolled steel sheet, with prefinished 15/16-inch- wide metal caps on flanges; other characteristics as follows:
1. Face Design: Flush capped faces without slot or reveal, with device built into runners to center panels in openings.
 2. Structural Classification: Intermediate-duty system.
 3. End Condition of Cross Runners: Override (stepped) or butt-edge type, as standard with manufacturer.
 4. Cap Material and Finish: Steel sheet painted white.

- B. Available Products: Subject to compliance with requirements, suspension systems that may be incorporated in the Work include, but are not limited to, the following:
1. Narrow-Face, Capped, Double-Web, Steel Suspension Systems with Flush Face:
 - a. Prelude ML 15/16" Exposed Tee System ; Armstrong World Industries, Inc.
 - b. Prelude XL 15/16" Exposed Tee System; Armstrong World Industries, Inc.
 - c. Centricitee DXT 24 System; USG Interiors, Inc.
 - d. Centricitee DXT 26 System; USG Interiors, Inc.
 - e. Centricitee DXTA 24 System; USG Interiors, Inc.
 - f. Tempra 4000; Chicago Metallic Corporation.

2.05 ACOUSTICAL SEALANT

- A. Acoustical Sealant for Exposed and Concealed Joints: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834 and the following requirements:
1. Product is effective in reducing airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies per ASTM E 90.
 2. Product has flame-spread and smoke-developed ratings of less than 25 per ASTM E 84.
- B. Acoustical Sealant for Concealed Joints: Manufacturer's standard nondrying, nonhardening, nonskinning, nonstaining, gunnable, synthetic rubber sealant recommended for sealing interior concealed joints to reduce transmission of airborne sound.
- C. Available Products: Subject to compliance with requirements, acoustical sealants that may be incorporated in the Work include, but are not limited to, the following:
1. Acoustical Sealant for Exposed and Concealed Joints:
 - a. AC-20 FTR Acoustical and Insulation Sealant; Pecora Corp.
 - b. SHEETROCK Acoustical Sealant; United States Gypsum Company.
 2. Acoustical Sealant for Concealed Joints:
 - a. BA-98; Pecora Corp.
 - b. Tremco Acoustical Sealant; Tremco, Inc.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Examine substrates and structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Coordination: Furnish layouts for cast-in-place anchors, clips, and other ceiling anchors whose installation is specified in other Sections.
1. Furnish cast-in-place anchors and similar devices to other trades for installation well in advance of time needed for coordinating other work.

- B. Measure each ceiling area and establish the layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders, and conform to the layout shown on reflected ceiling plans.

3.03 INSTALLATION

- A. General: Install acoustical panel ceilings to comply with publications referenced below per manufacturer's instructions and CISCA "Ceiling Systems Handbook."
1. Standard for Ceiling Suspension System Installations: Comply with ASTM C 636.
 2. Standard for Ceiling Suspension Systems Requiring Seismic Restraint: Comply with ASTM E 580.
 3. CISCA Recommendations for Acoustical Ceilings: Comply with CISCA "Recommendations for Direct-Hung Acoustical Tile and Lay-In Panel Ceilings."
 4. CISCA Guidelines for Systems Requiring Seismic Restraint: Comply with CISCA "Guidelines for Seismic Restraint of Direct-Hung Suspended Ceiling Assemblies."
 5. U.B.C. Standard for Ceiling Suspension Systems: U.B.C. Standard No. 47-18.
- B. Suspend ceiling hangers from building's structural members and as follows:
1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of the supporting structure or of the ceiling suspension system.
 2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 3. Splay hangers only where required, and if permitted with fire-resistance-rated ceilings, to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 4. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with the location of hangers at spacings required to support standard suspension system members, install supplemental suspension members and hangers in the form of trapezes or equivalent devices. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.
 5. Secure wire hangers to ceiling suspension members and to supports above with a minimum of 3 tight turns. Connect hangers either directly to structures or to inserts, eye screws, or other devices that are secure, that are appropriate for substrate, and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
 6. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both the structure to which hangers are attached and the type of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.
 7. Secure bracing wires to ceiling suspension members and to supports with a minimum of 4 tight turns. Fasten bracing wires to concrete with cast-in-place or postinstalled anchors.
 8. Do not support ceilings directly from permanent metal forms. Fasten hangers to cast-in-place hanger inserts, powder-actuated fasteners, or drilled-in anchors that extend through forms into concrete.
 9. Do not attach hangers to steel deck tabs.
 10. Do not attach hangers to steel roof deck. Attach hangers to structural members.

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11. Do not attach hangers to rated membrane projecting the structure.
 12. Space hangers not more than 48 inches (1200 mm) o.c. along each member supported directly from hangers, unless otherwise shown; and provide hangers not more than 8 inches (200 mm) from ends of each member.
- C. 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. Screw attach moldings to substrate at intervals not over 16 inches (400 mm) o.c. and not more than 3 inches (75 mm) from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet (3.18 mm in 3.66 m). Miter corners accurately and connect securely.
 3. Do not use exposed fasteners, including pop rivets, on moldings and trim.
- D. Install suspension system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- E. Install acoustical panels with undamaged edges and fitted accurately into suspension system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide neat, precise fit.
1. Arrange directionally patterned acoustical panels as follows:
 - a. In the manner indicated on reflected ceiling plans.
 - b. Install panels with pattern running in one direction parallel to long axis of space.
 - c. Install panels with pattern running in one direction parallel to short axis of space.
 - d. Install panels in a basket-weave pattern.
 2. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension system runners and moldings.
 3. For reveal-edged panels on suspension system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges.
 4. For reveal-edged panels on suspension system members with box-shaped flanges, install panels with reveal surfaces in firm contact with suspension system surfaces and panel faces flush with bottom face of runners.
 5. Paint the cut panel edges remaining exposed after installation; match color of exposed panel surfaces using coating recommended for this purpose by acoustical panel manufacturer.
 6. Install hold-down clips in areas indicated and in areas required by governing regulations, or for fire-resistance ratings; space as recommended by panel manufacturer, unless otherwise indicated or required.
 7. Protect lighting fixtures and air ducts to comply with requirements indicated for fire-resistance-rated assembly.

3.04 FIELD QUALITY CONTROL

- A. Testing Agency: A qualified independent testing agency employed and paid by Owner will perform field quality-control services.
- B. Extent and Testing Frequency: Testing will take place in successive stages in areas of extent described below. Do not proceed with installation of acoustical panel ceilings until test results for previously installed hangers show compliance with requirements.

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1. Extent of Each Test Area: When the installation of ceiling suspension systems on each floor has reached 20 percent completion but no panels have been installed.
 2. Within each test area, testing agency will select 1 of every 10 powder-actuated fasteners and postinstalled anchors used to attach hangers to concrete and will test them for 200 lbf (890 N) of tension; it will also select 1 of every 2 postinstalled anchors used to attach bracing wires to concrete and will test them for 440 lbf (1957 N) of tension.
 3. When testing discovers fasteners and anchors that do not comply with requirements, testing agency will test those anchors not previously tested until 20 consecutively pass, and then will resume initial testing frequency.
- C. Testing agency will report test results promptly and in writing to Contractor and Architect.
- D. Remove and replace those fasteners and anchors that test results indicate do not comply with requirements.

3.05 CLEANING

- A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension system members. Comply with manufacturer's instructions for cleaning and touchup of minor finish damage. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION

**SECTION 09512
RESILIENT BASE AND ACCESSORIES**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
1. Resilient base.
 2. Resilient stair accessories (enclosed stairs only).
 3. Resilient molding accessories.
- B. Related Sections:
1. Division 09 Section "Resilient Sheet Flooring" for resilient sheet floor coverings.
 2. Division 09 Section "Resilient Tile Flooring" for resilient floor tile.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Verification: For each type of product indicated, in manufacturer's standard-size Samples but not less than 12 inches long, of each resilient product color, texture, and pattern required.

1.4 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: As determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.
1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F.

1.6 PROJECT CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F in spaces to receive resilient products during the following time periods:
1. 48 hours before installation.
 2. During installation.
 3. 48 hours after installation.

- B. Until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.
- C. Install resilient products after other finishing operations, including painting, have been completed.

1.7 EXTRA MATERIALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Furnish not less than 10 linear feet for every 500 linear feet or fraction thereof, of each type, color, pattern, and size of resilient product installed.

PART 2 - PRODUCTS

2.1 RESILIENT BASE

- A. Provide products as indicated on interior design drawings.

2.2 RESILIENT STAIR ACCESSORIES

- A. Resilient Stair Treads:
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Burke Mercer Flooring Products; Division of Burke Industries, Inc.
 - b. Endura Rubber Flooring; Division of Burke Industries, Inc.
 - c. Estrie Products International; American Biltrite (Canada) Ltd.
 - d. Flexco, Inc.
 - e. Johnsonite.
 - f. Mondo Rubber International, Inc.
 - g. Musson, R. C. Rubber Co.
 - h. Nora Rubber Flooring; Freudenberg Building Systems, Inc.
 - i. PRF USA, Inc.
 - j. R.C.A. Rubber Company (The).
 - k. Roppe Corporation, USA.
 - l. VPI, LLC; Floor Products Division.
- B. Resilient Stair Treads Standard: ASTM F 2169.
 - 1. Material Requirement: Type TP (rubber, thermoplastic).
 - 2. Surface Design:
 - a. Class 1, Smooth (flat).
 - 3. Manufacturing Method: Group 2, tread with contrasting color for the visually impaired.
- C. Nosing Style: Square, adjustable to cover angles between 60 and 90 degrees.
- D. Nosing Height: 1-1/2 inches.
- E. Thickness: 1/4 inch and tapered to back edge.
- F. Size: Lengths and depths to fit each stair tread in one piece.

- G. Risers: Smooth, flat, toeless, height and length to cover risers; produced by same manufacturer as treads and recommended by manufacturer for installation with treads.
 - 1. Thickness: 0.125 inch.
- H. Stringers: Of same thickness as risers, height and length after cutting to fit risers and treads and to cover stair stringers; produced by same manufacturer as treads and recommended by manufacturer for installation with treads.
- I. Colors and Patterns: As selected by Architect from full range of manufacturer's standard and premium colors or as indicated on interior design documents.

2.3 RESILIENT MOLDING ACCESSORY

- A. Resilient Molding Accessory:
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Burke Mercer Flooring Products; Division of Burke Industries, Inc.
 - b. Flexco, Inc.
 - c. Johnsonite.
 - d. R.C.A. Rubber Company (The).
 - e. Roppe Corporation, USA.
 - f. VPI, LLC; Floor Products Division.
- B. Description: Carpet edge for glue-down applications, nosing for resilient floor covering, reducer strip for resilient floor covering, transition strips.
- C. Material: Rubber.
- D. Profile and Dimensions: As indicated.
- E. Colors and Patterns: As selected by Architect from full range of manufacturer's standard and premium 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 manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.
 - 1. Use adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 - a. Cove Base Adhesives: Not more than 50 g/L.
 - b. Rubber Floor Adhesives: Not more than 60 g/L.
- C. Stair-Tread-Nose Filler: Two-part epoxy compound recommended by resilient tread manufacturer to fill nosing substrates that do not conform to tread contours.
- D. Metal Edge Strips: Extruded aluminum with mill finish of width shown, of height required to protect exposed edges of tiles, and in maximum available lengths to minimize running joints.

- E. Floor Polish: Provide protective liquid floor polish products as recommended by resilient stair tread manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.
- B. Concrete Substrates for Resilient Stair Treads and Accessories: Prepare according to ASTM F 710.
 - 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 manufacturer. Do not use solvents.
 - 3. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer.
 - 4. Moisture Testing: Perform tests recommended by manufacturer and as follows. Proceed with installation only after substrates pass testing.
 - a. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft in 24 hours.
 - b. Perform relative humidity test using in situ probes, ASTM F 2170. Proceed with installation only after substrates have maximum 75 percent relative humidity level measurement.
- C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.
- D. Do not install resilient products until they are same temperature as the space where they are to be installed.
 - 1. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
- E. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation.

3.3 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 practicable 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. Job-Formed Corners:
 - 1. Outside Corners: Use straight pieces of maximum lengths possible. Form without producing discoloration (whitening) at bends.
 - 2. Inside Corners: Use straight pieces of maximum lengths possible.

3.4 RESILIENT ACCESSORY INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient accessories.
- B. Resilient Stair Accessories:
 - 1. Use stair-tread-nose filler to fill nosing substrates that do not conform to tread contours.
 - 2. Tightly adhere to substrates throughout length of each piece.
 - 3. For treads installed as separate, equal-length units, install to produce a flush joint between units.
- C. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of carpet and resilient floor covering that would otherwise be exposed.

3.5 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protection of resilient products.
- B. Perform the following operations immediately after completing resilient product installation:
 - 1. Remove adhesive and other blemishes from exposed surfaces.
 - 2. Sweep and vacuum surfaces thoroughly.
 - 3. Damp-mop surfaces to remove marks and soil.
- C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- D. Cover resilient products until Substantial Completion.

END OF SECTION

**SECTION 09650
RESILIENT FLOORING**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of contract, including General and Special conditions and Division 1 specification sections, apply to work specified in this section.

1.02 DESCRIPTION OF WORK

- A. Provide and install vinyl composition tile, vinyl plank, vinyl base and vinyl reducers, and special flooring as indicated on drawings. Include all accessories necessary to provide a complete installation.
- B. Locations for resilient flooring are indicated on drawings.

1.03 SUBMITTALS

- A. Manufacturer's product data for each product to be provided, including installation information.
- B. Provide a minimum of two samples of each of the following for approval:
1. 3 X 3 inch section of specified tile(s),
 2. 3 inch section of vinyl base and vinyl reducer in manufacturer's full range of standard colors.
 3. All transition materials:
 - a) CPT to Tile
 - b) CPT to VCT
 - c) Tile to VCT
 - d) CPT to CPT

1.04 DELIVERY AND STORAGE OF MATERIALS

- A. Manufacturer's product data for each product to be provided, including installation information.
- B. Maintain a temperature of not less than 70°F or more than 90°F in building day and night while the tiles are being installed and for a period of at least 48 hours before installation and 48 hours after installation.
- C. Install materials only when weather conditions are favorable for such work and when weather conditions are within the limits of the manufacturer's recommendations.

1.05 EXTRA STOCK

- A. Attic Stock – Provide the following:
- a. VCT – 1 unopened carton of each color and type.
 - b. Vinyl plank flooring – 1 unopened carton of each color and type.
 - c. Sheet flooring – 120 sqft of each type and color used.
 - d. Vinyl base – 1 unopened carton of each type and color

- e. Vinyl accessories – 50 linear feet (15 meters)
- f. Vinyl stair treads – 10 each of each color and type.

PART 2 - PRODUCTS

2.01 VINYL COMPOSITION TILE

- A. Acceptable Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include:
 - 1. Armstrong
 - 2. Azrock
 - 3. Tarkett
 - 4. Mannington
 - 5. Approved Equal
- B. Description
 - 1. Vinyl composition tile to be installed in rotated square pattern with tile centered on room, or as indicated on drawings.
 - 2. Flame Spread/Smoke Density:
 - a) ASTM E 648 – Class 1
 - b) ASTM E 662 – Less than 450
 - c) Critical radiant flux .45 watts/sq. cm
 - 3. Colors: refer to schedule

2.02 VINYL PLANK FLOORING

- A. Acceptable Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include
 - 1. Amtico
 - 2. Spacia
 - 3. Konecto
- B. Description
 - 1. PVC resin compound with high quality plasticizers and stabilizers.

2.03 VINYL BASE:

- A. Provide 4" high vinyl base with matching end stops and pre-formed corners. Base material to be roll goods.
 - 1. Manufacturers:
 - a) Roppe
 - b) Allstate
 - c) Burke
 - d) Johnsonite
 - e) Armstrong
 - f) Approved Equal
- B. Colors: Refer to schedule.

- C. Provide vinyl base in areas indicated on drawings. Provide cove base at resilient and hard floor coverings and flat type adjacent to carpeted areas.

2.04 SHEET FLOORING

- A. Provide vinyl safety flooring locations indicated on drawings.
- B. Color: Refer to schedule.
- C. Characteristics:
 - 1. Silicon carbide particles incorporated in vinyl for improved traction.
 - 2. Class 1 flame spread rating.
 - 3. Anti-bacterial surface.
 - 4. Adhesives as recommended by manufacturer for specific applications.
 - 5. Critical radiant flux .45 watts/sq. cm

2.05 ADHESIVES

- A. Water resistant adhesives standard with manufacturer to secure tile to concrete floor, cove base to CMU and gypsum wallboard walls and stair accessories to surfaces required.
- B. Adhesives shall be non-flammable, non-toxic and waterproof.

2.06 TILE REDUCERS

- A. Solid vinyl, 1" x 1/8" with beveled edge.
- B. Colors to be match selected vinyl or rubber base.

2.07 POLISH

- A. Apply Armstrong S-480 Commercial Floor Polish to all vinyl composition floors.

PART 3 - EXECUTION

3.01 GENERAL

- A. Do not begin installation of flooring until the work of all other trades, including painting, has been completed.
- B. Sweep surfaces to receive tile clean, and free from moisture, paint, oil or wax. Fill all cracks, rough areas and other surface defects in concrete floor with suitable plastic materials. Do not begin laying tile until other work, including painting, has been completed. Make certain that all surfaces over, which tile is to be laid are perfectly smooth, level and dry.

3.02 LAYING RESILIENT MATERIALS

- A. Tile and base shall be installed by experienced craftsmen in strict accordance with the instructions of the manufacturer.
- B. Maintain a temperature between 70°F and 90°F for 48 hours before, during and 48 hours after laying tile.

- C. Lay out the tile in each area so that the borders will not be more than nine inches (9") or less than four and one-half inches (4-1/2") wide. Start laying tile at room center and work toward the walls, adjusting the border as required by the run of the tile and scribing borders to walls and partitions after applying the field tiles. Lay all tile so as to be true, level and even with tight, straight joints. Provide a vinyl finishing edge at doors without thresholds.
- D. Direction of each color of vinyl tile to be consistent within scope of pattern.
- E. Perform all necessary cutting and fitting of flooring at all door openings. Provide tile reducers where edges of tile are exposed, and wherever tile floor coverings join another material.
- F. Install base in strict accordance with manufacturer's instructions. Make all joints neat and tight with adjacent pieces forming a plane surface.

3.03 VCT - CLEANING AND WAXING

- A. After laying tile, floor shall be thoroughly cleaned of all cement spots, dirt, and other soiling and left in perfectly clean condition. Spots shall be removed by means of a putty knife and steel wool, or by a cloth moistened with a neutral soap of a type approved by tile manufacturer.
- B. Use of solvents, and wet mopping and washing is prohibited.
- C. VCT shall be waxed with a high-quality commercial floor polish with a percent of solids level usually between 16% and 22%, such as Armstrong S-480 Commercial Floor Polish. When working with linoleum, all maintenance solutions must be 10 pH or less. Static Dissipative Tile requires the use of Armstrong S-392 Polish.

3.04 EXTRA STOCK

- A. Furnish and deliver in the manufacturer's packing, amounts as required under Section 01730, Project Closeout Submittals.

END OF SECTION

SECTION 09905**VINYL WALL COVERING****PART 1 GENERAL****1.01 RELATED DOCUMENTS**

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications, apply to this section.

1.02 DESCRIPTION OF WORK

- A. Work described in this section included provision and installation of vinyl wallcovering or protective wall covering. Extent and type of wall coverings required are indicated on drawings and/or Finish Schedule.

1.03 QUALITY ASSURANCE

- A. Manufacturer:
 - 1. Provide each type of wall covering as produced by a single manufacturer, including recommended primers, adhesives, and sealants.
- B. Fire Hazard Classification:
 - 1. Provide materials bearing UL label and marking, indicating fire hazard classification of wall covering, as determined by ASTM E 84.
 - a) Provide vinyl wall covering materials with the following fire hazard classifications:
 - 1) Flame spread not more than 25.
 - 2) Fuel contributed not more than 15.
 - 3) Smoke developed not more than 25.
- C. All yardage of each type to be from the same dye lot. Mixed lots or product other than first than first quality will not be accepted.

1.04 SUBMITTALS

- A. Submit 6" x 6" samples of each type and color of wall covering to Architect for approval.
- B. Hang three panels of wall covering for Architect's approval at job site prior to proceeding with the balance of installation.

1.05 JOB CONDITIONS

- A. Maintain constant minimum temperature of 60° F (16° C) at areas of installation for at least 72 hours before and 48 hours after application of materials.

PART 2. PRODUCTS

2.01 VINYL WALL COVERING

- A. Acceptable Manufacturers
 - 1. National Wallcovering
 - 2. Koroseal
 - 3. MDC
 - 4. Wolf Gordon
 - 5. Maharam
 - 6. Arc-Com
 - 7. Genysys

2.02 MATERIALS

Width:	52/54"	132/137 cm
Total Weight:	20.0 oz/lin yd	620 g/lin m
Total Weight:	13.3 oz/sq yd	451 g/sq m
Vinyl Weight:	11.1 oz/ sq yd	376 g/sq m
Backing:	Polyester/ Cotton Osnaburg	
Backing Weight:	2.2 oz/ sq yd	75g/ sq m

2.03 PROTECTIVE WALL COVERING

- A. Koroguard Wall Protection Systems, (800) 753-7512, or Approved Equal.
 - 1. Adhesives: as recommended by manufacturer for specific uses of this project.
 - 2. Any necessary related trims, i.e., Thermoformed Corner Guards and J-moldings for installation. Samples of these trims should be submitted to Owner for approval.
- B. Wainscot: provide from railing to base equal to KOROGUARD protective wall covering .040" thick, in areas indicated.
- C. Colors to be selected by Owner from manufacturer's complete line.
- D. Properties:

Specific gravity:	ASTM D-792	1.35-1.45
Tensile strength	ASTM D-638	6,000
Modulus of elasticity	ASTM D-638	324,000
Elongation at break	ASTM D-638	154
Impact strength	ASTM D-256	
Charpy unnotched		No Break
73°F (23° C)		No Break
32°F (0°C)		
Izod notched (in-lbs/in. of notch)	ASTM D-256	120-180

Shear Strength	ASTM D-732	4,500
Abrasion resistance	ASTM D-1044	0.015

2.04. ACCESSORY ITEMS/ CONTRACTOR FURNISHED

- A. Adhesives: Provide manufacturer's recommended adhesive, primer and sealer, produced expressly for use with selected wall covering on substrate as shown on drawings. Provide materials, which are mildew-resistant and nonstaining to wall covering.
- B. Base Coat: sealer or undercoat for virgin drywall substrates as recommended by wall covering manufacturers.
- C. Primer/Sealer: As recommended by wall covering manufacturer.

PART 3. EXECUTION

3.01 PREPARATION

- A. Acclimatize wall covering materials by removing from packaging in area of installation not less than 24 hours before application.
- B. Remove switchplates, wall plates, and surface-mounted fixtures (including covers for fire alarms) in areas to receive wall covering prior to installing wall covering.
- C. Prime and seal substrates in accordance with wall covering manufacturer's recommendations for type of substrate. Apply surface sealer to gypsum drywall which will permit subsequent removal of wall covering without damage to paper facing.
- D. Fill cracks and smooth irregularities with filler, sand smooth. Vacuum clean surfaces.
- E. Measure moisture content of surfaces using an electronic moisture meter. Do not apply coverings unless moisture content of surfaces is below maximums recommended by wall covering manufacturers.
- F. Verify that all material is the correct and there is sufficient material to complete the job.

3.02 INSTALLATION

- A. Metal Moldings:
 - 1. Furnish metal moldings for exterior corners of interior walls where shown on drawings.
- B. Wall Covering:
 - 1. Place wall covering panels consecutively in order cut from rolls, including filling of paces above or below openings. Hang by reversing alternate strips except on match patterns, or as recommended by manufacturer. Apply

**VINYL WALLCOVERING
SECTION 09905-3**

adhesive to back of wall covering and place in accordance with manufacturer's instructions.

2. Install seams plumb, and at least 6" away from corners. Horizontal seams are not permitted. Overlap seams and double-cut to assure tight closure.
3. Roll, brush or use broad knife to remove air bubbles, wrinkles, blisters, and other defects.
4. Cut wall covering evenly to edges of outlet boxes or support.
5. Trim selvages as required to assure color uniformity and pattern match.
6. Remove excess adhesive along finished seams while it is still wet, using warm water and clean sponge, and wipe dry.
7. All applications on Exterior Masonry Walls shall be perforated.

3.03 ADJUST AND CLEAN

- A. Replace removed plates and fixtures: verify cut edges of wall coverings are completely concealed.
- B. Remove surplus materials, rubbish, and debris resulting from wall covering installation upon completion of work, and leave areas of installation in neat, clean condition.

3.04 EXTRA MATERIALS

- A. Provide extra materials as indicated in Section 01730, 2.8, to Owner's designated storage space. Package and store in such a manner to prevent damage or deterioration.

3.05 SCHEDULE

- A. All wallcovering to be supplied and installed by Contractor.
- B. Refer to schedule provided by Architect or Interior Designer.

END OF SECTION

**SECTION 09912
INTERIOR PAINTS AND COATINGS**

PART 1 - GENERAL**1.1 SECTION INCLUDES**

- A Interior paint and coatings systems including: paint, stains, transparent coatings, and opaque finishes

1.2 RELATED SECTIONS

- A Division 1 - General Data
- B Division 3 - Concrete
- C Division 4 - Metal, Primer and Coatings
- D Division 6 - Architectural Wood and Plaster Coating
- E Division 8 – Doors and Windows

1.3 REFERENCES

- A SSPC-SP 1 - Solvent Cleaning
- B SSPC-SP 2 - Hand Tool Cleaning
- C SSPC-SP 3 - Power Tool Cleaning
- D SSPC-SP 13 / NACE No. 6 Surface Preparation for Concrete

1.4 SUBMITTALS

- A Submit under provisions of Section 01300 Submittals
- B Product Data: Manufacturer's data sheets on each paint and coating product should include:
 - 1 Product characteristics
 - 2 Surface preparation instructions and recommendations
 - 3 Primer requirements and finish specification
 - 4 Storage and handling requirements and recommendations
 - 5 Application methods
 - 6 Cleanup Information
- C Selection Samples: Submit a complete set of color chips that represent the full range of manufacturer's color samples available.
- D Coating Maintenance Manual: upon conclusion of the project, the Contractor or paint manufacture/supplier shall furnish a coating maintenance manual, such as Sherwin-Williams "Custodian Project Color and Product Information" report or equal. Manual shall include an Area Summary with finish schedule, Area Detail designating where each product/color/finish was used, product data pages, Material Safety Data Sheets, care and cleaning instructions, touch-up procedures, and color samples of each color and finish used.

1.5 MOCK-UP

Include a mock-up if the project size and/or quality warrant taking such a precaution. The following is one example of how a mock-up on a large project might be specified. When deciding on the extent of the mock-up, consider all the major different types of painting on the project.

- A Finish surfaces for verification of products, colors, & sheens
- B Finish area designated by Architect
- C Provide samples that designate prime & finish coats
- D Do not proceed with remaining work until the Architect approves the mock-up samples

1.6 DELIVERY, STORAGE, AND HANDLING

- A Delivery: Deliver manufacturer's unopened containers to the work site. Packaging shall bear the manufacturer's name, label, and the following list of information:
 - Product name and type (description)
 - Application & use instructions
 - Surface preparation
 - VOC content
 - Environmental handling
 - Batch date
 - Color number
- B Storage: Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction. Store materials in an area that is within the acceptable temperature range, per manufacturer's instructions. Protect from freezing.
- C Handling: Maintain a clean, dry storage area, to prevent contamination or damage to the coatings.

1.7 PROJECT CONDITIONS

- A Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not apply coatings under environmental conditions outside manufacturer's absolute limits.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A Preferred Manufacturer:
 - 1. Sherwin Williams: www.sherwin-williams.com
 - 2. Benjamin Moore & Co: www.benjaminmoore.com
 - 3. PPG Paint: www.ppg.com
 - 4. MDC: www.mdcwall.com
- B Substitutions: Requests for substitutions will be considered in accordance with provisions of Section 01600 Product Requirements. When submitting request for substitution, provide complete product data specified above under Submittals, for each substitute product.

2.2 APPLICATION/SCOPE

- A Use this article to define the scope of painting if not fully defined in a Finish Schedule or on the drawings. This article must be carefully edited to reflect the surfaces actually found on the project. In some cases, it may be enough to use the first paragraph that says, in effect, "paint everything" along with a list of items not to paint, without exhaustively defining all the different surfaces and items that must be painted.
- B If the project involves repainting some but not all existing painted surfaces, be sure to indicate the extent of the repainting.
- C The descriptions of each system can also be used to further refine the definition of what is to be painted, stained, or clear finished.
- D Surfaces to Be Coated:
 - Concrete: Poured, Precast, Tilt-Up, Cast-In-Place, Cement Board, Plaster
 - Concrete: Floors
 - Masonry: (CMU - Concrete, Split Face, Scored, Smooth, etc.)
 - Metal: Aluminum/ Galvanizing
 - Metal Ferrous: (Structural Steel, Joists, Trusses, Beams, Partitions, etc.)
 - Wood: Walls, Ceilings, Doors, Trim, etc
 - Wood: Floors-Painted
 - Drywall: Drywall board, Gypsum board

2.3 SCHEDULE

- A CONCRETE - (Walls & Ceilings, Poured Concrete, Precast Concrete, Unglazed Brick, Cement Board, Tilt-Up, Cast-In-Place)
 - 1. Latex Systems
 - a. Low Sheen Finish
 - 1st Coat: S-W Loxon Concrete & Masonry Primer Sealer, A24W8300 (8 mils wet, 3.2 mils dry)
 - 2nd Coat: S-W ProMar 200 Zero VOC Latex Low Sheen Enamel, B24-2600 Series
 - 3rd Coat: S-W ProMar 200 Zero VOC Latex Low Sheen Enamel, B24-2600 Series (4 mils wet, 1.6 mils dry per coat)
- B. CONCRETE- FLOORS (Non-Vehicular)
 - 1. Concrete Stain (Water Base)
 - a. Low Luster Finish Opaque
 - 1st Coat: S-W H&C Concrete Stain Solid Color Water Based
 - 2nd Coat: S-W H&C Concrete Stain Solid Color Water Based (50-300 sq/ft per gallon)
- C. METAL Ferrous- (Structural Steel Columns, Joists, Trusses, Beams, Miscellaneous & Ornamental Iron, Sashes, Doors, Partitions)
 - 1. Latex Systems
 - a. Semi-Gloss Finish
 - 1st Coat: S-W Pro Industrial Pro-Cryl Universal Primer, B66-310 Series (5-10 mils wet, 2-4 mils dry)
 - 2nd Coat: S-W ProClassic Waterborne Acrylic Semi-Gloss Enamel, B31 Series
 - 3rd Coat: S-W ProClassic Waterborne Acrylic Semi-Gloss Enamel, B31 Series (4 mils wet, 1.3 mils dry per coat)
- D. WOOD- (Walls, Ceilings, Doors, Trim, Partitions, Frames)
 - 1. Latex Systems
 - a. Semi-Gloss Finish

1st Coat: S-W Premium Wall & Wood Primer, B28W8111 (4 mils wet, 1.8 mils dry)
 2nd Coat: S-W ProClassic Waterborne Acrylic Semi-Gloss Enamel, B31 Series
 3rd Coat: S-W ProClassic Waterborne Acrylic Semi-Gloss Enamel, B31 Series (4 mils wet, 1.3 mils dry per coat)

2. Stain, Sealer & Varnish

a. Clear Finish

1st Coat: S-W Wood Classics 250 Oil Stain, A49-800 Series Or S-W Wood Classics Interior Oil Stain, A49 Series
 2nd Coat: S-W Wood Classics FastDry Sanding Sealer, B26V43
 3rd Coat: S-W Wood Classics FastDry Varnish, Gloss or Satin, A66 Series (4 mils wet, 1.3 mils dry per coat)

E. DRYWALL (Walls, Ceilings, Gypsum Board, Plaster Board, etc.)

1. Latex Systems

a. Egg-Shell Finish

1st Coat: S-W Harmony Interior Latex Primer, B11 Series (4 mils wet, 1.3 mils dry per coat)
 2nd Coat: S-W Harmony Interior Latex Eg-Shel, B9 Series
 3rd Coat: S-W Harmony Interior Latex Eg-Shel, B9 Series (4 mils wet, 1.7 mils dry per coat)

Alternate:

1st Coat: S-W ProMar 200 Zero VOC Latex Primer, B28W2600 (4 mils wet, 1.5 mils dry)
 2nd Coat: S-W ProMar 200 Zero VOC Latex Eg-Shel, B20-2600 Series
 3rd Coat: S-W ProMar 200 Zero VOC Latex Eg-Shel, B20-2600 Series (4 mils wet, 1.7 mils dry per coat)

F. Interior Precast Concrete Ceilings

1. Decorative spray knock-down texture.
2. Key joints shall be infilled flush with covercoat.
3. Compound by United States Gypsum Company.
4. Fill deep voids or offsets with sheet rock brand durabond joint compound.

2.4 MATERIALS - GENERAL REQUIREMENTS

A Paints and Coatings - General:

1. Unless otherwise indicated, provide factory-mixed coatings. When required, mix coatings to correct consistency in accordance with manufacturer's instructions before application. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.

B Primers:

1. Where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.

2.5 ACCESSORIES

A Coating Application Accessories:

1. Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials required, per manufacturer's specifications.

PART 3 - EXECUTION

3.1 EXAMINATION

- A Do not begin application of coatings until substrates have been properly examined and prepared. Notify Architect of unsatisfactory conditions before proceeding.
- B If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- C Proceed with work only after conditions have been corrected and approved by all parties, otherwise application of coatings will be considered as an acceptance of surface conditions.
- D Previously Painted Surfaces: Verify that existing painted surfaces do not contain lead based paints, notify Architect immediately if lead based paints are encountered.

3.2 SURFACE PREPARATION

WARNING! Removal of old paint by sanding, scraping or other means may generate dust, or fumes that contain lead. Exposure to lead dust or fumes may cause brain damage or other adverse health effects, especially in children or pregnant women. Controlling exposure to lead or other hazardous substances requires the use of proper protective equipment, such as a properly fitted respirator (NIOSH approved) and proper containment and cleanup.

For more information, call the National Lead Information Center at 1-800-424-LEAD (in US) or contact your local health authority. Removal must be done in accordance with EPA Renovation, Repair and Painting Rule and all related state and local regulations. Care should be taken to follow all state and local regulations which may be more strict than those set under the federal RRP Rule.

- A Proper product selection, surface preparation and application affect coating performance. Coating integrity and service life will be reduced because of improperly prepared surfaces. Selection and implementation of proper surface preparation ensures coating adhesion to the substrate and prolongs the service life of the coating system.
- B Selection of the proper method of surface preparation depends on the substrate, the environment, and the expected service life of the coating system. Economics, surface contamination, and the effect on the substrate will also influence the selection of surface preparation methods.
- C The surface must be dry and in sound condition. Remove oil, dust, dirt, loose rust, peeling paint or other contamination to ensure good adhesion.
- D Remove mildew before painting by washing with a solution of 1 part liquid household bleach and 3 parts of warm water. Apply the solution and scrub the mildewed area. Allow the solution to remain on the surface for 10 minutes. Rinse thoroughly with clean water and allow the surface to dry a minimum of 48 hours before painting. Wear protective glasses or goggles, waterproof gloves, and protective clothing. Quickly wash off any of the mixture that comes in contact with your skin. Do not add detergents or ammonia to the bleach/water solution.
- E Methods
 - 1 Aluminum

Remove all oil, grease, dirt, oxide and other foreign material by cleaning per SSPC-SP1, Solvent Cleaning.

- 2 Block (Cinder and Concrete)
Remove all loose mortar and foreign material. Surface must be free of laitance, concrete dust, dirt, form release agents, moisture curing membranes, loose cement, and hardeners. Concrete and mortar must be cured at least 30 days at 75°F. The pH of the surface should be between 6 and 9, unless the products are designed to be used in high pH environments. On tilt-up and poured-in-place concrete, commercial detergents and abrasive blasting may be necessary to prepare the surface. Fill bug holes, air pockets, and other voids with a cement patching compound.
- 3 Concrete, SSPC-SP13 or NACE 6
This standard gives requirements for surface preparation of concrete by mechanical, chemical, or thermal methods prior to the application of bonded protective coating or lining systems. The requirements of this standard are applicable to all types of cementitious surfaces including cast-in-place concrete floors and walls, precast slabs, masonry walls, and shotcrete surfaces. An acceptable prepared concrete surface should be free of contaminants, laitance, loosely adhering concrete, and dust, and should provide a sound, uniform substrate suitable for the application of protective coating or lining systems.
- 4 Cement Composition Siding/Panels
Remove all surface contamination by washing with an appropriate cleaner, rinse thoroughly and allow to dry. Existing peeled or checked paint should be scraped and sanded to a sound surface. Pressure clean, if needed, with a minimum of 2100 psi pressure to remove all dirt, dust, grease, oil, loose particles, laitance, foreign material, and peeling or defective coatings. Allow the surface to dry thoroughly. The pH of the surface should be between 6 and 9, unless the products are designed to be used in high pH environments.
- 5 Drywall—Interior
Must be clean and dry. All nail heads must be set and spackled. Joints must be taped and covered with a joint compound. Spackled nail heads and tape joints must be sanded smooth and all dust removed prior to painting.
- 6 Galvanized Metal
Clean per SSPC-SP1 using detergent and water or a degreasing cleaner to remove greases and oils. Apply a test area, priming as required. Allow the coating to dry at least one week before testing. If adhesion is poor, Brush Blast per SSPC-SP7 is necessary to remove these treatments.
- 7 Plaster
Must be allowed to dry thoroughly for at least 30 days before painting, unless the products are designed to be used in high pH environments. Room must be ventilated while drying; in cold, damp weather, rooms must be heated. Damaged areas must be repaired with an appropriate patching material. Bare plaster must be cured and hard. Textured, soft, porous, or powdery plaster should be treated with a solution of 1 pint household vinegar to 1 gallon of water. Repeat until the surface is hard, rinse with clear water and allow to dry.
- 8 Steel: Structural, Plate, etc.
Should be cleaned by one or more of the surface preparations described below. These methods are used throughout the world for describing methods for cleaning structural steel. Visual standards are available through the Society of Protective Coatings. A brief description of these standards together with numbers by which they can be specified follow.
- 9 Solvent Cleaning, SSPC-SP1
Solvent cleaning is a method for removing all visible oil, grease, soil, drawing and cutting compounds, and other soluble contaminants. Solvent cleaning does not remove rust or mill

scale. Change rags and cleaning solution frequently so that deposits of oil and grease are not spread over additional areas in the cleaning process. Be sure to allow adequate ventilation.

- 10 Hand Tool Cleaning, SSPC-SP2
Hand Tool Cleaning removes all loose mill scale, loose rust, and other detrimental foreign matter. It is not intended that adherent mill scale, rust, and paint be removed by this process. Before hand tool cleaning, remove visible oil, grease, soluble welding residues, and salts by the methods outlined in SSPC-SP1.
- 11 Power Tool Cleaning, SSPC-SP3
Power Tool Cleaning removes all loose mill scale, loose rust, and other detrimental foreign matter. It is not intended that adherent mill scale, rust, and paint be removed by this process. Before power tool cleaning, remove visible oil, grease, soluble welding residues, and salts by the methods outlined in SSPC-SP1.
- 12 White Metal Blast Cleaning, SSPC-SP5 or NACE 1
A White Metal Blast Cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter. Before blast cleaning, visible deposits of oil or grease shall be removed by any of the methods specified in SSPC-SP1 or other agreed upon methods.
- 13 Commercial Blast Cleaning, SSPC-SP6 or NACE 3
A Commercial Blast Cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter, except for staining. Staining shall be limited to no more than 33 percent of each square inch of surface area and may consist of light shadows, slight streaks, or minor discoloration caused by stains of rust, stains of mill scale, or stains of previously applied paint. Before blast cleaning, visible deposits of oil or grease shall be removed by any of the methods specified in SSPC-SP1 or other agreed upon methods.
- 14 Brush-Off Blast Cleaning, SSPC-SP7 or NACE 4
A Brush-Off Blast Cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, loose mill scale, loose rust, and loose paint. Tightly adherent mill scale, rust, and paint may remain on the surface. Before blast cleaning, visible deposits of oil or grease shall be removed by any of the methods specified in SSPC-SP 1 or other agreed upon methods.
- 15 Power Tool Cleaning to Bare Metal, SSPC-SP11
Metallic surfaces that are prepared according to this specification, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, mill scale, rust, paint, oxide corrosion products, and other foreign matter. Slight residues of rust and paint may be left in the lower portions of pits if the original surface is pitted. Prior to power tool surface preparation, remove visible deposits of oil or grease by any of the methods specified in SSPC-SP1, Solvent Cleaning, or other agreed upon methods.
- 16 Near-White Blast Cleaning, SSPC-SP10 or NACE 2
A Near White Blast Cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter, except for staining. Staining shall be limited to no more than 5 percent of each square inch of surface area and may consist of light shadows, slight streaks, or minor discoloration caused by stains of rust, stains of mill scale, or stains of previously applied paint. Before blast cleaning, visible deposits of oil or grease shall be removed by any of the methods specified in SSPC-SP1 or other agreed upon methods.
- 17 High- and Ultra-High Pressure Water Jetting for Steel and Other Hard Materials
SSPC-SP12 or NACE 5

This standard provides requirements for the use of high- and ultra-high pressure water jetting to achieve various degrees of surface cleanliness. This standard is limited in scope to the use of water only without the addition of solid particles in the stream.

- 18 Water Blasting, NACE Standard RP-01-72
Removal of oil grease dirt, loose rust, loose mill scale, and loose paint by water at pressures of 2,000 to 2,500 psi at a flow of 4 to 14 gallons per minute.
- 19 Wood
Must be clean and dry. Knots and pitch streaks must be scraped, sanded, and spot primed before a full priming coat is applied. Patch all nail holes and imperfections with a wood filler or putty and sand smooth.

3.3 INSTALLATION

- A Apply all coatings and materials with the manufacturer's specifications in mind. Mix and thin coatings according to manufacturer's recommendations.
- B Do not apply to wet or damp surfaces.
 - 1 Wait at least 30 days before applying to new concrete or masonry. Or follow manufacturer's procedures to apply appropriate coatings prior to 30 days.
 - 2 Test new concrete for moisture content.
 - 3 Wait until wood is fully dry.
- C Apply coatings using methods recommended by manufacturer.
- D Uniformly apply coatings without runs, drips, or sags, without brush marks, and with consistent sheen.
- E Apply coatings at spreading rate required to achieve the manufacturers recommended dry film thickness.
- F Regardless of number of coats specified, apply as many coats as necessary for complete hide, and uniform appearance.
- G Inspection: The coated surface must be inspected and approved by the Architect or Engineer just prior to the application of each coat.

3.4 PROTECTION

- A Protect finished coatings from damage until completion of project.
- B Touch-up damaged coatings after substantial completion, following manufacturer's recommendation for touch up or repair of damaged coatings. Repair any defects that will hinder the performance of the coatings.

END OF SECTION

**SECTION 10155
TOILET COMPARTMENTS**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 DESCRIPTION OF WORK

- A. This Section includes stock, manufactured toilet compartments.
- B. Types of toilet compartments include:
 - 1. Solid plastic, homogenous color.
- C. Styles of toilet compartments include:
 - 1. Overhead-Braced
 - 2. Floor-Supported
 - 3. Wall-Supported
- D. Styles of screens include:
 - 1. Wall-hung.
- E. Supports for attaching compartments to overhead structural system are specified in a Division 5 Section.
- F. Toilet accessories, such as toilet paper holders, grab bars, and purse shelves, are specified in another Division 10 Section.

1.03 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. Product data for materials, fabrication, and installation including catalog cuts of anchors, hardware, fastenings, and accessories.
- C. Shop drawings for fabrication and erection of toilet compartment assemblies not fully described by product drawings, templates, and instructions for installation of anchorage devices built into other work.
- D. Samples of full range of colors for each type of unit required. Submit 6 inch (150 mm) square samples of each color and finish on same substrate to be used in work, for color verification after selections have been made.

1.04 QUALITY ASSURANCE

- A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication, where possible, to ensure proper fitting of work. However, allow for adjustments where taking of field measurements before fabrication might delay work.

- B. Coordination: Furnish inserts and anchorages which must be built into other work for installation of toilet compartments and related items. Coordinate delivery with other work to avoid delay.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the Work include, but are not limited to, the following:
1. Solid Plastic - Phenolic with Melamine Facing:
 - a. Accurate Partitions Corp.
 - b. American Sanitary Partition Corp.
 - c. Bobrick Washroom Equipment, Inc.
 - d. Capitol Partitions, Inc.
 - e. General Partitions Manufacturing Corp.
 - f. Global Steel Products Corp.
 - g. Knickerbocker Partition Corp.
 - h. Metpar Steel Products Corp.
 - i. Monarch Toilet Partitions, Inc.
 - j. Sanymetal Products Corp.

2.02 MATERIALS

- A. General: Provide materials which have been selected for surface flatness and smoothness. Exposed surfaces which exhibit pitting, seam marks, roller marks, stains, discolorations, telegraphing of core material, or other imperfections on finished units are not acceptable.
- B. Concealed Anchorage Reinforcement: Minimum 0.108 inch (2.75 mm), galvanized steel sheet.
- C. Concealed Tapping Reinforcement: Minimum 0.0785 inch (2.0 mm), galvanized steel sheet.
- D. Pilaster Shoes and Caps: ASTM A 167, Type 302/304 stainless steel, not less than 3 inches (75 mm) high, 0.0396 inch (1.0 mm) thick, finished to match hardware.
- E. Stirrup Brackets: Manufacturer's standard design for attaching panels to walls and pilasters, either chromium-plated nonferrous cast alloy ("Zamac") or anodized aluminum.
- F. Hardware and Accessories: Manufacturer's standard design, heavy duty operating hardware and accessories of chromium-plated, nonferrous cast alloy ("Zamac").
- G. Overhead Bracing: Continuous extruded aluminum, antigrip profile, with clear anodized finish.
- H. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel, chromium-plated steel, or brass, finished to match hardware, with theft-resistant-type heads and nuts. For concealed anchors, use hot-dip galvanized, cadmium-plated, or other rust-resistant protective-coated steel.

2.03 FABRICATION

- A. General: Furnish standard doors, panels, screens, and pilasters fabricated for compartment system. Furnish units with cutouts, drilled holes, and internal reinforcement to receive partition-mounted hardware, accessories, and grab bars, as indicated.
- B. Door Dimensions: Unless otherwise indicated, furnish 24 inch (600 mm) wide in-swinging doors for ordinary toilet stalls and 32 inch (800 mm) wide (clear opening) out-swinging doors for stalls equipped for use by handicapped.
- C. Overhead-Braced Compartments: Furnish galvanized steel supports and leveling bolts at pilasters as recommended by manufacturer to suit floor conditions. Make provisions for setting and securing continuous, extruded, aluminum, antigrip, overhead bracing at top of each pilaster. Provide shoe at each pilaster to conceal supports and leveling mechanism.
- D. Floor-Supported Compartments: Furnish galvanized steel anchorage devices complete with threaded rods, lock washers, and leveling adjustment nuts at pilasters to permit structural connection at floor. Provide shoe at each pilaster to conceal anchorage.
- E. Wall-Supported Compartments: Fabricate divider panels of two steel sheets with internal reinforcing to form unit which is "V" shaped in plan, approximately 6 inches (150 mm) wide at wall and tapered to approximately 1 inch (25 mm) at pilaster. Furnish complete with anchorages and supporting framework for installation in other work. Provide anchorage system with mechanical adjustment for leveling panels.
- F. Wall-Hung Screens: Furnish panel units in sizes indicated, of same construction and finish as partition system panels.
- G. Hardware: Furnish hardware for each compartment to comply with ANSI A117.1 for handicapped accessibility and as follows:
 - 1. Hinges: Cutout inset type, adjustable to hold door open at any angle up to 90 degrees. Provide gravity type, spring-action cam type, or concealed torsion rod type to suit manufacturer's standards.
 - 2. Latch and Keeper: Manufacturer's standard surface-mounted latch unit, designed for handicapped accessibility, with combination rubber-faced door strike and keeper.
 - 3. Coat Hook: Manufacturer's standard unit, combination hook and rubber-tipped bumper, sized to prevent door hitting mounted accessories.
 - 4. Door Pull: Manufacturer's standard unit for out-swinging doors. Provide pulls on both faces of handicapped compartment doors.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. General: Comply with manufacturer's recommended procedures and installation sequence. Install compartment units rigid, straight, plumb, and level. Provide clearances of not more than 1/2 inch (13 mm) between pilasters and panels, and not more than 1 inch (25 mm) between panels and walls. Secure panels to walls with not less than two stirrup brackets attached near top and bottom of panel.

Locate wall brackets so that holes for wall anchorages occur in masonry or tile joints. Secure panels to pilasters with not less than two stirrup brackets located to align with stirrup

brackets at wall. Secure panels in position with manufacturer's recommended anchoring devices.

- B. Overhead-Braced Compartments: Secure pilasters to floor and level, plumb, and tighten installation with devices furnished. Secure overhead brace to each pilaster with not less than two fasteners. Hang doors and adjust so that tops of doors are parallel with overhead brace when doors are in closed position.
- C. Floor-Supported Compartments: Set pilaster units with anchorages having not less than 2 inches (50 mm) penetration into structural floor, unless otherwise recommended by partition manufacturer. Level, plumb, and tighten installation with devices furnished. Hang doors and adjust so that tops of doors are level with tops of pilasters when doors are in closed position.
- D. Wall-Supported Compartments: Secure divider panels to built-in anchorage devices using concealed fasteners. Level, plumb, and tighten installation with devices furnished. Hang doors and adjust so that bottoms of doors are level with bottoms of pilasters when doors are in closed position.
- E. Screens: Attach with anchoring devices as recommended by manufacturer to suit supporting structure. Set units to provide support and to resist lateral impact.

3.02 ADJUST AND CLEAN

- A. Hardware Adjustment: Adjust and lubricate hardware for proper operation. Set hinges on in-swinging doors to hold open approximately 30 degrees from closed position when unlatched. Set hinges on out-swinging doors (and entrance swing doors) to return to fully closed position.
- B. Clean exposed surfaces of partition systems using materials and methods recommended by manufacturer, and provide protection as necessary to prevent damage during remainder of construction period.

END OF SECTION

**SECTION 10306
FIRE EXTINGUISHER CABINETS**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. Section Includes:
 - 1. Fire protection cabinets for the following:
 - a. Portable fire extinguishers.
 - b. Alternate cabinet styles (provide individual pricing for each).
- B. Related Sections:
 - 1. Division 09 painting Sections for field painting fire protection cabinets.
 - 2. Division 10 Section "Fire Extinguishers."

1.03 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for fire protection cabinets.
 - 1. Fire Protection Cabinets: Include roughing-in dimensions, details showing mounting methods, relationships of box and trim to surrounding construction, door hardware, cabinet type, trim style, and panel style.
- B. Shop Drawings: For fire protection cabinets. Include plans, elevations, sections, details, and attachments to other work.
- C. Samples for Initial Selection: For each type of fire protection cabinet indicated.
- D. Maintenance Data: For fire protection cabinets to include in maintenance manuals.

1.04 QUALITY ASSURANCE

- A. Fire-Rated, Fire Protection Cabinets: Listed and labeled to comply with requirements in ASTM E 814 for fire- resistance rating of walls where they are installed.

1.05 COORDINATION

- A. Coordinate size of fire protection cabinets to ensure that type and capacity of fire extinguishers indicated are accommodated.
- B. Coordinate sizes and locations of fire protection cabinets with wall depths.

1.06 SEQUENCING

- A. Apply vinyl lettering on field-painted, fire protection cabinets after painting is complete.

PART 2 - PRODUCTS**2.01 MATERIALS**

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B.
- B. Aluminum: Alloy and temper recommended by aluminum producer and manufacturer for type of use and finish indicated, and as follows:
 - 1. Sheet: ASTM B 209 (ASTM B 209M).
 - 2. Extruded Shapes: ASTM B 221 (ASTM B 221M).
- C. Stainless-Steel Sheet: ASTM A 666, Type 304.

2.02 FIRE PROTECTION CABINET

- A. Cabinet Type: Suitable for fire extinguisher.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. J. L. Industries, Inc., a division of Activar Construction Products Group. (Model 1017 – S21-PUF-LDCVBF - Basis of Design)
 - b. Kidde Residential and Commercial Division, Subsidiary of Kidde plc.
 - c. Larsen's Manufacturing Company.
 - d. Modern Metal Products, Division of Technico Inc.
 - e. Potter Roemer LLC.
 - f. Watrous Divison, American Specialties, Inc.
- B. Cabinet Construction: Nonrated or 1-hour fire rated.
 - 1. Fire-Rated Cabinets: Construct fire-rated cabinets with double walls fabricated from 0.0428-inch- thick, cold-rolled steel sheet lined with minimum 5/8-inch- thick, fire-barrier material. Provide factory-drilled mounting holes.
- C. Cabinet Material: Steel sheet.
 - 1. Shelf: Same metal and finish as cabinet.

BASE BID

- D. Semi-recessed Cabinet: Cabinet box partially recessed in walls of sufficient depth to suit style of trim indicated; with one-piece combination trim and perimeter door frame overlapping surrounding wall surface with exposed trim face and wall return at outer edge (backbend). Provide where walls are of insufficient depth for recessed cabinets but are of sufficient depth to accommodate semi-recessed cabinet installation.
 - 1. Rolled-Edge Trim: 2 ½" to 3-inch backbend depth.
- E. Recessed Cabinet: Cabinet box recessed in walls of sufficient depth to suit style of trim indicated.
 - 1. Alternate #1: Trimless with Concealed Flange: Surface of surrounding wall finishes flush with exterior finished surface of cabinet frame and door, without overlapping trim attached to cabinet. Provide recessed flange, of same material as box, attached to box to act as drywall bead.
 - 2. Alternate #2: Exposed Flag Trim: One piece combination trim and perimeter door frame overlapping surrounding wall surface with exposed trim face and wall return

at outer edge (backbend).

- F. Cabinet Trim Material: Steel sheet.
- G. Door Material: Steel sheet.
- H. Door Style: Flush opaque panel, frameless, with no exposed hinges.
- I. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.
 - 1. Provide projecting door pull and friction latch.
 - 2. Provide concealed hinge permitting door to open 180 degrees.
- J. Accessories:
 - 1. Mounting Bracket: Manufacturer's standard steel, designed to secure fire extinguisher to fire protection cabinet, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked- enamel finish.
 - 2. Lettered Door Handle: One-piece, cast-iron door handle with the word "FIRE" embossed into face.
 - 3. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location.
 - a. Identify fire extinguisher in fire protection cabinet with the words "FIRE EXTINGUISHER".
 - 1) Location: Applied to cabinet door. 2) Application Process: Silk-screened. 3) Lettering Color: Black. 4) Orientation: Vertical.
- K. 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.

2.02 FABRICATION

- A. Fire Protection Cabinets: Provide manufacturer's standard box (tub) with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated.
 - 1. Weld joints and grind smooth.
 - 2. Provide factory-drilled mounting holes.
 - 3. Prepare doors and frames to receive locks.
 - 4. Install door locks at factory.
- B. Cabinet Doors: Fabricate doors according to manufacturer's standards, from materials indicated and coordinated with cabinet types and trim styles selected.
 - 1. Fabricate door frames with tubular stiles and rails and hollow-metal design, minimum 1/2 inch thick.
 - 2. Fabricate door frames of one-piece construction with edges flanged.
 - 3. Miter and weld perimeter door frames.
- C. Cabinet Trim: Fabricate cabinet trim in one piece with corners mitered, welded, and ground smooth.

2.03 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces of fire protection cabinets from damage by applying a strippable, temporary protective covering before shipping.
- C. Finish fire protection cabinets after assembly.
- D. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.04 STEEL FINISHES

- A. Surface Preparation: Remove mill scale and rust, if present, from uncoated steel, complying with SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning" or SSPC-SP 8, "Pickling".
- B. Factory Prime Finish: Apply manufacturer's standard, fast-curing, lead- and chromate-free, universal primer immediately after surface preparation and pretreatment.
- C. Baked-Enamel or Powder-Coat Finish: Immediately after cleaning and pretreating, apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat. Comply with coating manufacturer's written instructions for applying and baking to achieve a minimum dry film thickness of 2 mils.
 - 1. Color and Gloss: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION**3.01 EXAMINATION**

- A. Examine roughing-in for hose and cabinets to verify actual locations of piping connections before cabinet installation.
- B. Examine walls and partitions for suitable framing depth and blocking where semi-recessed cabinets will be installed.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Prepare recesses for semi-recessed fire protection cabinets as required by type and size of cabinet and trim style.

3.03 INSTALLATION

- A. General: Install fire protection cabinets in locations and at mounting heights indicated or, if not indicated, at heights acceptable to authorities having jurisdiction.
 - 1. Fire Protection Cabinets: 54 inches above finished floor to top of cabinet.

- B. Fire Protection Cabinets: Fasten cabinets to structure, square and plumb.
 - 1. Unless otherwise indicated, provide recessed fire protection cabinets. If wall thickness is not adequate for recessed cabinets, provide semi-recessed fire protection cabinets.
 - 2. Provide inside latch and lock for break-glass panels.
 - 3. Fasten mounting brackets to inside surface of fire protection cabinets, square and plumb.
 - 4. Fire-Rated, Cabinets:
 - a. Install cabinet with not more than 1/16-inch tolerance between pipe OD and knockout OD. Center pipe within knockout.
 - b. Seal through penetrations with firestopping sealant as specified in Division 07 Section "Penetration Firestopping."
- C. Identification: Apply vinyl lettering at locations indicated.

3.04 ADJUSTING AND CLEANING

- A. Remove temporary protective coverings and strippable films, if any, as fire protection cabinets are installed unless otherwise indicated in manufacturer's written installation instructions.
- B. Adjust fire protection cabinet doors to operate easily without binding. Verify that integral locking devices operate properly.
- C. On completion of fire protection cabinet installation, clean interior and exterior surfaces as recommended by manufacturer.
- D. Touch up marred finishes, or replace fire protection cabinets that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by fire protection cabinet and mounting bracket manufacturers.
- E. Replace fire protection cabinets that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION

**SECTION 10307
FIRE EXTINGUISHERS**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. Section includes portable, fire extinguishers and mounting brackets for fire extinguishers.
- B. Related Sections:
 - 1. Division 10 Section "Fire Extinguisher Cabinets."

1.03 SUBMITTALS

- A. Product Data: For each type of product indicated. Include rating and classification, material descriptions, dimensions of individual components and profiles, and finishes for fire extinguisher and mounting brackets.
- B. Product Schedule: For fire extinguishers. Coordinate final fire extinguisher schedule with fire protection cabinet schedule to ensure proper fit and function. Use same designations indicated on Drawings.
- C. Operation and Maintenance Data: For fire extinguishers to include in maintenance manuals.
- D. Warranty: Sample of special warranty.

1.04 QUALITY ASSURANCE

- A. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."
- B. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.
- C. Provide fire extinguishers approved, listed, and labeled by FMG.

1.05 COORDINATION

- A. Coordinate type and capacity of fire extinguishers with fire protection cabinets to ensure fit and function.

1.06 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace fire extinguishers that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:
 - a. Failure of hydrostatic test according to NFPA 10.
 - b. Faulty operation of valves or release levers.
2. Warranty Period: 6 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PORTABLE, HAND-CARRIED FIRE EXTINGUISHERS

- A. Fire Extinguishers: Type, size, and capacity for each fire protection cabinet and mounting bracket indicated.
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Amerex Corporation.
 - b. Ansul Incorporated; Tyco International Ltd.
 - c. Badger Fire Protection; a Kidde company.
 - d. Buckeye Fire Equipment Company.
 - e. Fire End & Croker Corporation.
 - f. J. L. Industries, Inc.; a division of Activar Construction Products Group.
 - g. Kidde Residential and Commercial Division; Subsidiary of Kidde plc.
 - h. Larsen's Manufacturing Company.
 - i. Moon-American.
 - j. Pem All Fire Extinguisher Corp.; a division of PEM Systems, Inc.
 - k. Potter Roemer LLC.
 - l. Pyro-Chem; Tyco Safety Products.
 2. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B and bar coding for documenting fire extinguisher location, inspections, maintenance and recharging.
- B. Multipurpose Dry-Chemical Type in Steel Container: UL-rated 4-A: 60-B:C, 10-lb nominal capacity, with monoammonium phosphate-based dry chemical in enameled-steel container.

2.2 MOUNTING BRACKETS

- A. Mounting Brackets: Manufacturer's standard galvanized steel, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated, with plated or black baked- enamel finish.
 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Amerex Corporation.
 - b. Ansul Incorporated; Tyco International Ltd.
 - c. Badger Fire Protection; a Kidde company.
 - d. Buckeye Fire Equipment Company.
 - e. Fire End & Croker Corporation.
 - f. J. L. Industries, Inc.; a division of Activar Construction Products Group.
 - g. Larsen's Manufacturing Company.
 - h. Potter Roemer LLC.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine fire extinguishers for proper charging and tagging.
 - 1. Remove and replace damaged, defective, or undercharged fire extinguishers.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Install fire extinguishers and mounting brackets in locations indicated and in compliance with requirements of authorities having jurisdiction.
 - 1. Mounting Brackets: 54 inches or as indicated on drawings above finished floor to top of fire extinguisher.
- B. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.

END OF SECTION

**SECTION 10550
POSTAL SPECIALTIES**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 DESCRIPTION OF WORK

- A. This Section includes the following postal specialties:
 - 1. Horizontal mailboxes.

1.03 RELATED SECTIONS

- A. Division 8 Section "Door Hardware" for lock cylinders when keyed to building keying system.
- B. Division 9 Section "Gypsum Wallboard Systems".

1.04 SUBMITTALS

- A. General: Submit the following according to Conditions of Contract and Division 1 Specification Sections.
- B. Product data consisting of manufacturer's technical data and installation instructions for postal specialty units required.
 - 1. Provide manufacturer's certification that equipment proposed conforms to U.S. Postal Service (USPS) regulations and has been approved by the Postmaster General.
- C. Shop drawings showing fabrication and installation of postal specialties. Include plans, elevations, and large-scale details. Show anchorages and accessory items. Provide location template drawings for items supported or anchored to permanent construction.
- D. Samples for initial selection purposes in form of manufacturer's color charts showing colors and finishes of exposed materials and accessories available for each type of postal specialties indicated.
- E. Samples for verification purposes in full-size units of each type of postal specialty indicated, in colors and finishes specified, showing full range of variations expected in these characteristics.

1.04 QUALITY ASSURANCE

- A. Where mail system is served by U.S. Postal Service (USPS), provide products approved by the USPS.

- B. Requirements of Regulatory Agencies: Comply with USPS requirements for construction and installation of units served by USPS carriers.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - 1. Horizontal Mailboxes:
 - a. American Device Mfg. Co.
 - b. The Auth Company, Inc.
 - c. Bommer Industries, Inc.
 - d. Florence Manufacturing Co.
 - e. Salisbury Industries. (Basis of Design)

2.02 METALS AND FINISHES

- A. Aluminum: Alloy and temper best suited for the intended use and finish indicated.
 - 1. Plate and Sheet: ASTM B 209 (ASTM B 209M), mill finish, where not exposed.
 - 2. Extruded Bar and Shapes: ASTM B 221 (ASTM B 221M).
 - 3. Exposed Finish: Manufacturer's standard matching following BHMA or US finish according to ANSI/BHMA A156.18.
 - a. Baked Enamel: Color selected by Architect from manufacturer's standards.
- B. Steel: Cold-rolled steel sheet or plate, galvanized where indicated or exposed to outside elements with manufacturer's standard baked-enamel finish in color selected by the Architect.

2.03 HORIZONTAL MAILBOXES

- A. General: Provide horizontal-type mailbox units complying with USPS Publication 17 in size and with features indicated.
- B. General: Provide horizontal-type mailbox units in size and with features indicated.
- C. Front-Loading Door: Manufacturer's standard unit, braced and framed to hold box doors in master front. Construct continuous stainless-steel piano hinge on one side, and solid closure for back of mail compartments. Fabricate unit so that door remains open while mail is deposited.
 - 1. Locking: Construct unit to receive locking unit provided by local postmaster for use by letter carriers.
- D. Mail Compartments and Wall Receptacles: Manufacturer's standard, heavy-metal construction. Equip each compartment to receive tenant's name card. Fabricate concealed components of units of manufacturer's standard sheet aluminum or galvanized steel.
- E. Compartment Doors and Trim: Fabricate doors and trim of clear-anodized extruded aluminum to suit type of installation and loading method.
 - 1. Identification: Plastic tabs with heat-stamped numbers, as designated by Architect on each door. For sorting, provide slots and clear plastic openings to receive tenants' name cards.

2. Locking: A five-pin tumbler, cylinder lock capable of at least 1000 key changes, with two keys for each box door. Key each box differently and deliver keys to Owner with record of each corresponding lock and key numbers.
- F. Directory: Manufacturer's standard directory unit in size and location as indicated and of same materials and finish as box frames, unless otherwise indicated.

PART 3 - EXECUTION

3.01 PREPARATION

- A. In addition to requirements of these specifications, comply with manufacturer's instructions and recommendations for preparing substrate, installing anchors, and applying postal specialties units.

3.02 INSTALLATION

- A. Install units to comply with manufacturer's instructions and final drawings.
 1. Final acceptance is contingent upon compliance with USPS requirements.

END OF SECTION

**SECTION 11400
RESIDENTIAL APPLIANCES**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications, apply to this section.

1.02 DESCRIPTION OF WORK

- A. Work included in this Section:
Provide and install equipment as scheduled on drawings and specified in this Section.

1.03 QUALITY ASSURANCE

- A. For purposes of designing type and quality for work under this Section, Drawings and Specifications are based on products manufactured or furnished by manufacturers listed in the PRODUCTS Section. In case of equipment specified by description only, submit manufacturer's complete printed Specification for Architect's approval.
- B. Underwriter's Laboratory Label:
All equipment shall meet requirements of Underwriter's Laboratory and shall bear that label.

1.04 SUBMITTALS

- A. Manufacturer's Data: Submit for approval, three (3) copies of folder containing complete manufacturer's data and installation procedures for all materials to be used on work of this Section of specifications.
- B. Shop Drawings: Submit for approval, by Architect, in accordance with GENERAL CONDITIONS. Shop drawings shall provide complete information regarding materials of fabrication, mechanical characteristics for energizing, capacity limits and mechanical data required for providing service for each unit installed.
- C. Operating Instructions: Submit in triplicate, for each item of equipment, complete operating instructions and maintenance requirements.

1.05 MANUFACTURERS

- A. General Electric
- B. Kenmore
- C. Approved equal

PART 2 - PRODUCTS

2.01 SCHEDULE OF EQUIPMENT

- A. All models indicated are Whirlpool.
 - 1. MICROWAVE
 - a. Whirlpool Model #WMH53521HZ
 - 2. REFRIGERATOR/FREEZER
 - a. Whirlpool Model #WRS3256DHZ – Side by side

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Furnish and install all items of equipment according to manufacturer's written instructions and shop drawings approved by Architect.

3.02 COORDINATION

- A. Coordinate all final connection with the Plumbing and Electrical contractors.

END OF SECTION

**SECTION 12352
RESIDENTIAL CASEWORK**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications, apply to this section.

1.02 DESCRIPTION OF WORK

- A. Kitchen Cabinets and countertops complete with all necessary hardware.

1.03 RELATED SECTIONS

- A. Casework – Section 06400
- B. Residential Appliances – Section 11400

1.04 DEFINITIONS

- A. Definitions in the AWI's, AWMAC's and WI's "Architectural Woodwork Standards" apply to the work of this Section.

1.05 SUBMITTALS

- A. Shop Drawings. Submit large scale shop drawings of casework items in accordance with Section 01300. All measurements shall be verified at job site. Shop drawings shall located blocking and other anchoring devices required to secure work.
- B. Samples. Submit samples of following items for approval of Architect prior to preparation of shop drawings; cabinet door and drawer, plastic laminate counter top, corner cut-away showing joining of framing plastic laminate samples showing complete range of color selections.

1.06 QUALITY ASSURANCE

- A. Certification. Provide casework with National Kitchen Cabinet Manufacturer's Association "Certified Cabinet" seal affixed in a semi-concealed location of each unit, evidencing compliance with ANSI/KCMA A161.1.
- B. Manufacturer. Manufacturers desiring to supply products supplied under this Section shall be approved by Architect prior to bid opening in accordance with Section 01330 and as specified herein this Section.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Subject to compliance with project requirements provide products by one of the following:
Mid Continent Cabinetry – "Pro Series – Entre"
Republic Industries, Inc. – "Nordic"

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Saco Industries, Inc. "Next Generation"
Tri-Pac – "Gemini Series"
LSI
Leedo
Master Wood Craft
Or approved equal

2.02 GENERAL

- A. Quality Standard: Unless otherwise indicated, comply with the AWI's, AWMAC's and WI's "Architectural Woodwork Standards" for grades of casework indicated for construction, finishes, installation, and other requirements.
 - 1. Grade: Custom
 - 2. Provide labels and certificates from AWI certification program indicating that casework, including installation, complies with requirements of grades specified.

2.03 PARTICLE BOARD

- A. ANSI A-208.1 mat-formed particleboard, Grade 1-M-2 with minimum density of 40 lbs. Per cu. Ft., internal bond of 60 psi; and minimum screwholding capacity of 225 lbs. On faces and 200 lbs. On edges.

2.04 PLASTIC LAMINATE

- A. High pressure type conforming to NEMA Standard LD-3 of the following types for applicable surface, finish shall be suede or satin (gloss value 15 to 34).
- B. Post Forming Grade (PF 42). .042" thick, use for counter tops, backsplashes where plastic cove is indicated.
- C. General Purpose Grade (GP 50). .05" thick for backsplash above post formed top.

2.05 HARDWOOD PLYWOOD

- A. ANSI/HPMA HP hardwood and decorative plywood, Good Grade (1) or better, of thickness, species, cut and core construction indicated.

2.06 HARDWOOD LUMBER

- A. Clear, dry, sound and free of defects selected from First Grade lumber (National Hardwood Lumber Association), of species indicated.

2.07 HARDBOARD

- A. ANSI A-135.4, Class 1, tempered.

2.08 HARDWARE

- A. Provide manufacturer's standard hardware units complying with ANSI A-156.9, of type, material, size, and finish indicated, or if not indicated, as selected by Architect from manufacturer's standard choices.
- B. All cabinet drawers and doors shall have wire pulls 5/16" diameter by 3 1/2" long. Finish shall be selected by Architect.

2.09 CABINET FINISH SCHEDULE

- A. Exposed materials. Do not juxtapose materials noticeable dissimilar in color, grain, figure and natural color markings.
- Solid Lumber. Selected for compatible grain and color of the following species:
Natural Birch
Northern Hard Maple
Red or White Oak
Pine
Ash
Cherry
- B. Plywood Face Veneer. Same species as exposed lumber, unless otherwise indicated, selected for grain and color compatible with exposed solid lumber, no defects. Edgeband exposed edges with solid wood of same species as face veneer.
- C. Semi-Exposed Materials
1. Solid lumber, dry, sound selected to eliminate appearance defects, of any species of hardwood or softwood with color and grain characteristics similar to exposed portions.
 2. Plywood. Species to match color and grain of exposed members; with particleboard core or veneer core as standard with manufacturer; unless otherwise indicated.
- D. Concealed Members. Solid lumber, plywood, particleboard or hardboard, as indicated.

2.10 STYLE OF FACE CONSTRUCTION

- A. Flush Overlay Style. Provide base, wall and full height units (if any) with drawer fronts, doors and fixed panels (if any) overlaying and concealing face frames of cabinet body, unless otherwise indicated.

2.11 CABINET CONSTRUCTION. GENERAL

- A. Face Frames. Not less than 1" x 1 5/8" solid lumber rails and stiles with glued mortise and tenon joints.
- B. Exposed Ends. Not less than .5" thick, medium density particleboard core with exterior veneer to match door and drawer fronts, and minimum 4-mil vinyl laminate on interior surfaces. Connect to stile with pressure-glued tongue and plow joint, and supplemented by concealed mechanical fasteners.
- C. Unexposed Ends. Not less than .5" thick, particleboard with thermoset decorative finish on interior surfaces. Attach to front frame in same manner as exposed ends.
- D. Back, Top and Bottom Rails. Not less than 3/4" x 3" solid lumber, machined to interlock with end panels, and rabbeted to receive top and bottom panels; with back rails secured under pressure with glue and mechanical fastening devices.
- E. Shelving. Not less than 5/8" thick particleboard core plywood or .5" thick particleboard thermoset decorative finish on top, bottom and exposed (front) edge.

2.12 WALL CABINET CONSTRUCTION

- A. Tops and Bottoms. Not less than .5" thick particleboard or 3/8" thick hardwood plywood, fully supported by, and secured in, rabbets in end panels, front frame and back rail.
- B. Backs. Not less than 1/8" hardboard or 3/16" plywood fasted to machined rear edge of ends and to top and bottom hanger rails.

2.13 BASE CABINET CONSTRUCTION

- A. Front Fume Drawer Rails. Not less than 1" x 1/4" lumber mortised and fastened into face frame.
- B. Tops and Bottoms. Not less than .5" thick particleboard or 3/8" thick hardwood plywood secured in and fully supported rabbets in end panels, front frame and back bottom rail.
- C. Back Panels. Not less than 1/8" thick hardboard fastened to machined rear edge of end panels and to top and bottom rails. Interior surface prefinished with thermoset decorative finish.
- D. Toe Boards. Not less than 5/8" particleboard attached with concealed fasteners.
- E. Corner Blocks. Glue and fastened in each of 4 top corners to maintain cabinet squareness and rigidity.

2.14 DRAWER CONSTRUCTION

- A. Minimum 3/8" thick particleboard subfront, back and sides. Provide box-type construction with subfront and back rabbeted into sides and secured with glue and mechanical fasteners. Exposed fronts fastened to subfront with mounting screws from interior of body. Drawer bottom of not less than 1/4" thick hardboard, set into rabbets in back, sides and front.
- B. Drawer Suspension. Minimum 50 lbs. capacity twin track, side-mounted drawer glide suspension with nylon rollers, self-closing feature and positive stop.

2.15 COUNTERTOPS

- A. Core shall be 3/4" particleboard or plywood, post-formed profile with rolled edge, integral curved backsplash (with self-edge). Exposed surface shall be .050" plastic laminate. Particleboard not permitted within 3 ft. of sink edge.

2.16 TRANSPARENT FINISH

- A. Finishing Materials. Manufacturer's standard products selected to comply with performance requirements in referenced kitchen cabinet standard.
- B. Shop Finishing. Finish kitchen cabinets at shop or factory to the greatest extent possible. Defer any final touch-up, cleaning and polishing until after delivery and installation. Apply finish in a properly equipped, temperature controlled spray room free from circulating dust, dirt, sawdust, and other foreign material.
- C. Preparation for Finishing. Carefully and smoothly machine sand parallel with grain, exposed and semi-exposed surfaces of cabinets. Hand scrape or sand exposed surfaces to remove machine marks and scratches. Remove sanding residue and other foreign material.

PART 3 – EXECUTION**3.01 GENERAL**

- A. Install cabinets plumb, level, true and straight with no distortions. Shim as required using concealed shims. Where wood kitchen cabinets abut other finished work, scribe and cut for accurate fit. Provide filler strips, scribe strips and moldings as indicated or required, and in finish to match cabinet face.

3.02 INSTALLATION

- A. Anchor cabinets securely in place with concealed (when doors and drawers are closed) fasteners, anchored into structural support members of wall construction. Comply with manufacturer's instructions for support of units.
- B. Attach countertops securely to base units. Spline and glue joints in countertops; provide concealed mechanical clamping of joint. Provide cutouts for fixtures and appliances as indicated; drill pilot holes at corners before making cutouts. Smooth cut edges and coat with waterproof coating or adhesive.
- C. Complete hardware installation and adjust doors and drawers for proper operation.

END OF SECTION

**SECTION 13312
PRE-ENGINEERED SHADE STRUCTURES**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections apply to this section.

1.02 SUMMARY

- A. The shade structure contractor shall be responsible *for* the design, engineering, fabrication, supply, and installation (including foundations) of the work specified herein. The intent of this specification is to have only one single contractor be responsible *for* all the *above* functions.

1.03 REFERENCES

- A. Shade Structures must comply with the latest revision of applicable codes and regulations including IBC 2009.
- B. American Society for Testing Materials (ASTM)
- C. American Welding Society: Structural Welding Code AWS 01. 1: Symbols for Welding and Nondestructive Testing AWS 2.3
- D. International Accreditation Services (IAS)
- E. American Institute of Steel Construction (AISC): Specifications for the design, fabrication, and erection of structural steel.

1.04 SUBMITTALS

- A. Provide proof of installed reference sites with six structures for similar scope of project and installation that are engineered to IBC 2009 Specifications.
- B. Provide a minimum of 13 fabric samples to demonstrate fabric color range and powder color selections.
- C. Provide proof of all quality assurance items including:
 - 1. A list of at least three reference projects that have been installed in the last 10 years.
 - 2. Proof of general liability, professional liability, and umbrella insurance as per section 1.5 C.

1.05. QUALITY ASSURANCE

Fabrication and erection are limited to firms with proven experience in design and construction of fabric shade structures and such firms shall meet the following minimum requirements. No substitutions shall be allowed for the following:

- A. A single shade contractor shall design, engineer, manufacture, and erect the fabric shade structures including the foundations.
- B. All bidders shall have at least 15 years' experience in the design, engineering, manufacturing, and installation of shade structures.
- C. All bidders shall engineer to IBC 2009 requirements with similar scope.
- D. All bidders shall be able to provide proof of a minimum of general/public liability insurance, and professional liability (PL) insurance
- E. All bidders shall be licensed and bonded with a minimum bonding capacity of \$6,000,000.
- F. Steel manufacturer shall be accredited by IAS (International Accreditation Service) for Structural Steel Fabrication under UBC 97 & 2000 Section 1701.7 and IBC 2012 Section 1704.2.2.
- G. The shade contractor shall have a Corporate Quality Control program and manual describing their complete quality assurance program.
- H. All bidders must have an in-house warranty & service department and local office to assist in repairs and service calls.

1.06 PROJECT CONDITIONS

- A. Field Measurements: Verify layout information for the shade structure(s) shown on the project drawings in relation to the property survey and existing structures , and verify locations by field measurements prior to construction for the shade structures .

1.07 WARRANTY

- A. The successful bidder shall provide a 12-month warranty on all labor and materials.
- B. A supplemental warranty from the manufacturer shall be provided for a period of 10 years (pro-rated) on fabric and 10 years on the structural integrity of the steel from the date of substantial completion.
- C. The warranty shall not deprive the Owner of other rights under the provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Scope: The fabric project shall consist of four (4) type of custom Structures
 1. One (1) custom shade sail. 27' X 18'
 2. Two steel post cantilever frames with cross-braced shade structure support
 3. Central Pendent L
- B. The structures shall be manufactured by Shade Structures, Inc. or approved equivalent and include the structural steel frame, fabric roof, steel cables, all fasteners, and installation.

Project management and foundations will also be included.

1. Creative Shade Solutions, Inc.
 2. Shade Comforts, Inc.
 3. Fabric Architect, LLC
- C. To qualify as an approved equivalent, please submit product documentation, fabric samples and all quality assurance criteria as per Section 1.4 at least 10 days prior to bid date. Approved equals will be issued per addendum prior to bid date.
- D. The shade structure shall conform to the current adopted version of the International Building Code 2013 / FBC 2014 and local agency additions and amendments.
- E. All shade structures are engineered and designed to meet a minimum of 150 mph wind load, Exposure C and live load of 5 lbs/sf2. All shade structures shall be engineered with a zero wind pass-through factor on the fabric. When ASD Steel Design Method is used based on IBC 2009 Section 1605.3.1 the Dead + 0.75 of Live + 0.75 of Wind Load cases must be combined. NO EXCEPTIONS.
- F. Steel:
1. All steel members of the shade structure shall be designed in strict accordance with the requirements of the "American Institute of Steel Construction" (AISC) Specifications and the "American Iron and Steel Institute" (AISI) Specifications for Cold Formed Members and manufactured in a IAS (International Accreditation Service) accredited facility for Structural Steel Fabrication as per IBC 2009 Section 1704.2.2.
 2. All connections shall have a maximum internal sleeving tolerance of .0625 inches using high tensile strength steel sections with a minimum sleeve length of 6 inches.
 3. All non-hollow structural steel members shall comply with ASTM A-36. All hollow structural steel members shall be cold formed, high strength steel and comply with ASTM A-500, Grade C. All steel plates shall comply with ASTM A-572, Grade 50. All galvanized steel tubing shall be triple coated for rust protection using an in-line electro-plating coat process. All galvanized steel tubing shall be internally coated with zinc and organic coatings to prevent corrosion.
- G. Welding :
1. All shop-welded connections of the shade structure shall be designed and performed in strict accordance with the requirements of the "American Welding Society" (AWS) Specifications. Structural welds shall be made in compliance with the requirements of the "Prequalified" welded joints where applicable and by certified welders. No onsite or field welding shall be permitted.
 2. All full penetration welds shall be continuously inspected by an independent inspection agency and shall be tested to the requirement of IBC 2009 and local agency additions and amendments.
- H. Powder Coating:
1. Galvanized steel tubing preparation prior to powder coating shall be executed in accordance to solvent cleaning SSPC-SP1. Solvent such as water, mineral spirits, xylol, toluol, which are to be used to remove foreign matter from the surface. A mechanical method prior to solvent cleaning prior to surface preparation shall be executed according to Power Tool Cleaning SSPC-SP3 and utilizing wire brushed

abrasive wheels and needle gun, etc.

2. Carbon structural steel tubing preparation prior to powder coating shall be executed in accordance to commercial blast cleaning SSPC-SP6 or NACE #3. A commercial blast cleaned surface, when viewed without magnification, shall be free of any visible oil, grease, dirt, mill scale, rust, coating, oxides, corrosion, products and other foreign material.
 3. Powder coating shall be sufficiently applied, with a minimum three mils thickness and cured at the recommended temperature to provide proper adhesion and stability to meet salt spray and adhesion tests as defined by the American Society of Testing Materials.
 4. Powder used in the powder coat process shall have the following characteristic:
 - a. Specific Gravity: 1.68 +/- 0.05
 - b. Theoretical coverage: 114 +/- 4ft²/lb/mil
 - c. Mass loss during cure: < 1%
 - d. Maximum storage temperature : 75°F
 - e. POWDURA® Super Durable TGIC-Free Polyester provides better exterior durability, UV resistance and gloss retention than standard TGIC powders. Further, it accepts and holds onto electrical charge better and longer than standard TGIC powders, improving transfer efficiency by 10% more. The technology's non-toxic, TGIC-free properties also contribute to making it a greener solution for metal finishers.
 - f. Rust Protection Powder under Coat Primer will be required on all structures. POWDURA® Epoxy Powder Coating Z.R. Primer shall be applied in accordance with the manufacturers' specifications. Primer should be fused only and then top coated with the selected powder coat to ensure proper intercoat adhesion.
- I. Tension Cable: Steel cable is determined based on calculated engineering loads.
1. For light and medium loads, Y_i " (nominal) galvanized 7 x 19 strand cable to be used.
- J. Fabric Roof Systems
1. UV shade fabric is made of UV stabilized commercial cloth. Manufactured by system provider made of a UV stabilized high-density polyethylene mesh. Mesh shall be knitted with monofilament and tape yarn filler to ensure that material will not unravel if cut. Panels to be 10 ft. wide.
 2. Fabric Properties:
 - a. Life Expectancy: A minimum of 10 years continuous exposure to the sun.
 3. Stitching & Thread:
 - a. All sewing threads are to be double stitched.
 - b. Thread shall be GORE Tenara Sewing Thread manufactured from 100% expanded **PTFE** (Teflon): mildew resistant exterior approved thread. Thread shall meet or exceed the following:
 - 1) Flexible temperature range
 - 2) Very low shrinkage factor
 - 3) Extremely high strength, durable in outdoor climates
 - 4) Resists flex and abrasion of fabric
 - 5) Unaffected by cleaning agents; acid rain, mildew, salt water and rot resistant, unaffected by most industrial pollutants
 - 6) Treated for prolonged exposure to the sun

2.02 SHIPPING AND HANDLING

- A. All steel surfaces touched by tie down straps are to be padded before final clinching. This can be accomplished by using carpet pads or factory manufactured padding.
- B. All dunnage must be padded before painted products are set in place. Smaller and loose pieces must be padded and totally separate from paint padding.
- C. Unloading: Lift forks to be covered with padding. All dunnage must be padded vertically and horizontally to prevent damage to painted surfaces. When unloading, take care to prevent tools and other hard surface items from making contact.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Installation of shade structures shall be performed by a bonded contractor by the State of Texas.
- B. The contractor installing the structure shall comply with manufactures instructions for assembly, installation, and erection per approved drawings.
- C. Concrete:
 - 1. Concrete work shall be executed in accordance with the latest edition of American Concrete Building Code ACI 318
 - 2. Concrete specifications shall comply in accordance with the section 03300 , and detailed as per plans, shall be as follows:
 - a.) 28 days strength F'c = 3000 psi
 - b.) Aggregate : HR
 - c.) Slump: 3 - 5
 - d.) Portland Cement shall conform to ASTM C-33
 - 3. All reinforcement shall conform to ASTM A-615 grade 60
 - 4. Reinforcing steel shall be detailed , fabricated, and placed in accordance with the latest ACI Detailing Manual and Manual of Standard Practice
 - 5. Whenever daily ambient temperatures are below 80 degrees Fahrenheit, the contractor may have mix accelerators and hot water added at the batch plant (See Table 1)
 - 6. The contractor shall not pour any concrete when daily ambient temperature is below 55 degrees Fahrenheit

TABLE 1

Temperature Range	% Accelerator	Type Accelerator
75-80 degrees	1%	High Early (non-calcium)
70-75 degrees	2%	High Early (non-calcium)
Below 70 degrees	3%	High Early (non-calcium)

- D. Foundations:
 - 1. All anchor bolts set in new concrete shall be ASTM A-325
 - 2. All Anchor Bolts shall be Hot Dipped Galvanized.

1.3 SAFETY PROCEDURES

- A. The Contractor is responsible for the coordination of work with other trades.
- B. All staff personnel are to be dressed and conduct themselves in accordance with OSHA Standards. All staff must be properly trained for equipment that they might use. Safety is a top priority.
- C. All vehicles and machinery are to be properly licensed and insured and must be operated by licensed operators in accordance with OSHA Standards. All cranes and lifts must be operated in accordance with manufacturer's guidelines.
- D. The handling of steel during installation is critical. Exercise care when lifting items so that it does not come into contact with other surfaces. Clean sand and other deleterious material from structural items before moving or lifting. Before installation, all items are to be washed with soap and water and dried with cloths. All grease, dust, oils, and other latent materials are to be removed during this washing. When pouring concrete pour backs at columns, protect paint by using plastic and tape to prevent concrete from splashing on finish surfaces.
- E. All concrete must be cut with a wet diamond blade to ensure that it leaves a clean finish. If at any stage the existing remaining surface lifts, creating a tripping hazard, additional saw cutting will be required so as to leave a neat and uniform joint.
- F. Cover all open holes at all times with solid plywood and spoils to prevent access until concrete is poured.
- G. All equipment and/or product must be stored inside fenced area.

END OF SECTION