

IFB# GHURA-23-02-CDBG-GPDESS

**Specification
for the**

Guam Police Division Eastern Sub-Station

**OWNER
Guam Housing and Urban Renewal Authority**

BY: _____
Elizabeth F. Napoli, EXECUTIVE DIRECTOR

Contractor: _____

By: _____
Signature and Title

Date: _____

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IFB Number: GHURA-23-02-CDBG-GPDESS		Submit bid to: GHURA 117 Bien Venida Ave. Sinajana, Guam 96910 Contact: Sonny Perez, 475-1404 or email sperez@ghura.org Andrew Manglona, 475-1315 or email amanglona@ghura.org
Bid Opening Date: May 25, 2023	Bid Opening Time: 2:00 pm	
Project Title: Guam Police Division Eastern Sub-Station		
Project Description: Build Design and Build of the Guam Police Division Eastern Sub Station		

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GHURA

Guahan Housing and Urban Renewal Authority
Aturidat Ginima' Yan Rinueban Siudat Guahan
117 Bien Venida Avenue, Sinajana, GU 96910
Phone: (671) 477-9851 · Fax: (671) 300-7565 · TTY: (671) 472-3701



Lourdes A. Leon Guerrero
Governor of Guam

Joshua F. Tenorio
Lt. Governor of Guam

Invitation for Bid
IFB-GHURA-23-02-CDBG-GPDESS
Guam Police Division Eastern Sub-Station
This ad is paid with HUD Funds by GHURA

Guam Housing and Urban Renewal Authority (GHURA) will receive sealed proposals to design and build the Guam Police Division Eastern Sub-Station located in Talofofo **until 2:00 PM ChST on Thursday May 25, 2023** at GHURA's Main office in Sinajana.

Bid packets are available for view at GHURA's website: <https://www.ghura.org/doing-business-us/bidsproposalsrelease-funds/invitation-bids> beginning, Thursday April 27, 2023. **Interested parties must register at GHURA Main Office in Sinajana to receive access to a downloadable bid packet file; for a non-refundable fee of \$50.00 (exact cash amount, money order, or company check). Registration schedule is: Monday through Friday, 8:30 am - 4:00 pm ChST; with the exception of GovGu holidays.** A pre-bid conference will be held on Thursday May 04, 2023 at 10:00 AM ChST in the GHURA Main Office Conference Room in Sinajana. A site visit will be conducted by GHURA staff on Friday May 05, 2023. Attendance at pre-bid conference or site visit is nonmandatory but highly encouraged. Any questions regarding the project or requirements must be submitted in writing or via email to Antonio C. Camacho at accamacho@ghura.org no later Monday May 15, 2023 **Bid closing date and time is Thursday May 25, 2023 at 2:00 pm ChST.** All bid submittals will be opened publicly at GHURA's Main Office Conference Room, Sinajana.

Pursuant to 5GCA, Chapter 5, §5212, bid guarantees in the amount of 15% of the total base bid shall accompany each bid. Bid guarantee shall be a Bid Bond secured by a surety company authorized to do business in Guam and listed in the latest Department of Treasury Circular 570 published in the Federal Register; or as permitted by state law, a certified check, bank draft, or U.S. Government Bond at par value. All Bid Guarantees must be made payable to GHURA. Personal checks *will not* be accepted. GHURA reserves the right to waive irregularities and to reject any or all bids. Failure to submit a bid properly shall result in rejection of the bid.

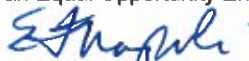
For all contracts which exceed \$100,000, the successful bidder will be required to furnish and pay for satisfactory Performance and Payment bond for 100% of the contract price. GHURA will retain the bid guarantee until the performance bond is received and will release it soon thereafter. The Contractor must not discriminate on the basis of race, color, religion, sex, national origin, age, disability, or genetic information in employment or the provision of services. Restriction Against Contractors Employing Convicted Sex Offenders from Working at Government of Guam Venues. (§5253 of Title 5 Guam Code Annotated).

The successful bidder will be required to accomplish the following to the best possible and greatest extent feasible:

1. A goal of awarding at least 50 percent of the dollar value of construction contracts to Minority and/or Women Business Enterprises (MBE/WBE) or General Contractors with MBE/WBE participation.
2. In accordance with Section 3 of the U.S. Department of Housing and Urban Development Act of 1968, all construction contractors, to the maximum extent feasible, shall provide training, contracting, and employment opportunities to low-income residents residing in GHURA.

GHURA intends to award a contract on the basis of the lowest most responsive responsible bid for the work described in the bid documents. No bid shall be withdrawn for a period of sixty (60) days subsequent to the opening of bids without the prior written consent of GHURA.

GHURA is an Equal Opportunity Employer


Elizabeth Napoli
Executive Director

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

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

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

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

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

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

10. Assurance of Completion

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

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

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

[] (3) a 20 percent cash escrow;

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

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

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

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

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

11. Preconstruction Conference (applicable to construction contracts)

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

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

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

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

(2) Preference in the award of contracts or subcontracts in connection with the administration of contracts be given to Indian organizations and to Indian-owned economic enterprises, as defined in section 3 of the Indian Financing Act of 1974 (25 U.S.C. 1452). That Act defines "economic enterprise" to mean any 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)

(Required by 5 GCA § 5233 as amended by P.L. 36-13 (4/9/2021))

ISLAND OF GUAM

- [] One or more of the more-than-10% owners listed above is a business or artificial person. Any more-than-25% owners of such a business or artificial person are listed below per 5 GCA § 5233. Note: any less-than-25% owners of such a business or artificial person is encouraged to also be listed below.

Name of >10% Owner Business or Artificial Person:

--

Names of owners of the >10% Owner Business or Artificial Person ("Second Tier Owner")	Owner's Principal Place of Business Street Address	% of Interest

Name of other >10% Owner Business or Artificial Person:

--

Names of owners of the >10% Owner Business or Artificial Person ("Second Tier Owner")	Owner's Principal Place of Business Street Address	% of Interest

- B. If any Second Tier Owner identified above is an artificial person, the natural or artificial owners of such Second Tier Owner who have held more than 49% of the shares or interest in the Bidder/Offeror/Prospective Contractor (Third Tier Owners) are as follows [if none, please so state]:

Second Tier Owner Name _____

Name of Third Tier Owner	Principal Place of Business Street Address	% of Interest
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

- C. If the name of no natural person has been identified as an owner, or a Second or Third Tier Owner of the Bidder/Offeror/Prospective Contractor, please identify the name, position, address, and contact information of the natural person having the authority and responsibility for the Bid/Offer/Proposal/Prospective Contract, and the name of any natural person who has the authority and power to remove and replace the designated responsible person:

Name of Natural Person	Position	Street Address of Principal Place of Business	Phone Number, Email Address, and other Contact Information

- D. Further, I say that the persons who have received or are entitled to receive a commission, gratuity, contingent fee or other compensation to solicit, secure, or assist in obtaining business related to the Bid/Offer/Proposal/Prospective Contract for which this Affidavit is submitted are as follows (if none, please so state):

Name	Principal Place of Business Street Address	Amount of Compensation

- E. Further, I say that the persons who have directly or indirectly participated in this solicitation and who are also employees of the government of Guam or the government of the United States, if federal funds are to be used in the payment of the contract related to the Bid/Offer/Proposal/Prospective Contract for which this Affidavit is submitted, are as follows (if none, please so state):

Name	Principal Place of Business Street Address

- F. Regardless of any ownership interest, the following individuals have the power to control the performance of the contract or to control the Bidder/Offeror/Prospective Contractor, directly or indirectly:

Name	Principal Place of Business Street Address

///

///

- G. Until award of the contract, and throughout the term of any contract awarded to the Bidder/Offeror/Prospective Contractor represented herein, I agree to promptly make any disclosures not made previously and update changes in ownership, identities of owners and other required information, interests, compensation or conflicts of the persons required to be disclosed. I understand that failure to comply with this requirement shall constitute a material breach of contract.
- H. I hereby declare under penalty of perjury under the laws of Guam that the foregoing is true and correct.

Executed on: _____
(date)

Signature of one of the following:
Bidder/Offeror/Prospective Contractor, if a licensed individual
Owner of sole proprietorship Bidder/Offeror/Prospective
Contractor
Partner, if the Bidder/Offeror/Prospective Contractor is a
partnership
Officer, if the Bidder/Offeror/Prospective Contractor is a
corporation

Subscribed and sworn to before me

This _____ day of _____, 20 _____.

NOTARY PUBLIC

My commission expires: _____

CITY OF _____)
ISLAND OF GUAM) ss.

1. The name of the offering company or individual is [*state name of company*]

3. I make this statement on behalf of myself as a representative of the offeror, and on behalf of the offeror's officers, representatives, agents, subcontractors, and employees.

Offeror, if the offeror is an individual;
Partner, if the offeror is a partnership;
Officer, if the offeror is a corporation.

this _____ day of _____, 201__.

My commission expires _____, _____.

AFFIDAVIT re NO GRATUITIES or KICKBACKS

CITY OF _____)
) ss.
ISLAND OF GUAM)

_____[*state name of affiant signing below*], being
first duly sworn, deposes and says that:

1. The name of the offering firm or individual is [*state name of offeror company*]
_____. Affiant is _____ [*state one
of the following: the offeror, a partner of the offeror, an officer of the offeror*] making the foregoing
identified bid or proposal.

2. To the best of affiant's knowledge, neither affiant, nor any of the offeror's officers,
representatives, agents, subcontractors, or employees have violated, are violating the prohibition against
gratuities and kickbacks set forth in 2 GAR Division 4 § 11107(e). Further, affiant promises, on behalf
of offeror, not to violate the prohibition against gratuities and kickbacks as set forth in 2 GAR Division 4
§ 11107(e).

3. To the best of affiant's knowledge, neither affiant, nor any of the offeror's officers,
representatives, agents, subcontractors, or employees have offered, given or agreed to give, any
government of Guam employee or former government employee, any payment, gift, kickback, gratuity or
offer of employment in connection with the offeror's proposal.

4. I make these statements on behalf of myself as a representative of the offeror, and on behalf of
the offeror's officers, representatives, agents, subcontractors, and employees.

Signature of one of the following:

Offeror, if the offeror is an individual;
Partner, if the offeror is a partnership;
Officer, if the offeror is a corporation.

Subscribed and sworn to before me

this ____ day of _____, 200__.

NOTARY PUBLIC

My commission expires _____, _____.

AFFIDAVIT RE ETHICAL STANDARDS

CITY OF _____)
) ss.
ISLAND OF GUAM)

_____ [state name of affiant signing below], being first
duly sworn, deposes and says that:

The affiant is _____ [state one of the following: *the offeror, a partner of the offeror, an officer of the offeror*] making the foregoing identified bid or proposal. To the best of affiant's knowledge, neither affiant nor any officers, representatives, agents, subcontractors or employees of offeror have knowingly influenced any government of Guam employee to breach any of the ethical standards set forth in 5 GCA Chapter 5, Article 11. Further, affiant promises that neither he or she, nor any officer, representative, agent, subcontractor, or employee of offeror will knowingly influence any government of Guam employee to breach any ethical standards set forth in 5 GCA Chapter 5, Article 11. These statements are made pursuant to 2 GAR Division 4 § 11103(b).

Signature of one of the following:

Offeror, if the offeror is an individual;
Partner, if the offeror is a partnership;
Officer, if the offeror is a corporation.

Subscribed and sworn to before me
this ____ day of _____, 201__.

NOTARY PUBLIC

My commission expires _____, _____.

AFFIDAVIT re CONTINGENT FEES

CITY OF _____)
ISLAND OF GUAM) ss.

_____ [state name of affiant signing below], being first duly sworn, deposes and says that:

1. The name of the offering company or individual is *[state name of company]*

2. As a part of the offering company's bid or proposal, to the best of my knowledge, the offering company has not retained any person or agency on a percentage, commission, or other contingent arrangement to secure this contract. This statement is made pursuant to 2 GAR Division 4 11108(f).

3. As a part of the offering company's bid or proposal, to the best of my knowledge, the offering company has not retained a person to solicit or secure a contract with the government of Guam upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, except for retention of bona fide employees or bona fide established commercial selling agencies for the purpose of securing business. This statement is made pursuant to 2 GAR Division 4 11108(h).

4. I make these statements on behalf of myself as a representative of the offeror, and on behalf of the offeror's officers, representatives, agents, subcontractors, and employees.

Signature of one of the following:

Offeror, if the offeror is an individual;
Partner, if the offeror is a partnership;
Officer, if the offeror is a corporation.

Subscribed and sworn to before me

this _____ day of _____, 201__.

NOTARY PUBLIC

My commission expires _____, _____.

Requirements for Compliance with Requirements of Section 3 of the Housing and Urban Development Act of 1968 (12 U.S.C. 1701u) (Section 3) Provisions of 24CFR 75

Overview of Section 3 Requirements

Section 3 is a provision of the Housing and Urban Development Act of 1968 (12 U.S.C. 1701u) that is regulated by the provisions of 24 CFR 75. Section 3 regulations ensure that employment and other economic opportunities generated by certain HUD financial assistance shall, to the greatest extent feasible, and consistent with existing Federal, State and local laws and regulations, be directed to low- and very low-income persons, particularly those who are recipients of government assistance for housing, and to business concerns which provide economic opportunities to low- and very low-income persons.

General Policy Statement:

It is the declared policy of GHURA that Equal Employment Opportunities shall be provided for every employee and applicant for employment regardless of race, color, religion, sex, national origin, handicap, or economic status; and, that through the award of contracts to contractors, vendors, and suppliers, that employment and business opportunities be created for residents of GHURA properties and other qualified low- and very low-income persons residing on the island of Guam. This policy does not end with the mere prohibition of discriminatory practices by programs receiving HUD financial assistance or contractors, subcontractors, and vendors contracting with GHURA. GHURA recognizes its obligation as well as the obligation of potential contractors, subcontractors, and vendors, to develop practical steps to achieve the goal of providing meaningful, full-time permanent employment opportunities, as well as business opportunities to GHURA Residents and other Section 3 eligible persons.

Such obligation shall be demonstrated not merely through inclusion of positive or “best effort” steps, but shall result in a reasonable level of success in the recruitment, employment, and utilization of GHURA Residents and other Section 3 eligible persons and businesses in the workforce and subcontracting of work resulting out of the expenditure of HUD funding. GHURA’s Board of Commission, through official resolution, shall examine and consider a contractor/vendor’s success in providing employment and business opportunities to Authority Residents prior to acting on any proposed contract award.

Eligibility:

Individuals and businesses that meet Section 3 criteria may seek Section 3 preference from GHURA or its contractors/subcontractors for training, employment, or contracting opportunities generated by [public housing financial assistance or housing and community development financial assistance]. To qualify as a Section 3 worker, Targeted Section 3 worker or a Section 3 business concern, each must self-certify that they meet the applicable criteria.

Businesses who *misrepresent* themselves as Section 3 business concerns and *report false* information to GHURA may have their contracts terminated as default and be barred from ongoing and future considerations for contracting opportunities.

Applicability:

For public housing financial assistance, all funding is covered, regardless of the amount of expenditure or size of a contract. This plan applies to development assistance, operating funds, capital funds, and all mixed-finance development. For housing and community development financial assistance, this plan applies to housing rehabilitation, housing construction, and other public construction projects that exceed \$200,000 or more of housing and community development financial assistance from one or more HUD programs. Applicability is determined at the project level.

For projects funded with Lead and Hazard Control and Healthy Homes Programs, this plan applies to projects that exceed \$100,000.

This plan also applies to projects that include multiple funding sources. Multiple funding source projects include projects that include public housing financial assistance, housing and community development financial assistance for single or multiple recipients, and the Lead Hazard Control and Healthy Homes Program.

Section 3 requirements do not apply to: 1) Material Supply Contracts - § 75.3(b), 2) Indian and Tribal Preferences - § 75.3(c), and 3) Other HUD assistance and other Federal assistance not subject to Section 3 §75.3 (d). However, for financial assistance that is not subject to Section 3, recipients are encouraged to consider ways to support the purpose of Section 3.

Purpose of this Policy and Compliance Plan:

The purposes of this Policy are to create sustained employment and other opportunities for Section 3 Beneficiaries and to assist Contractors in understanding their Section 3 obligations so that they can be successful in meeting the responsibilities of the Section 3 requirements. These purposes are accomplished through the guidance provided by GHURA and assistance provided by GHURA's Section 3 coordinator. This policy shall remain in effect for so long as it remains consistent with federal regulations or amended by GHURA's Board of Commissioners.

Numerical Goals for Section 3 Compliance:

Recipients and Contractors may demonstrate compliance with the "greatest extent feasible" requirement of Section 3 by meeting the numerical goals set forth in this Section 3 Program for providing training, employment, and contracting opportunities to Section 3 Residents and Section Business Concerns. Efforts to employ Section 3 Residents to the greatest extent feasible should be made at all job levels.

GHURA, in its own operations, shall endeavor to achieve the goals of Section 3 and shall provide equal responsibility to its contractors, vendors, and suppliers to implement progressive efforts to also attain compliance. In doing so, GHURA shall evaluate contractors' compliance towards achieving the goals of Section 3 and ensure a system of leveling sanctions against contractor, vendor, or supplier for non-compliance and endeavor to take appropriate steps to ensure any such concern is not permitted to participate in future GHURA procurement activities.

Section 3 Final Rule Benchmark Notice:

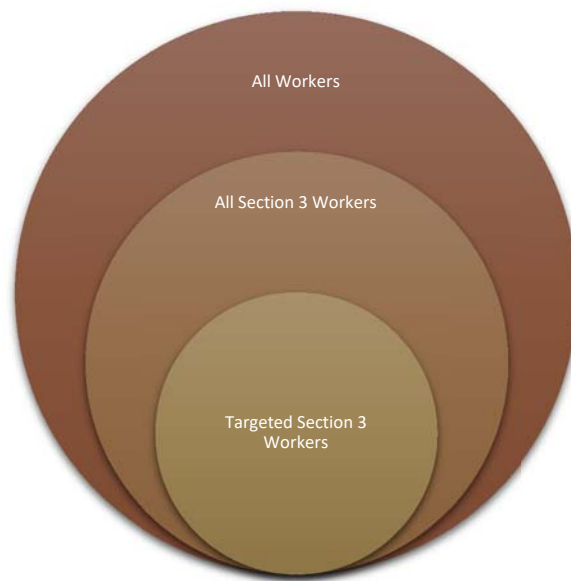
- 25% of all labor hours must be performed by a Section 3 worker.
- 5% of all labor hours must be performed by Targeted Section 3 workers

The numerical goals established above represent minimum numerical targets and all prospective contractors shall be advised and encouraged to seek Section 3 participation to the greatest extent feasible. Any contractor that meets the minimum numerical goals set forth above will be considered to have complied with the Section 3 requirements. Any contractor that does not meet the numerical goals set forth above has the burden of demonstrating why it was not feasible to meet the numerical goals. In the event no competing contractors were successful in meeting the minimum goals set forth above, GHURA shall consider documentation provided by the contractor evidencing impediments encountered despite actions taken to comply with the Section 3 Requirements. Such evidence shall be subject to the satisfaction of GHURA. Any contractor found to be in non-compliance with Section 3 shall be considered ineligible for award.

All contractors submitting bids/proposals to the GHURA shall be required to complete certifications, as appropriate, as acknowledgment of the Section 3 contracting and employment provisions as required by this section. Such certifications shall be supported with adequate evidence to support representations made. The certifications required to be submitted with the bid/proposal consist of the following:

- Certification for business concerns seeking Section 3 preference.
- Contractor certification of efforts to fully comply with employment and training provisions of Section 3.

Prior to the award of any contract the contractor shall enter into negotiations with GHURA for the purpose of incorporating into the contract a provision for a specific number of Public Housing residents or other Section 3 residents to be trained or employed on the contract. Such resulting provision shall obligate the contractor toward achieving not less than the numerical goals listed above and shall be based on a detailed workforce analysis to be compiled by the contractor and submitted to GHURA prior to award of contract.



Section 3 Worker and Targeted Section 3 Worker:

A Section 3 worker seeking certification shall submit self-certification documentation to the recipient contractor or subcontractor, that the person is a Section 3 worker or Targeted Section 3 worker as defined in 24 CFR Part 75. For the purposes of Section 3 worker eligibility, GHURA will use individual income rather than family/household income to determine eligibility.

Individual Income Limits		
FY2021 Income Limit Area	Income Limit Category	FY 2021 Income Limits
GUAM	Extremely Low Income Limits 30%	\$14,350
	Very Low Income Limits 50%	\$23,900
	Low Income Limits 80%	\$38,200

Persons seeking the Section 3 worker preference shall demonstrate that it meets one or more of the following criteria currently or when hired within the past five years, as documented:

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

Persons seeking the Targeted Section 3 worker preference shall demonstrate that it meets one or more of the following criteria:

(For public housing financial assistance)

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

c) A YouthBuild participant.

(For housing and community development assistance)

1) Employed by a Section 3 business concern or

2) Currently meets or when hired met at least one of the following categories as documented within the past five years: a) Living within the service area or the neighborhood of the project, as defined in 24 CFR Part 75.5; or b) A YouthBuild participant.

Section 3 workers and Targeted Section 3 workers who are seeking preference in training and employment must submit the Section 3 Worker and Targeted Section 3 Worker Certification Form from the GHURA office.

Example of the Section 3 Worker and Targeted Section Worker form is as follows:

Exhibit 1

Section 3 Worker and Targeted Section 3 Worker Self-Certification Form												
<p>The purpose of HUD's Section 3 program is to provide employment, training and contracting opportunities to low-income individuals, particularly those who are recipients of government assistance for housing or other public assistance programs. Your response is voluntary, confidential, and has no effect on your employment.</p> <p>Eligibility for Section 3 Worker or Targeted Section 3 Worker Status: A Section 3 worker seeking certification shall self-certify and submit this form to the recipient contractor or subcontractor, that the person is a Section 3 worker or Targeted Section 3 Worker as defined in 24 CFR Part 75.</p> <p>Instructions: Enter/select the appropriate information to confirm your Section 3 worker or Targeted Section 3 Worker status.</p> <p>Employee Name: _____</p> <p>1. Are you a resident of public housing or a Housing Choice Voucher Holder (Section 8)? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>2. Are you a resident of GUAM? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>In the field below, select the amount of individual income you believe you earn on an annual basis.</p> <table border="0"><tr><td><input type="checkbox"/> Less than \$10,000</td><td><input type="checkbox"/> \$30,001 - \$40,001</td><td><input type="checkbox"/> More than \$60,000</td></tr><tr><td><input type="checkbox"/> \$10,001 - \$20,000</td><td><input type="checkbox"/> \$40,001 - \$50,000</td><td></td></tr><tr><td><input type="checkbox"/> \$20,001 - \$30,000</td><td><input type="checkbox"/> \$50,001 - \$60,000</td><td></td></tr></table> <p>Select from ONE of the following two options below:</p> <p>I qualify as a:</p> <table border="1"><tr><td><input type="checkbox"/> Section 3 Worker (as defined on page 3 of Section 3 Worker Certification Form)</td></tr><tr><td><input type="checkbox"/> Targeted Section 3 Worker (as defined on page 3 of Section 3 Worker Certification Form)</td></tr></table> <p>GHURA SECTION 3 FORM-01A 10-1</p>		<input type="checkbox"/> Less than \$10,000	<input type="checkbox"/> \$30,001 - \$40,001	<input type="checkbox"/> More than \$60,000	<input type="checkbox"/> \$10,001 - \$20,000	<input type="checkbox"/> \$40,001 - \$50,000		<input type="checkbox"/> \$20,001 - \$30,000	<input type="checkbox"/> \$50,001 - \$60,000		<input type="checkbox"/> Section 3 Worker (as defined on page 3 of Section 3 Worker Certification Form)	<input type="checkbox"/> Targeted Section 3 Worker (as defined on page 3 of Section 3 Worker Certification Form)
<input type="checkbox"/> Less than \$10,000	<input type="checkbox"/> \$30,001 - \$40,001	<input type="checkbox"/> More than \$60,000										
<input type="checkbox"/> \$10,001 - \$20,000	<input type="checkbox"/> \$40,001 - \$50,000											
<input type="checkbox"/> \$20,001 - \$30,000	<input type="checkbox"/> \$50,001 - \$60,000											
<input type="checkbox"/> Section 3 Worker (as defined on page 3 of Section 3 Worker Certification Form)												
<input type="checkbox"/> Targeted Section 3 Worker (as defined on page 3 of Section 3 Worker Certification Form)												
<p>Employee Affirmation</p> <p>I affirm that the above statements on this form are true, complete, and correct to the best of my knowledge and belief. I hereby certify, under penalty of law, that the following information is correct to the best of my knowledge.</p> <p>Employee Address: _____</p> <p>Print Name: _____ Date Hired: _____</p> <p>Signature: _____ Date: _____</p> <p>FOR ADMINISTRATIVE USE ONLY</p> <p>Is the employee a Section 3 worker based upon their self-certification? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Is the employee a Targeted Section 3 worker based upon their self-certification? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Was this an applicant who was hired as a result of the Section 3 project? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If Yes, what is the name of the company? _____</p> <p>What was the date of hire? _____</p> <p>EMPLOYERS MUST RETAIN THIS FORM IN THEIR SECTION 3 COMPLIANCE FILE FOR FIVE YEARS.</p> <p>GHURA SECTION 3 FORM-01A 10-1</p>												

Section 3 Program Participant Certification Procedure:

GHURA will certify Section 3 program participants who reside in GUAM or near the project site and who are seeking preference in training and employment by completing and attaching adequate proof of Section 3 eligibility as required (see Exhibit 1- Section 3 Participant Eligibility for Preference Form).

1. All persons living in GUAM or within the required radius of the project site who meet the Section 3 eligibility guidelines.
2. Once this assessment is complete, the Section 3 Coordinator will determine if the individual needs the eligibility requirements and is job ready.
3. If the individual is deemed eligible for Section 3 participation and deemed not ready for employment, a referral will be made to other agencies that are better equipped to address the individual's needs, ie., substance abuse providers, etc.
4. The Section 3 readiness component is a part of GHURA's commitment to provide economic opportunities and training to residents/eligible participants to become gainfully employed.

Section 3 Business Concern Certification:

Businesses that believe they meet the Section 3 Business requirements can may self-register in the HUD Business registry, here: <http://www.hud.gov/Sec3Biz>. Businesses may seek Section 3 Business Concern preference by

demonstrating that it meets one or more of the following criteria:

- 1) At least 51 percent of the business is owned and controlled by low- or very low-income persons; or
- 2) At least 51 percent of the business is owned and controlled by current public housing residents or residents who currently live in Section 8-assisted housing; or
- 3) Over 75 percent of the labor hours performed for the business over the prior three-month period are performed by Section 3 workers.

Businesses that seek Section 3 preference shall certify, or demonstrate to GHURA contractors or subcontractors, that they meet the definitions provided in the above. Businesses may demonstrate eligibility by submitting the Section 3 Business Concern Certification Form, located at the GHURA office.

Section 3 Business Concern Certification Forms must be submitted at the time of bid/proposal. If GHURA previously approved the business concern to be Section 3 certified, then the certification can be submitted along with the bid, as long as the form is submitted within the prescribed expiration date. The Section 3 Business Concern Certification Form will expire after **12 months**. Establishing a **12 month certification** of eligibility period allows GHURA the ability to assess contractor performance to ensure the business is striving to meet the required goals.

Note: While registering as a Section 3 Business Concern may give a business certain preferences, such registration is not a guarantee of such preferences that the business will be awarded any contractors or subcontracts by GHURA or its contractors/vendors.

Example of a Certification for Business Concerns Seeking Section 3 Preference form is located below:

Exhibit 2

Certification for Business Concerns Seeking Section 3 Preference in Contracting and Demonstration of Capability	
Business Information	
Name of Business:	
Address of Business:	
Name of Business Owner:	
Phone Number of Business Owner:	
Email Address of Business Owner:	
Preferred Contact Information	
Same as above: <input type="checkbox"/>	
Name of Preferred Contact:	
Phone Number of Preferred Contact:	
Type of Business (select from the following options):	
<input type="checkbox"/> Corporation <input type="checkbox"/> Partnership <input type="checkbox"/> Sole Proprietorship <input type="checkbox"/> Joint Venture	
Select from ONE of the following three options below that applies:	
<input type="checkbox"/> At least 51 percent of the business is owned and controlled by low- or very low-income persons (Refer to income guidelines on page 3)	
<input type="checkbox"/> At least 51 percent of the business is owned and controlled by current public housing residents or residents who currently live in Section 8-assisted housing.	
<input type="checkbox"/> Over 75 percent of the labor hours performed for the business over the prior three-month period are performed by Section 3 workers (Refer to definition on page 3).	
<small>GHURA SECTION 3 FORM-01B pg. 1</small>	

Business Concern Affirmation	
<small>I affirm that the above statements on this form are true, complete, and correct to the best of my knowledge and belief. I understand that businesses who misrepresent themselves as Section 3 business concerns and report false information to [insert name of recipient/grantee] may have their contracts terminated as default and be barred from ongoing and future considerations for contracting opportunities. I hereby certify, under penalty of law, that the following information is correct to the best of my knowledge.</small>	
Print Name:	Date:
Signature:	
<small>*Certification expires within six months of the date of signature. Information regarding Section 3 Business Concerns can be found at 24 CFR 75.5</small>	
FOR ADMINISTRATIVE USE ONLY	
<small>Is the business a Section 3 business concern based upon their certification?</small>	
<input type="checkbox"/> Yes <input type="checkbox"/> No	
EMPLOYERS MUST RETAIN THIS FORM IN THEIR SECTION 3 COMPLIANCE FILE FOR FIVE YEARS.	
<small>GHURA SECTION 3 FORM-01B pg. 2</small>	

Section 3 Recruitment and New hires:

Contractors are expected to make best efforts to achieve the benchmarks and Section 3 Worker priorities outlined in this Policy and at 24 CFR Part 75. This section provides guidance for the recruitment of New Hires who are Section 3 Workers and Targeted Section 3 Workers to assist Contractors in meeting their benchmarks and obligations.

A. Recruitment Efforts:

1. GHURA maintains a database of employment-ready Section 3 Workers/Targeted Section 3 Workers who meet certain minimum qualifications for various categories of employment. Upon receipt of a completed Section 3 Job Order Form from Contractor/Subcontractor, GHURA will provide referrals of qualified candidates from the database. Contractors are expected to provide GHURA with the Section 3 Job Order Form in sufficient time to identify prospective candidates, prepare and refer them for interviews and secure employment in advance project commencement.
2. Contractors/Subcontractors are also to advertise Job Announcements within the project site area. Please see Exhibit 3.
3. Upon receipt of a Section 3 Job Order Form, GHURA will refer qualified candidates for interview for each available position. Contractors are expected to give each referred candidate full consideration for available positions.
4. Independent of GHURA's efforts and referrals, Contractors shall engage in independent employment recruitment efforts and follow the Section 3 Worker and Targeted Section 3 Worker order in of hiring priority as identified in this policy.
5. Contractors shall submit to GHURA their interview notes, including reasons for denial of employment or training opportunity in the future, as applicable.

B. Section 3 Worker and Targeted Section 3 Worker New Hires:

1. All Section 3 Worker and Targeted Section 3 Worker New Hires shall be employees of the Contractor and shall have all the protections afforded to employees under state, federal and local laws. Contractors are expected to impose the same hiring requirements and personnel rules and policies upon Section 3 Worker New Hires as are imposed upon their other employment candidates and employees. GHURA expects and requires Contractors to abide by equal pay for equal work principles.
2. Contractors are required to report to GHURA within five (5) business days of hiring Section 3 Workers and Targeted Section 3 Workers and shall provide to GHURA a completed Section 3 Worker and Targeted Section 3 Worker form.

C. Apprenticeship Programs:

1. Contractors who employ apprentices are required to utilize apprenticeship programs approved by the Federal Department of Labor (DOL)
2. Contractors who employ apprentices on construction projects that are subject to the Davis-Bacon Wage Act are required to adhere to all legal requirements for wage rates and ratios of apprentices to journeymen set forth.

D. Limitations:

Contractors retain the sole discretion and control over any hiring and personnel decisions. GHURA cannot and will not exercise any control over any of the Contractor's employees, including New Hires, regardless of whether they were referred by GHURA or are Section 3 Workers/Targeted Section 3 Workers recruited through other means.

Safe Harbor Compliance: 25% of total hours or 5% of hours contracted to targeted workers:

It is the responsibility of contractors to implement efforts to achieve Section 3 compliance. Any contractor that does not meet the Section 3 benchmarks must demonstrate why meeting the benchmarks were not feasible. All contractors submitting bids or proposals to GHURA are required to certify that they will comply with the requirements of Section 3.

Good Faith and Qualitative Efforts:

Qualitative efforts to satisfy its benchmark goals, which may include, but are not limited to the following:

1. Engaging in outreach efforts to generate job applicants who are Targeted Section 3 Workers, including notifying GHURA's Section 3 Coordinator, posting job openings at the job site, HUD Opportunity Portal, social media pages, contacting Resident Advisory Councils, and other platforms;
2. Contacting agencies administering Department of Labor YouthBuild Programs, and requesting their assistance in recruiting Department of Labor YouthBuild Program participants for training opportunities and employment positions;
3. Consulting with state and local agencies administering training programs, such as those funded through Workforce Investment Act, unemployment compensation programs, community organizations and other officials or organizations to assist with training and recruiting Section 3 Workers and Targeted Section 3 Workers;
4. Holding job fairs;
5. Providing or connecting Section 3 Workers and Targeted Section 3 Workers with assistance in seeking employment, including: drafting resumes, preparing for interviews, and finding job opportunities connecting residents to job placement services;
6. Providing or referring Section 3 Workers to services supporting work readiness and retention (e.g., work readiness activities, interview clothing, test fees, transportation, child care);
7. Assisting Section 3 Workers to obtain financial literacy training and/or coaching;
8. Engaging in outreach efforts to identify and secure bids from Section 3 Business Concerns.
9. Providing technical assistance to help Section 3 Business Concerns understand and bid on contracts;
10. Dividing contracts into smaller jobs to facilitate participation by Section 3 Business Concerns;
11. Providing bonding assistance, guaranties, or other efforts to support viable bids from Section 3 Business Concerns;
12. Promoting use of Section 3 Business Registries designed to create opportunities for Section 3, disadvantaged and small businesses

Documented Efforts:

Contractors shall document efforts taken to recruit and interview Section 3 Workers/Targeted Section 3 Workers for hire and shall, upon reasonable request, provide GHURA with documentation that demonstrates such efforts, including interview notes, which shall include reasons for denial of employment or other actions as applicable.

Lack of Compliance:

A Contractor's failure to satisfy the requirements of this section may result in GHURA's determination that the Contractor has failed to demonstrate good faith and qualitative efforts to comply with the requirements of Section 3 and this Policy, and may subject Contractor to the penalties for default.

Reporting Requirements:

For Section 3 covered contracts, contractors must submit the Section 3 Performance and Summary Report to GHURA's Section 3 Coordinator on a monthly basis, and the annual reporting requirement set forth in that form's instructions.

1) Monthly Reporting -

- i) Contractors are required to submit monthly activity reports to GHURA's Section 3 Coordinator alicej@ghura.org by the 30th day of each month

2) Annual Reporting -

- i) Once a project is completed, contractors must submit a final Section 3 cumulative report for the program year.
- ii) Upon the completion of a project, GHURA's Section 3 Coordinator will conduct a final review of the project's overall performance and compliance.
- iii) GHURA's Section 3 Coordinator will submit the Section 3 data into required reporting system to HUD at the respective reporting period.

Internal Section 3 Complaint Procedure:

In an effort to resolve complaints generated due to non-compliance through an internal process, GHURA encourages submittal of such complaints to its Section 3 Coordinator as follows:

- 1) Complaints of non-compliance should be filed in writing and must contain the name of the complainant and brief description of the alleged violation of 24 CFR Part 75.
- 2) Complaints must be filed within 14 calendar days after the complainant becomes aware of the alleged violation.
- 3) An investigation will be conducted if complaint is found to be valid. GHURA will conduct an informal, but thorough investigation affording all interested parties, if any, an opportunity to submit testimony and/or evidence pertinent to the complaint.
- 4) GHURA will provide written documentation detailing the findings of the investigation. GHURA will review the findings for accuracy and completeness before it is released to complainants. The findings will be made available no later than 30 days after the filing of complaint. If complainants wish to have their concerns considered outside of GHURA a complaint may be filed with:

The HUD program office responsible for the public housing financial assistance or the Section 3 project, or to the local HUD field office. These offices can be found through the HUD website, www.hud.gov/.

Appendices A: Definitions

The terms **HUD, Public housing, and Public Housing Agency (PHA)** are defined in 24 CFR part 5.

The following definitions also apply to 24 CFR Part 75 HUD's Economic Opportunities for Low-and Very Low-Income Persons:

1937 Act means the United States Housing Act of 1937, 42 U.S.C. 1437 et seq. activities related to Public Housing

Contractor means any entity entering into a contract with:

- (1) A recipient to perform work in connection with the expenditure of public housing financial assistance or for work in connection with a Section 3 project; or
- (2) A sub recipient for work in connection with a Section 3 project.

Labor hours means the number of paid hours worked by persons on a Section 3 project or by persons employed with funds that include public housing financial assistance.

Low-income person means a person as defined in Section 3(b)(2) of the 1937 Act, at or below 80% AMI. Note that Section 3 worker eligibility uses individual income rather than family/household income.

Material supply contracts means contracts for the purchase of products and materials, including, but not limited to, lumber, drywall, wiring, concrete, pipes, toilets, sinks, carpets, and office supplies.

Professional services means non-construction services that require an advanced degree or professional licensing, including, but not limited to, contracts for legal services, financial consulting, accounting services, environmental assessment, architectural services, and civil engineering services.

Public housing financial assistance means assistance as defined in 24 CFR Part 75.3(a)(1).

Public housing project is defined in 24 CFR 905.108.

Recipient means any entity that receives directly from HUD public housing financial assistance or housing and community development assistance that funds Section 3 projects, including, but not limited to, any State, local government, instrumentality, PHA, or other public agency, public or private nonprofit organization.

Section 3 means Section 3 of the Housing and Urban Development Act of 1968, as amended (12 U.S.C. 1701u).
Section 3 business concern means:

- (1) A business concern meeting at least one of the following criteria, documented within the last six-month period:
 - (i) It is at least 51 percent owned and controlled by low- or very low-income persons;
 - (ii) Over 75 percent of the labor hours performed for the business over the prior three-month period are performed by Section 3 workers; or
 - (iii) It is a business at least 51 percent owned and controlled by current public housing residents or residents who currently live in Section 8-assisted housing.
- (2) The status of a Section 3 business concern shall not be negatively affected by a prior arrest or conviction of its owner(s) or employees.
- (3) Nothing in this part shall be construed to require the contracting or subcontracting of a Section 3 business concern. Section 3 business concerns are not exempt from meeting the specifications of the contract.

Section 8-assisted housing refers to housing receiving project-based rental assistance or tenant-based assistance under Section 8 of the 1937 Act.

Service area or the neighborhood of the project means an area within one mile of the Section 3 project or, if fewer than 5,000 people live within one mile of a Section 3 project, within a circle centered on the Section 3 project that is sufficient to encompass a population of 5,000 people according to the most recent U.S. Census.

Subcontractor means any entity that has a contract with a contractor to undertake a portion of the contractor's obligation to perform work in connection with the expenditure of public housing financial assistance or for a Section 3 project.

Subrecipient has the meaning provided in the applicable program regulations or in 2 CFR 200.93.

Targeted Section 3 worker has the meanings provided in 24 CFR Part 75.11, 75.21, or 75.29, and does not exclude an individual that has a prior arrest or conviction.

Very low-income person means the definition for this term set forth in section 3(b) (2) of the 1937 Act (at or below 50% AMI)

YouthBuild programs refers to YouthBuild programs receiving assistance under the Workforce Innovation and Opportunity Act (29 U.S.C. 3226).

Section 3 Worker and Targeted Section 3 Worker Self-Certification Form

The purpose of HUD's Section 3 program is to provide employment, training and contracting opportunities to low-income individuals, particularly those who are recipients of government assistance for housing or other public assistance programs. **Your response is voluntary, confidential, and has no effect on your employment.**

Eligibility for Section 3 Worker or Targeted Section 3 Worker Status

A Section 3 worker seeking certification shall self-certify and submit this form to the recipient contractor or subcontractor, that the person is a Section 3 worker or Targeted Section 3 Worker as defined in 24 CFR Part 75.

Instructions: Enter/select the appropriate information to confirm your Section 3 worker or Targeted Section 3 Worker status.

Employee Name: _____

1. Are you a resident of public housing or a Housing Choice Voucher Holder (Section 8) ☐ Yes ☐ No
2. Are you a resident of GUAM)? ☐ Yes ☐ No

In the field below, select the amount of individual income you believe you earn on an annual basis.

- | | | |
|--|---|---|
| <input type="checkbox"/> Less than \$10,000 | <input type="checkbox"/> \$30,001- \$40,001 | <input type="checkbox"/> More than \$60,000 |
| <input type="checkbox"/> \$10,001 - \$20,000 | <input type="checkbox"/> \$40,001- \$50,000 | |
| <input type="checkbox"/> \$20,001 - \$30,000 | <input type="checkbox"/> \$50,001- \$60,000 | |

Select from ONE of the following two options below:

I qualify as a:

- ☐ Section 3 Worker (as defined on page 3 of Section 3 Worker Certification Form)
- ☐ Targeted Section 3 Worker (as defined on page 3 of Section 3 Worker Certification Form)

Employee Affirmation	
<p>I affirm that the above statements on this form are true, complete, and correct to the best of my knowledge and belief. I hereby certify, under penalty of law, that the following information is correct to the best of my knowledge.</p>	
<p>Employee Address: _____</p>	
<p>Print Name: _____</p>	<p>Date Hired: _____</p>
<p>Signature: _____</p>	<p>Date: _____</p>

FOR ADMINISTRATIVE USE ONLY	
<p>Is the employee a Section 3 worker based upon their self-certification?</p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p>Is the employee a Targeted Section 3 worker based upon their self-certification?</p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p>Was this an applicant who was hired as a result of the Section 3 project?</p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p>If Yes, what is the name of the company? _____</p>	
<p>What was the date of hire? _____</p>	
<p>EMPLOYERS MUST RETAIN THIS FORM IN THEIR SECTION 3 COMPLIANCE FILE FOR FIVE YEARS.</p>	

Certification for Business Concerns Seeking Section 3 Preference in Contracting and Demonstration of Capability

Business Information	
Name of Business:	
Address of Business:	
Name of Business Owner :	
Phone Number of Business Owner:	
Email Address of Business Owner :	

Preferred Contact Information	
Same as above: <input type="checkbox"/>	
Name of Preferred Contact:	
Phone Number of Preferred Contact:	

Type of Business (select from the following options):

☐ Corporation
 ☐ Partnership
 ☐ Sole Proprietorship
 ☐ Joint Venture

Select from ONE of the following three options below that applies:

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

Business Concern Affirmation

I affirm that the above statements on this form are true, complete, and correct to the best of my knowledge and belief. I understand that businesses who misrepresent themselves as Section 3 business concerns and report false information to GHURA may have their contracts terminated as default and be barred from ongoing and future considerations for contracting opportunities. I hereby certify, under penalty of law, that the following information is correct to the best of my knowledge.

Print Name:

Signature:

Date:

**Certification expires within six months of the date of signature Information regarding Section 3 Business Concerns can be found at [24 CFR 75.5](#)*

FOR ADMINISTRATIVE USE ONLY

Is the business a Section 3 business concern based upon their certification?

☐ Yes

☐ No

EMPLOYERS MUST RETAIN THIS FORM IN THEIR SECTION 3 COMPLIANCE FILE FOR FIVE YEARS.

JOB POSTING

We're looking for:

Laborer

Carpenter

Mason

Certified Mechanics

Email your resume and apply at example@mail.com

Inquire at:

(Phone number)

(Address here)

Contractor Certification to Efforts to Fully Comply with Employment and Training Provisions of Section 3 Provisions of 24CFR 75

The bidder represents and certifies as part of its bid/offer the following:

☐ Section 3 Business concern and has submitted the required certification with the bid. A Section 3 Business concern means a business concern:

- 1) At least 51 percent of the business is owned and controlled by low- or very low-income persons; or
- 2) At least 51 percent of the business is owned and controlled by current public housing residents or residents who currently live in Section 8-assisted housing; or
- 3) Over 75 percent of the labor hours performed for the business over the prior three-month period are performed by Section 3 workers.

☐ I am not a Section 3 Business concern but who has and will continue to seek compliance with Section 3 by certifying to the following efforts to be undertaken.

Efforts to award subcontractor to Section 3 concerns (*Check all that apply*)

☐ Contacting business assistance agencies, minority contractors associations and community organizations to inform them of the contracting opportunities and requesting their assistance in identifying Section 3 businesses which may solicit bids for a portion of the work.

☐ Advertising contracting opportunities by posting notices, which provide general information about the work to be contracted and where to obtain additional information, in the common areas of the applicable development(s) owned and managed by the Housing Authority.

☐ Providing written notice to all known Section 3 business concerns of contracting opportunities. This notice should be in sufficient time to allow the Section 3 business concerns to respond to bid invitations

☐ Following up with Section 3 business concerns that have expressed interest in the contracting opportunities

☐ Coordinating meetings at which Section 3 business concerns could be informed of specific elements of the work for which subcontract bids are being sought

☐ Conducting workshops on contracting procedures and specific contracting opportunities in a timely manner so that Section 3 business concerns can take advantage of contracting opportunities

☐ Advising Section 3 business concerns as to where they may seek assistance to overcome barriers such as inability to obtain bonding, lines of credit, financing, or insurance, and aiding Section 3 businesses in qualifying for such bonding, financing, insurance, etc.

☐ Where appropriate, by breaking out contract work into economically feasible units to facilitate participation by Section 3 businesses

☐ Entering into a "first source" hiring agreements with organizations representing Section 3 residents

Exhibit 4

- ☐ Establishing training programs, which are consistent with the requirements of the Department of Labor, specifically for Section 3 residents in the building trades
- ☐ Advertising employment and training positions to dwelling units
- ☐ Contacting resident councils and other resident organizations in the affected housing development to request assistance in notifying residents of the training and employment positions to be filled
- ☐ Undertaking such continued job training efforts as may be necessary to ensure the continued employment of Section 3 residents previously hired for employment opportunities.

Section 3 Efforts to comply affirmation

I affirm that the above statements on this form are true, complete, and correct to the best of my knowledge and belief. I understand that businesses who misrepresent themselves as Section 3 business concerns and report false information to GHURA may have their contracts terminated as default and be barred from ongoing and future considerations for contracting opportunities. I hereby certify, under penalty of law, that the following information is correct to the best of my knowledge.

Print Name & Title:

Signature:

Date:

Bidder/offeror, if the Bidder/offeror is an Individual Partner, if the Bidder/offeror is a Partnership Officer, if the Bidder/offeror is a Corporation

Print Name & Title:

Signature:

Date:

Bidder/offeror, if the Bidder/offeror is an Individual Partner, if the Bidder/offeror is a Partnership Officer, if the Bidder/offeror is a Corporation

**Certification expires within six months of the date of signature Information regarding Section 3 can be found at [24 CFR 75.5](#)*

FOR ADMINISTRATIVE USE ONLY

Is the business a Section 3 compliance based upon their certification?

☐ Yes

☐ No

EMPLOYERS MUST RETAIN THIS FORM IN THEIR SECTION 3 COMPLIANCE FILE FOR FIVE YEARS.

GHURA Section 3 Job Order Form

The following job order shall be completed by vendors to request assistance in recruiting Section 3 Workers when they have new hire needs. The form should be submitted to the Section 3 Compliance Coordinator (ccabral@ghura.org) as soon as the contractor is aware of the hiring need. GHURA will use the form to identify and recruit candidates to fill the position. A separate job order must be completed for each position title.

This job order is not a substitute for recruitment efforts by the contractor/subcontractor. You are encouraged to engage in independent outreach efforts, including posting this job opening at the job site and posting at HUD Opportunity Portal. For hiring priorities, refer to your contract, or inquire with the Section 3 Compliance Administrator.

PART I: CONTRACTOR INFORMATION:

Contractor Name:	Project Description:	GHURA Contract Number
Point of Contact Title :	Telephone:	Email:
Work/Project Start Date	Work/Project End Date:	Notes:

PART II: JOB DETAILS:

Job Title:	Job Start Date:	Job End Date:
Job Location:	Pay Rate:	Required Skills/Experience:
Required Licenses/Certifications:	Work Hours/Days:	

PART III: CONTRACTOR EFFORTS:

Would your business be able to provide training or refer the Section 3 Worker to a local agency administering training programs?	<input type="checkbox"/> Yes <input type="checkbox"/> No
--	--

This form was completed by:

Name :

Date :

Signature:

Contractor Certification to Efforts to Fully Comply with Employment and Training Provisions of Section 3 Provisions of 24CFR 75

The bidder represents and certifies as part of its bid/offer the following:

☐ Section 3 Business concern and has submitted the required certification with the bid. A Section 3 Business concern means a business concern:

- 1) At least 51 percent of the business is owned and controlled by low- or very low-income persons; or
- 2) At least 51 percent of the business is owned and controlled by current public housing residents or residents who currently live in Section 8-assisted housing; or
- 3) Over 75 percent of the labor hours performed for the business over the prior three-month period are performed by Section 3 workers.

☐ I am not a Section 3 Business concern but who has and will continue to seek compliance with Section 3 by certifying to the following efforts to be undertaken.

Efforts to award subcontractor to Section 3 concerns (*Check a minimum of two items*)

☐ Contacting business assistance agencies, minority contractors associations and community organizations to inform them of the contracting opportunities and requesting their assistance in identifying Section 3 businesses which may solicit bids for a portion of the work.

☐ Advertising contracting opportunities by posting notices, which provide general information about the work to be contracted and where to obtain additional information, in the common areas of the applicable development(s) owned and managed by the Housing Authority.

☐ Providing written notice to all known Section 3 business concerns of contracting opportunities. This notice should be in sufficient time to allow the Section 3 business concerns to respond to bid invitations

☐ Following up with Section 3 business concerns that have expressed interest in the contracting opportunities

☐ Coordinating meetings at which Section 3 business concerns could be informed of specific elements of the work for which subcontract bids are being sought

☐ Conducting workshops on contracting procedures and specific contracting opportunities in a timely manner so that Section 3 business concerns can take advantage of contracting opportunities

☐ Advising Section 3 business concerns as to where they may seek assistance to overcome barriers such as inability to obtain bonding, lines of credit, financing, or insurance, and aiding Section 3 businesses in qualifying for such bonding, financing, insurance, etc.

☐ Where appropriate, by breaking out contract work into economically feasible units to facilitate participation by Section 3 businesses

☐ Entering into a "first source" hiring agreements with organizations representing Section 3 residents

- ☐ Establishing training programs, which are consistent with the requirements of the Department of Labor, specifically for Section 3 residents in the building trades
- ☐ Advertising employment and training positions to dwelling units
- ☐ Contacting resident councils and other resident organizations in the affected housing development to request assistance in notifying residents of the training and employment positions to be filled
- ☐ Undertaking such continued job training efforts as may be necessary to ensure the continued employment of Section 3 residents previously hired for employment opportunities.

Section 3 Efforts to comply affirmation

I affirm that the above statements on this form are true, complete, and correct to the best of my knowledge and belief. I understand that businesses who misrepresent themselves as Section 3 business concerns and report false information to GHURA may have their contracts terminated as default and be barred from ongoing and future considerations for contracting opportunities. I hereby certify, under penalty of law, that the following information is correct to the best of my knowledge.

Print Name & Title:

Signature:

Date:

Bidder/offeror, if the Bidder/offeror is an Individual Partner, if the Bidder/offeror is a Partnership Officer, if the Bidder/offeror is a Corporation

Print Name & Title:

Signature:

Date:

Bidder/offeror, if the Bidder/offeror is an Individual Partner, if the Bidder/offeror is a Partnership Officer, if the Bidder/offeror is a Corporation

**Certification expires within six months of the date of signature Information regarding Section 3 can be found at [24 CFR 75.5](#)*

FOR ADMINISTRATIVE USE ONLY

Is the business a Section 3 compliance based upon their certification?

☐ Yes ☐ No

EMPLOYERS MUST RETAIN THIS FORM IN THEIR SECTION 3 COMPLIANCE FILE FOR FIVE YEARS.

Certification for Business Concerns Seeking Section 3 Preference in Contracting and Demonstration of Capability

Business Information	
Name of Business:	
Address of Business:	
Name of Business Owner :	
Phone Number of Business Owner:	
Email Address of Business Owner :	

Preferred Contact Information	
Same as above: <input type="checkbox"/>	
Name of Preferred Contact:	
Phone Number of Preferred Contact:	

Type of Business (select from the following options):

☐ Corporation ☐ Partnership ☐ Sole Proprietorship ☐ Joint Venture

Select from ONE of the following three options below that applies:

- ☐ At least 51 percent of the business is owned and controlled by low- or very low-income persons (Refer to income guidelines on page 3)
- ☐ At least 51 percent of the business is owned and controlled by current public housing residents or residents who currently live in Section 8-assisted housing.
- ☐ Over 75 percent of the labor hours performed for the business over the prior three-month period are performed by Section 3 workers (Refer to definition on page 3).
- ☐ N/A if the bidder is not claiming Section 3 preference.

Business Concern Affirmation

I affirm that the above statements on this form are true, complete, and correct to the best of my knowledge and belief. I understand that businesses who misrepresent themselves as Section 3 business concerns and report false information to GHURA may have their contracts terminated as default and be barred from ongoing and future considerations for contracting opportunities. I hereby certify, under penalty of law, that the following information is correct to the best of my knowledge.

Print Name:

Signature:

Date:

**Certification expires within six months of the date of signature Information regarding Section 3 Business Concerns can be found at [24 CFR 75.5](#)*

FOR ADMINISTRATIVE USE ONLY

Is the business a Section 3 business concern based upon their certification?

☐ Yes

☐ No

EMPLOYERS MUST RETAIN THIS FORM IN THEIR SECTION 3 COMPLIANCE FILE FOR FIVE YEARS.

The Guam Housing and Urban Renewal Authority Section 3 Income Limits

Eligibility Guidelines

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

Individual Income Limits		
FY20__ Income Limit Area	Income Limits Category	FY20__ Income Limits
GUAM	Extremely Low Income Limits 30%	\$14,350
	Very Low Income Limits 50%	\$23,900
	Low Income Limits 80%	\$38,200

Section 3 Worker Definition:

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

Targeted Section 3 Worker Definition:

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

Law to be Observed

1. The Proposer is to be familiar with federal and local laws, codes, ordinances, and regulations which, in any manner, affect those engaged or employed in the work or the material or equipment used in or upon the site, or in any way affect the conduct of the work. No place of misunderstanding or ignorance on the part of the Arbitrator will in any way serve to modify the provision of the contract.

2. Restriction Against Contractors Employing Convicted Sex Offenders from Working at Government of Guam Venues. (§5253 of Title 5 Guam Code Annotated).

(a) No person convicted of a sex offense under the provisions of Chapter 25 of Title 9 Guam Code Annotated, or an offense as defined in Article 2 of Chapter 28, Title 9 GCA in Guam, or an offense in any jurisdiction which includes, at a minimum all of the elements of said offenses, or who is listed on the Sex Offender Registry, and who is employed by a business contracted to perform services for an agency or instrumentality of the Government of Guam other than a public highway;

By submission of this bid or offer, each Vendor and each person signing on behalf of any Vendor certifies, and in the case of a joint bids or offers each party thereto certifies as to its own organization, under penalty of perjury, that to the best of his knowledge and belief will be in compliance:

Print Name:

Print Name:

Signature:

Signature:

Title:

Bidder/offeror, if the Bidder/offeror is an Individual
Partner, if the Bidder/offeror is a Partnership
Officer, if the Bidder/offeror is a Corporation

Title:

Bidder/offeror, if the Bidder/offeror is an Individual
Partner, if the Bidder/offeror is a Partnership
Officer, if the Bidder/offeror is a Corporation

Company Name: _____

Company Name: _____

Date: _____

Date: _____

Bidder's Qualifications

All questions must be answered and the data given must be clear and comprehensive. This statement must be notarized. If necessary, add separate sheets for items requiring additional explanation. This information may be submitted in a separate sealed envelope marked **CONFIDENTIAL** "Bidder's Qualifications and Financial Statement". In the event your bid is not selected for award, this envelope will be returned to the Contractor unopened.

1. Name of Bidder	2. Date organized
3. Permanent main office address	4. State incorporated
	5. How many years have you been engaged in the contracting business under your present firm name?

6. Listing of current contracts: (Schedule these, showing nature of the work, gross amount of each contract, anticipated dates for completion, name and telephone number of owner's representative).

7. General character of work usually performed by your company.

8. Have you ever failed to complete any work awarded to you? If so, where and why?

9. Have you ever defaulted on a contract?

10. List the three (3) most important structures recently completed by your company, stating approximate cost of each, month and year completed, name and telephone number of owner's representative.

11. List your major equipment available for use on this contract.

12. Experience in construction work similar in importance to this project.

13. Background and experience of the principal members of your firm, including the officers and proposed construction superintendent.

--

14. Credit available for administration of this contract, furnish written evidence.

--

15. Financial report not more than three (3) months old and containing a balance sheet providing at least the following information.

Balance Sheet

ASSETS

CURRENT ASSETS:

Cash
 Joint Venture Accounts
 Accounts Receivable
 Notes Receivable
 Accrued Interest on Notes
 Deposits
 Material and Prepaid Expense
 Total Current Assets

FIXED ASSETS - NET

OTHER ASSETS

TOTAL ASSETS:

LIABILITIES AND CAPITAL

CURRENT LIABILITIES

Accounts Payable
 Notes Payable
 Accrued Interest on Notes
 Provision for Income Taxes
 Advances Received from Owners
 Accrued Salaries
 Accrued Payroll Taxes
 Other
 Total Current Liabilities

OTHER LIABILITIES

CAPITAL

Capital Stock
 Authorized and Outstanding Shares,
 Par Value
 Earned Surplus

TOTAL LIABILITIES AND CAPITAL

The undersigned hereby authorizes and requests any person, firm, or corporation to furnish any information requested by the Guam Housing and Urban Renewal Authority in verification of the recitals comprising this Statement of Bidder's Qualifications.

Signature of Bidder

Name of Bidder

Date

Title of Bidder

Sworn to before me this ____ day of _____, 20 ____

 Notary Public
 My Commission Expires _____

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. 11/30/2023)

Applicability. This form is applicable to any
construction/development contract greater than \$250,000.

Public reporting burden for this collection of information is estimated to average 1 hour. This includes the time for collecting, reviewing, and reporting the data. The information requested is required to obtain a benefit. This form includes those clauses required by OMB's common rule on grantee procurement, implemented at HUD in 2 CFR 200, and those requirements set forth in Section 3 of the Housing and Urban Development Act of 1968 and its amendment by the Housing and Community Development Act of 1992, implemented by HUD at 24 CFR Part 75. The form is required for construction contracts awarded by Public Housing Agencies (PHAs). The form is used by Housing Authorities in solicitations to provide necessary contract clauses. If the form were not used, PHAs would be unable to enforce their contracts. There are no assurances of confidentiality. HUD may not conduct or sponsor, and an applicant is not required to respond to a collection of information unless it displays a currently valid OMB control number.

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1. Definitions

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

2. Contractor's Responsibility for Work

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

3. Architect's Duties, Responsibilities, and Authority

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

- (b) The Architect shall serve as the Contracting Officer's technical representative with respect to architectural, **Schedule** 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

of the work, and that it has investigated and satisfied itself

- (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

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

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

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

8. Differing Site Conditions

(a) The Contractor shall promptly, and before the conditions are disturbed, give a written notice to the Contracting Officer of (1) subsurface or latent physical conditions at the site which differ materially from those indicated in this contract, or (2) unknown physical conditions at the site(s), of an unusual nature, which differ materially from those ordinarily encountered and generally recognized as inhering in work of the character provided for in the contract.

(b) The Contracting Officer shall investigate the site conditions promptly after receiving the notice. Work shall not proceed at the affected site, except at the

Contractor's risk, until the Contracting Officer has provided written instructions to the Contractor. If the conditions do materially so differ and cause an increase or decrease in the Contractor's cost of, or the time required for, performing any part of the work under this contract, whether or not changed as a result of the conditions, the Contractor shall file a claim in writing to the PHA within ten days after receipt of such instructions and, in any event, before proceeding with the work. An equitable adjustment in the contract price, the delivery schedule, or both shall be made under this clause and the contract modified in writing accordingly.

(c) No request by the Contractor for an equitable adjustment to the contract under this clause shall be allowed, unless the Contractor has given the written notice required; provided, that the time prescribed in (a) above for giving written notice may be extended by the Contracting Officer.

(d) No request by the Contractor for an equitable adjustment to the contract for differing site conditions shall be allowed if made after final payment under this contract.

9. Specifications and Drawings for Construction

(a) The Contractor shall keep on the work site a copy of the drawings and specifications and shall at all times give the Contracting Officer access thereto. Anything mentioned in the specifications and not shown on the drawings, or shown on the drawings and not mentioned in the specifications, shall be of like effect as if shown or mentioned in both. In case of difference between drawings and specifications, the specifications shall govern. In case of discrepancy in the figures, in the drawings, or in the specifications, the matter shall be

promptly submitted to the Contracting Officer, who shall

promptly make a determination in writing. Any adjustment by the Contractor without such a determination shall be at its own risk and expense. The Contracting Officer shall furnish from time to time such detailed drawings and other information as considered necessary, unless otherwise provided.

(b) Wherever in the specifications or upon the drawings the words "directed", "required", "ordered", "designated", "prescribed", or words of like import are used, it shall be understood that the "direction", "requirement", "order", "designation", or "prescription", of the Contracting Officer is intended and similarly the words "approved", "acceptable", "satisfactory", or words of like import shall mean "approved by", or "acceptable to", or "satisfactory to" the Contracting Officer, unless otherwise expressly stated.

(c) Where "as shown" "as indicated", "as detailed", or words of similar import are used, it shall be understood that the reference is made to the drawings accompanying this contract unless stated otherwise. The word "provided" as used herein shall be understood to mean "provide complete in place" that is "furnished and installed".

(d) "Shop drawings" means drawings, submitted to the PHA by the Contractor, subcontractor, or any lower tier subcontractor, showing in detail (1) the proposed fabrication and assembly of structural elements and (2) the installation (i.e., form, fit, and attachment details) of materials of equipment. It includes drawings, diagrams, layouts, schematics, descriptive literature, illustrations, schedules, performance and test data, and similar materials furnished by the Contractor to explain in detail specific portions of the work required by the contract. The PHA may duplicate, use, and disclose in any manner and for any purpose shop drawings delivered under this contract.

(e) If this contract requires shop drawings, the Contractor shall coordinate all such drawings, and review them for accuracy, completeness, and compliance with other contract requirements and shall indicate its approval thereon as evidence of such coordination and review. Shop drawings submitted to the Contracting Officer without evidence of the Contractor's approval may be returned for resubmission. The Contracting Officer will indicate an approval or disapproval of the shop drawings and if not approved as submitted shall indicate the PHA's reasons therefore. Any work done before such approval shall be at the Contractor's risk. Approval by the Contracting Officer shall not relieve the Contractor from responsibility for any errors or omissions in such drawings, nor from responsibility for complying with the requirements of this contract, except with respect to variations described and approved in accordance with (f) below.

(f) If shop drawings show variations from the contract requirements, the Contractor shall describe such variations in writing, separate from the drawings, at the time of submission. If the Architect approves any such variation and the Contracting Officer concurs, the Contracting Officer shall issue an appropriate modification to the contract, except that, if the variation is minor or does not involve a change in price or in time of performance, a modification need not be issued.

(g) It shall be the responsibility of the Contractor to make timely requests of the PHA for such large scale and full size drawings, color schemes, and other additional information, not already in his possession, which shall be

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

- (h) The Contractor shall submit to the Contracting Officer for approval four copies (unless otherwise indicated) of all shop drawings as called for under the various headings of these specifications. Three sets (unless otherwise indicated) of all shop drawings, will be retained by the PHA and one set will be returned to the Contractor. As required by the Contracting Officer, the Contractor, upon completing the work under this contract, shall furnish a complete set of all shop drawings as finally approved. These drawings shall show all changes and revisions made up to the time the work is completed and accepted.
- (i) This clause shall be included in all subcontracts at any tier. It shall be the responsibility of the Contractor to ensure that all shop drawings prepared by subcontractors are submitted to the Contracting Officer.

10. As-Built Drawings

- (a) "As-built drawings," as used in this clause, means drawings submitted by the Contractor or subcontractor at any tier to show the construction of a particular structure or work as actually completed under the contract. "As-built drawings" shall be synonymous with "Record drawings."
- (b) As required by the Contracting Officer, the Contractor shall provide the Contracting Officer accurate information to be used in the preparation of permanent as-built drawings. For this purpose, the Contractor shall record on one set of contract drawings all changes from the installations originally indicated, and record final locations of underground lines by depth from finish grade and by accurate horizontal offset distances to permanent surface improvements such as buildings, curbs, or edges of walks.
- (c) This clause shall be included in all subcontracts at any tier. It shall be the responsibility of the Contractor to ensure that all as-built drawings prepared by subcontractors are submitted to the Contracting Officer.

11. Material and Workmanship

- (a) All equipment, material, and articles furnished under this contract shall be new and of the most suitable grade for the purpose intended, unless otherwise specifically provided in this contract. References in the contract to equipment, material, articles, or patented processes by trade name, make, or catalog number, shall be regarded as establishing a standard of quality and shall not be construed as limiting competition. The Contractor may, at its option, use any equipment, material, article, or process that, in the judgment of, and as approved by the Contracting Officer, is equal to that named in the specifications, unless otherwise specifically provided in this contract.
- (b) Approval of equipment and materials.
- (1) The Contractor shall obtain the Contracting Officer's approval of the machinery and mechanical and other equipment to be incorporated into the work. When requesting approval, the Contractor shall furnish to the Contracting Officer the name of the manufacturer, the model number, and other information concerning the performance, capacity, nature, and rating of the

machinery and mechanical and other equipment.

When required by this contract or by the Contracting Officer, the Contractor shall also obtain the

Contracting Officer's approval of the material or articles which the Contractor contemplates incorporating into the work. When requesting

approval, the Contractor shall provide full information concerning the material or articles. Machinery, equipment, material, and articles that do not have the required approval shall be installed or used at the risk of subsequent rejection.

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

12. Permits and Codes

- (a) The Contractor shall give all notices and comply with all applicable laws, ordinances, codes, rules and regulations. Notwithstanding the requirement of the Contractor to comply with the drawings and specifications in the contract, all work installed shall comply with all applicable codes and regulations as amended by any

waivers. Before installing the work, the Contractor shall examine the drawings and the specifications for compliance with applicable codes and regulations bearing on the work and shall immediately report any discrepancy it may discover to the Contracting Officer.

Where the requirements of the drawings and specifications fail to comply with the applicable code or regulation, the Contracting Officer shall modify the contract by change order pursuant to the clause entitled Changes herein to conform to the code or regulation.

- (b) The Contractor shall secure and pay for all permits, fees, and licenses necessary for the proper execution and completion of the work. Where the PHA can arrange for the issuance of all or part of these permits, fees and licenses, without cost to the Contractor, the contract amount shall be reduced accordingly.

13. Health, Safety, and Accident Prevention

(a) In performing this contract, the Contractor shall:

- (1) Ensure that no laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his/her health and/or safety as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation;
- (2) Protect the lives, health, and safety of other persons;
- (3) Prevent damage to property, materials, supplies, and equipment; and,
- (4) Avoid work interruptions.

(b) For these purposes, the Contractor shall:

- (1) Comply with regulations and standards issued by the Secretary of Labor at 29 CFR Part 1926. Failure to comply may result in imposition of sanctions pursuant to the Contract Work Hours and Safety Standards Act (Public Law 91-54, 83 Stat. 96), 40 U.S.C. 3701 et seq.; and
 - (2) Include the terms of this clause in every subcontract so that such terms will be binding on each subcontractor.
- (c) The Contractor shall maintain an accurate record of exposure data on all accidents incident to work performed under this contract resulting in death, traumatic injury, occupational disease, or damage to property, materials, supplies, or equipment, and shall report this data in the manner prescribed by 29 CFR Part 1904.
- (d) The Contracting Officer shall notify the Contractor of any noncompliance with these requirements and of the corrective action required. This notice, when delivered to the Contractor or the Contractor's representative at the site of the work, shall be deemed sufficient notice of the noncompliance and corrective action required. After receiving the notice, the Contractor shall immediately take corrective action. If the Contractor fails or refuses to take corrective action promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. The Contractor shall not base any claim or request for equitable adjustment for additional time or money on any stop order issued under these circumstances.
- (e) The Contractor shall be responsible for its subcontractors' compliance with the provisions of this clause. The Contractor shall take such action with respect to any subcontract as the PHA, the Secretary of Housing and Urban Development, or the Secretary of Labor shall direct as a means of enforcing such provisions.

14. Temporary Heating

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

15. Availability and Use of Utility Services

- (a) The PHA shall make all reasonably required amounts of utilities available to the Contractor from existing outlets and supplies, as specified in the contract. Unless otherwise provided in the contract, the amount of each utility service consumed shall be charged to or paid for by the Contractor at prevailing rates charged to the PHA or, where the utility is produced by the PHA, at reasonable rates determined by the Contracting Officer. The Contractor shall carefully conserve any utilities furnished without charge.
- (b) The Contractor, at its expense and in a manner satisfactory to the Contracting Officer, shall install and maintain all necessary temporary connections and distribution lines, and all meters required to measure the amount of each utility used for the purpose of determining charges. Before final acceptance of the work by the PHA, the Contractor shall remove all the temporary connections, distribution lines, meters, and associated paraphernalia.

16. Protection of Existing Vegetation, Structures, Equipment, Utilities, and Improvements

- (a) The Contractor shall preserve and protect all structures, equipment, and vegetation (such as trees, shrubs, and grass) on or adjacent to the work site, which are not to be removed under this contract, and which do not unreasonably interfere with the work required under this contract.
- (b) The Contractor shall only remove trees when specifically authorized to do so, and shall avoid damaging vegetation that will remain in place. If any limbs or branches of trees are broken during performance of this contract, or by the careless operation of equipment, or by workmen, the Contractor shall trim those limbs or branches with a clean cut and paint the cut with a tree-pruning compound as directed by the Contracting Officer.
- (c) The Contractor shall protect from damage all existing improvements and utilities (1) at or near the work site and (2) on adjacent property of a third party, the locations of which are made known to or should be known by the Contractor. Prior to disturbing the ground at the construction site, the Contractor shall ensure that all underground utility lines are clearly marked.
- (d) The Contractor shall shore up, brace, underpin, secure, and protect as necessary all foundations and other parts of existing structures adjacent to, adjoining, and in the vicinity of the site, which may be affected by the excavations or other operations connected with the construction of the project.
- (e) Any equipment temporarily removed as a result of work under this contract shall be protected, cleaned, and replaced in the same condition as at the time of award of this contract.

- (f) New work which connects to existing work shall correspond in all respects with that to which it connects and/or be similar to existing work unless otherwise required by the specifications.
- (g) No structural members shall be altered or in any way weakened without the written authorization of the Contracting Officer, unless such work is clearly specified in the plans or specifications.
- (h) If the removal of the existing work exposes discolored or unfinished surfaces, or work out of alignment, such surfaces shall be refinished, or the material replaced as necessary to make the continuous work uniform and harmonious. This, however, shall not be construed to require the refinishing or reconstruction of dissimilar finishes previously exposed, or finished surfaces in good condition, but in different planes or on different levels **Construction** 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

- (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 **Construction 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

- (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

accordance with the terms and conditions of the

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

retain ten (10) percent of the amount of progress

- (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 subcontract.

Name:

Title:

Date:

- (f) Except as otherwise provided in State law, the PHA shall

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 nowise impair the obligations of any surety or sureties under any bonds furnished under this contract.

28. Contract Modifications

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

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

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

29. Changes

- (a) The Contracting Officer may, at any time, without notice to the sureties, by written order designated or indicated to be a change order, make changes in the work within the general scope of the contract including changes:
 - (1) In the specifications (including drawings and designs);
 - (2) In the method or manner of performance of the work;
 - (3) PHA-furnished facilities, equipment, materials, 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 **Convenience** 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

- (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/Seller agrees as follows:

- (a) The Contractor/Seller shall not discriminate against any employee or applicant for employment because of race color, religion, sex, sexual orientation, gender identity, disability, or national origin.
- (b) The Contractor/Seller 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, sexual orientation, gender identity, disability, or national origin. Such action shall include, but not be limited to, (1) employment, (2) upgrading 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/Seller agrees to post in conspicuous places available to employees and applicants for employment the notices to be provided by the Contracting Officer setting forth the provisions of this nondiscrimination clause.

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

(e) The Contractor/Seller 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/Seller shall comply with Executive Order 11246, as amended, and the rules, regulations, and orders of the Secretary of Labor.

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

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

(j) Compliance with the requirements of this clause shall 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 75, 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 75 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 prioritization requirements and shall state the minimum percentages of labor hour requirements established in the Benchmark Notice (FR-6085-N-04).

(d) The contractor agrees to include this section 3 clause in every subcontract subject to compliance with regulations in 24 CFR Part 75, 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 75. 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 75.

(e) Noncompliance with HUD's regulations in 24 CFR Part 75 may result in sanctions, termination of this contract for default, and debarment or suspension from future HUD assisted contracts.

(f) Contracts, subcontracts, grants, or subgrants subject to Section 7(b) of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 5307(b)) or subject to tribal preference requirements as authorized under 101(k) of the Native American Housing Assistance and Self-Determination Act (25 U.S.C. 4111(k)) must provide preferences in employment, training, and business opportunities to Indians and Indian organizations, and are therefore not subject to the requirements of 24 CFR Part 75.

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 **Acts** 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

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 \$27 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. DOL posts current fines at: <https://www.dol.gov/whd/govcontracts/cwhssa.htm#cmp>
 - (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.
- () Paragraph (a) of this clause shall apply to items purchased under this contract where: (1) the Contractor purchases in excess of \$10,000 of the item under this contract; or (2) during the preceding Federal fiscal year, the Contractor: (i) purchased any amount of the items for use under a contract that was funded with Federal appropriations and was with a Federal agency or a State agency or agency of a political subdivision of a State; and (ii) purchased a total of in excess of \$10,000 of the item both under and outside that contract.

"General Decision Number: GU20230001 01/06/2023

Superseded General Decision Number: GU20220001

State: Guam

Construction Types: Building, Heavy, Highway and Residential

Excludes any projects funded under the National Defense Authorization Act 2010 - Guam Realignment Fund - Defense Policy Review

County: Guam Statewide.

BUILDING, HEAVY, HIGHWAY AND RESIDENTIAL

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026. Please note that this Executive Order applies to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but 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).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	<ul style="list-style-type: none">. Executive Order 14026 generally applies to the contract.. The contractor must pay all covered workers at least \$16.20 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 2023.
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The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at

Modification Number	Publication Date
0	01/06/2023

	Rates	Fringes
CARPENTER.....	\$ 15.48	**
CEMENT MASON.....	\$ 14.92	**
ELECTRICIAN.....	\$ 18.52	
Heavy Equipment Mechanic.....	\$ 18.32	
Heavy Equipment Operator.....	\$ 16.58	
IRONWORKER, REINFORCING.....	\$ 15.61	**
IRONWORKER, STRUCTURAL.....	\$ 14.90	**
PAINTER.....	\$ 12.86	**
PIPEFITTER.....	\$ 16.52	
PLASTERER.....	\$ 22.89	
PLUMBER.....	\$ 16.52	
REFRIGERATION MECHANIC (including Heating, Air Conditioning (HVAC) Mechanic work).....	\$ 18.43	
SHEET METAL WORKER.....	\$ 16.73	

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** Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 (\$16.20). Please see the Note at the top of the wage determination for more information.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

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

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

Survey Rate Identifiers

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

these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

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

Union Average Rate Identifiers

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

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

WAGE DETERMINATION APPEALS PROCESS

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

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

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

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

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

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

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

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

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

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

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

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END OF GENERAL DECISION"

A. APPLICABILITY

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

(1) MINIMUM WAGES

- (i) All laborers and mechanics employed or working upon the site of the work 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 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 (WH1321)) 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) Additional Classifications.

- (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 therefor 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;
 - (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, the laborers and mechanics to be employed in the classification (if known), or their representatives, and HUD or its designee agree on the proposed 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 ("Administrator"), 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 ("OMB") under OMB control number 1235-0023.)
- (C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, or 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 1235-0023.)

(D) The wage rate (including fringe benefits, where appropriate) determined pursuant to subparagraphs (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 1235-0023.)

(2) **Withholding.** HUD or its designee shall, upon its own action or upon written request of an authorized representative of the U.S. 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, 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 U.S. Department of Labor shall make such disbursements in the case of direct Davis-Bacon Act contracts.

(3) Payrolls and basic records.

(i) **Maintaining Payroll 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. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification(s), 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 1235-0023 and 1215-0018)

(ii) Certified Payroll Reports.

(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 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead, the payrolls only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at <https://www.dol.gov/agencies/whd/forms> or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors.

Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request 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 contractor, or the Wage and Hour Division of the U.S. Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this subparagraph for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to HUD or its designee. (Approved by the Office of Management and Budget under OMB Control Number 1235-0008.)

- (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 provided under 29 CFR 5.5(a)(3)(ii), the appropriate information is being maintained under 29 CFR 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; and
- (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 subparagraph (a)(3)(ii)(b).
- (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 3729 of Title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under subparagraph (a)(3)(i) available for inspection, copying, or transcription by authorized representatives of HUD or its designee or the U.S. 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 5.12.

(4) Apprentices and Trainees.

- (i) **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 Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, 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 Office of Apprenticeship Training, Employer and Labor Services, 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, fringe benefits shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, 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 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 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 29 CFR Part 5 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 subparagraphs (1) through (11) in this paragraph (a) and such other clauses as HUD or its designee may, by appropriate instructions, require, and a copy of the applicable prevailing wage decision, 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 this paragraph.
- (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 U.S. 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) **Certification of Eligibility.**
- (i) 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 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) Anyone who knowingly makes, presents, or submits a false, fictitious, or fraudulent statement, representation or certification is subject to criminal, civil and/or administrative sanctions, including fines, penalties, and imprisonment (e.g., 18 U.S.C. §§ 287, 1001, 1010, 1012; 31 U.S.C. §§ 3729, 3802).

(11) Complaints, Proceedings, or Testimony by Employees. No laborer or mechanic, to whom the wage, salary, or other labor standards provisions of this Contract are applicable, shall be discharged or in any other manner discriminated against by the contractor or any subcontractor because such employee has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or relating to the labor standards applicable under this Contract to his employer.

B. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

The provisions of this paragraph (b) are applicable where the amount of the prime contract exceeds **\$100,000**. 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 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 clause set forth in subparagraph B(1) of this paragraph, 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 clause set forth in subparagraph B(1) of this paragraph, **in the sum set by the U.S. Department of Labor at 29 CFR 5.5(b)(2)** 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 the clause set forth in subparagraph B(1) of this paragraph. In accordance with the Federal Civil Penalties Inflation Adjustment Act of 1990 (28 U.S.C. § 2461 Note), the DOL adjusts this civil monetary penalty for inflation no later than January 15 each year.
- (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 U.S. 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 contract, 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 B(2) of this paragraph.
- (4) Subcontracts.** The contractor or subcontractor shall insert in any subcontracts the clauses set forth in subparagraph B(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 B(1) through (4) of this paragraph.

C. HEALTH AND SAFETY

The provisions of this paragraph (c) are applicable where the amount of the prime contract exceeds **\$100,000**.

- (1)** No laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his or her health and safety, as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation.
- (2)** The contractor shall comply with all regulations issued by the Secretary of Labor pursuant to 29 CFR Part 1926 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), 40 U.S.C. § 3701 et seq.
- (3)** The contractor shall include the provisions of this paragraph in every subcontract, so that such provisions will be binding on each subcontractor. The contractor shall take such action with respect to any subcontractor as the Secretary of Housing and Urban Development or the Secretary of Labor shall direct as a means of enforcing such provisions.

Bid Information

IFB Number GHURA-23-02-CDBG-GPDESS		Submit bid to: GHURA 117 Bien Venida Ave. Sinajana, Guam 96926 Contract: Sonny Perez, 475-1404 or email sperez@ghura.org Andrew Manglona, 475-1315 or email amanglona@ghura.org
Bid Opening Date: May 25	Bid Opening Time: 2:00pm	
Project Title: Guam Police Division Eastern Sub-Station		
Project Description: Design and Build of Guam Police Division Eastern Sub-Station		
Contract Completion Time: See Special Conditions		
Amount of Liquidated Damages: \$150.00 per calendar day		

Bidder's Information

Name of Company	FEIN
	Bidder's Telephone Number
Bidder's Address	Bidder's Fax Number
	Name of Person Submitting the Bid
	Title of Person Submitting the Bid

Bidder's Acknowledgments

<p>This is to acknowledge that an authorized representative(s) of the above named company has familiarized himself/herself/themselves with the local conditions affecting the cost of the work, all instructions, General and Supplemental Conditions, Contractor's compliance and reporting requirements, the specifications, drawings, and addenda.</p> <p>GHURA requires a minimum acceptance period of 60 calendar days "Acceptance period," as used in this provision, means the number of calendar days available to GHURA for awarding a contract from the date specified in this solicitation for receipt of bids. GHURA reserves the option, depending on the availability of funds to award a contract to the lowest responsible responsive bidders submitting the lowest bid on Base Bid Item No. 1, 2 & 3 . A bid may be submitted for either or both bid items</p> <p>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). In submitting this bid, it is understood that the right is reserved by GHURA to reject any and all bids.</p>			
Acknowledgment of Addenda The bidder acknowledges the following addenda: (Failure to acknowledge may cause bid rejection.)			
Addenda No.	Addenda Date	Addenda No.	Addenda Date
	Addenda Date	Addenda No.	Addenda Date

Required Submissions

To be responsive, the bidder must submit the following documents in a sealed envelope marked on its face with the correct bidding information with his/her bid: Form HUD-5369-a , Representations, Certifications, and Other Statements of Bidders AG form 002 , Disclosing ownership & Commission AG form 003 , Affidavit re Non-Collusion AG form 004 , Affidavit re No Gratuities or Kickbacks AG form 005 , Affidavit re Ethical Standards AG form 007 -Affidavit re Contingent Fees Form GHURA 01B , Section 3 Preference Certification completed and certified OR marked NA if the bidder is not claiming Section 3 preference. GHURA shall reject a bid as non-responsive and bid that does not include		Form GHURA 09 , Law to be observed GHURA 010 , Bidder's Qualifications including a Financial Statement and a certificate of authority to do business in Guam Form GHURA 013 , Bidder's Section 3 Commitment Form GHURA 014 , Bid Form Form GHURA 016 , Bid Bond and Certificates Contractor's License Acknowledged copies of any and all Addenda each of the above documents, fully completed and properly executed.
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A breakdown is required for each item description as noted below

Base Bid Item No.1

The bidder hereby proposes to furnish all labor, materials, equipment and services required to complete the construction contract as per the requirements of the specification documents for the design and build of Guam police Division Eastern Sub Station located in Talofofo all in accordance therewith, for the sum of:

(\$ _____ DOLLARS)

Base Bid Item No.2

The bidder hereby proposes to furnish all labor, materials, equipment and services required to complete the construction contract as per the requirements of the specification documents for the design and build of Guam police Division Eastern Sub Station located in Talofofo all in accordance therewith, for the sum of:

(\$ _____ DOLLARS)

Base Bid Item No.3

The bidder hereby proposes to furnish all labor, materials, equipment and services required to complete the construction contract as per the requirements of the specification documents for the design and build of Guam police Division Eastern Sub Station located in Talofofo all in accordance therewith, for the sum of:

(\$ _____ DOLLARS)

Item #	Item Description	Estimated Quantity	Unit		Unit Bid Price
			Measure	Price	
					\$
					\$
					\$
					\$
					\$
					\$
					\$
					\$
					\$
					\$
					\$
					\$
					\$
					\$
The bidder may continue by copying and attaching this section to the Bid Form.					
Sum of all cost extensions are included in the base bid					\$

Additive Bid Items

GHURA does not require an additive bid for this proposal. To offer a bid the bidder is requested to breakout the following items from the base bid. Each item shall include all labor, materials, equipment and services required to complete

Item #	Item Description	Item Bid

Individual Bidder

<p>Trading and doing business as</p> <p>If fictitious trade name is employed in the conduct of business, insert such name and complete, as appropriate. This foregoing fictitious or trade name <input type="checkbox"/> is <input type="checkbox"/> is not a been registered under Guam Law.</p>	<p>Bidder's Signature</p> <p>_____</p> <p>Date</p> <p>_____</p>
<p>Name of person submitting the bid</p>	<p>Witness</p> <p>Witness Name _____</p> <p>Witness Signature _____</p> <p>Date _____</p>
<p>Business address</p>	

Partnership Bidder

<p>Name of Partnership</p> <p>If fictitious trade name is employed in the conduct of business, insert such name and complete, as appropriate. This foregoing fictitious or trade name <input type="checkbox"/> is <input type="checkbox"/> is not a been registered under Guam Law.</p>	<p>Bidder's Signature _____</p> <p>Date _____</p>
<p>Name of person submitting the bid</p>	<p>Witness</p> <p>Witness Name _____</p> <p>Witness Signature _____</p> <p>Date _____</p>
<p>Business address</p>	

Corporate Bidder

Name of Corporation	Corporate's Signature _____ Title _____ Date _____
Name of person submitting the bid	Certificate as to Corporate Principle I, _____, certify that I am the Secretary of the corporation named as Principal in the within bond: That _____ _____ , who signed the bond on behalf of the Principal, was then of said corporation; that I know his signature, and his signature thereto is genuine; and that said bond was duly signed, sealed, and attested to for and I behalf of said corporation by authority of its governing body. _____ (Corporate Seal)
Business address	

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we the undersigned_____

(Name of Principal)

as PRINCIPAL, and

SURETY

are held and firmly bound unto Guam Housing and Urban Renewal Authority,
hereinafter called "GHURA", in the penal sum of _____

Dollars, (_____), lawful money of the United States, for
the
payment of which sum will and truly be made, we bind ourselves, our heirs,
executors, administrators and successors, jointly and severally, firmly by these
presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas, the Principal
has submitted the accompanying bid, dated the_____, 20____, for the

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

IN WITNESS WHEREOF, the above bounden parties have executed this
instrument under their several seals this _____day of _____20____,
the name and corporate seal of each corporate party being hereto affixed and
these presents duly signed by its undersigned representatives, pursuant to
authority of its governing body.

ATTEST:

Sole Proprietorship

(Individual Principal Signature)

(Business Address)

(Name of Individual Principal Above)

(Seal)

ATTESTED:

Corporation

(Corporate Principal Signature)

(Business Address)

(Name of Corporate Principal Above)

(Title)

Affix Corporate Seal

ATTEST:

Surety Company

(Corporate Surety Signature)

Corporate Surety Signature)

(Business Address)

Name of Corporate Surety)

(Title)

Affix Corporate Seal

(Power of Attorney for person signing for Surety Company must be attached to the Bond)

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, _____, certify that I am the _____

Secretary of the Corporation names as Principal in the within the bond; that
_____ " who signed the said bond on behalf of the

Principal was then _____ of said corporation; that I know his

signature, and his signature thereto is genuine; and that said bond was duly signed,

sealed, and attested to, for and *in* behalf of said corporation by authority of its governing

body.

(Corporate Seal)

THIS AGREEMENT MADE THIS _____ day of _____ in the year _____ by and between _____, A Corporation, Partnership or Sole Proprietorship existing under the laws of the State of _____ Guam hereinafter called the "Contractor," and the Guam Housing and Urban Renewal Authority, herein called the "GHURA."

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

ARTICLE I

Statement of Work. The Contractor shall furnish all labor, material, equipment, and services and perform and complete all work required for the construction of Project No. GHURA-09-01-2022-MOD8 AMP's 2, 3 & 4, in strict accordance with "Specifications" for the ,which includes all items listed in the Tale of Contents and Addenda thereto, Numbered and the drawings referred to herein, all as prepared by Architect, which said Specifications, Addenda and Drawings are incorporated herein by reference and made a part hereof.

ARTICLE II

Contract Price. GHURA shall pay the Contractor for the performance of the Contract, in current funds, subject to additions and deductions as provided in the specifications for completed work meeting the requirements of the Contract Documents, the sum of Two Hundred Ninety-Seven Thousand One Hundred Eighty-Seven Dollars and 00/100 (\$297,187.00).

ARTICLE III

Contractor agrees that time is of the essence in the completion of the work in the time required by this contract and hereby waives any notice of putting in default for failure to complete on time.

ARTICLE IV

Contract Documents. The contract shall consist of the following component parts:

- (a) This Instrument
- (b) General Conditions
 - (HUD-5370EZ or HUD-5370)
 - Wage Determination
- (c) Special/supplemental Conditions
- (d) Technical Specifications
- (e) Drawings
- (f) IFB # GHURA-09-01-2022-MOD8 AMP's 2, 3 & 4
- (g) Forms
 - (AG-002) Affidavit Disclosing Ownership and Commissions
 - (AG-003) - Affidavit re Non-Collusion
 - (AG-004) - Affidavit re No Gratuities or Kickbacks
 - (AG- 005) - Affidavit re Ethical Standards
 - (AG-007) - Affidavit re Contingent Fees
 - (GHURA-13) - Mandatory Compliance for Section 3
 - (GHURA-01B) - Section 3 Business Preference
 - (HUD-4010) - Federal Labor Standards
 - (HUD-5369) – Instructions to Bidders Offerors
 - (HUD-5369-a) - Representations, Certifications, and Other Statements of Bidders
- (h) Proposal
- (i) Addendum(s)

This instrument, together with the other documents enumerated in this ARTICLE IV, which said other documents are as fully a part of the Contract as if hereto attached or herein repeated, form the Contract. In the event that any provision of any other component part of this Contract conflicts with any provision of any other component part, the provision of the component part first enumerated in the ARTICLE IV shall govern, except as otherwise specially stated. The various provisions in Addenda shall be construed in the order of the preference of the component part of the Contract which each modifies. IN WITNESS WHEREOF, the parties hereto have caused this Instrument to be executed in three (3) original counterparts as of the day and year first above written

Form of Contract

Name:

Executed by: **Elizabeth F. Napoli**
Executive Director for the Guam Housing Urban
Renewal Authority

Signature: _____

Signature: _____

Title: _____

Date: _____

Company Name: _____

Date: _____

Contractor's Certification

I, _____, certify that I am the _____
_____, of the Corporation, Partnership or Sole
(Title)
Proprietorship named as Contractor herein, and that _____, who signed
(Name of Signatory)
the Contract on behalf of the Contractor, was then the _____
of said Corporation, Partnership or Sole Proprietorship; that said contract was duly signed for and in behalf of said
Corporation, Partnership or Sole Proprietorship by authority of its governing body, and is within the scope of its
corporate powers.

(Corporate Seal)

Signature of person affixing the Corporate Seal

Funds Certified By: _____
Controller

Date: _____

Grant No.	Project Number	Amount	

GPD EASTERN SUB STATION
Talofofo, Guam

GDP EASTERN
SUB-STATION
TALOFOFO, GUAM

PROJECT MANUAL
&
SPECIFICATIONS

Bid Documents

GHURA A/E
DEPARMENT

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SECTION 01012
SUPPLEMENTARY CONDITIONS

PART 1 GENERAL

1.1 PROJECT SITE

- A. The Project Site is located as shown on Drawing T-1.

1.2 CONTRACT DOCUMENTS

- A. Contract form shall be:
1. AIA Standard Form - Owner/Contractor Agreement
 2. Owner prepared Agreement
 3. Government of Guam Agreement Form
- B. General Conditions should be:
1. AIA Standard Form - General Conditions A-201
 2. Government of Guam General Conditions
- C. Owner-issued bid and contract documents shall take precedence should there be conflict between the Owner-issued documents and these Specifications.

1.3 TIME OF COMPLETION

- A. The work shall commence upon Contract signing and shall be thereafter substantially completed within the Contract Time. Prerequisites for substantial completion are indicated in Section 01705 - Project Closeout.

1.4 LIQUIDATED DAMAGES

- A. In case of failure on the part of the Contractor to complete the work within the time fixed in the Contract or within any time extensions given thereof, the Contractor and his sureties shall be liable for and shall pay to the Owner for his real damages, the sum of \$_____ liquidated damages, per calendar day of delay, until the work is completed and accepted.

1.5 CLIMATIC CONDITIONS

- A. The contract time for this Contract allows for the following number of days lost due to adverse climatic conditions in each month. Time extension on account of inclement weather will be allowed only for lost days of work in excess of the limits shown below. Time extension on account of inclement weather on Saturday and Sunday shall be granted only if the Contractor has confirmed, in writing, his intention to work on those days. Allowance for delays will not be given for interior work and other work which can proceed during periods of inclement weather.

<u>Month</u>	<u>Non-Working Days</u>
January	4
February	3

March	3
April	3
May	4
June	5
July	7
August	8
September	8
October	8
November	7
December	5

1.6 FEES

- A. The Contractor will be responsible for all processing and payment of fees and payments pursuant to the construction of this Project. Included are Building Permit and regulatory agencies fees. The Contractor will be responsible for submitting the required drawings and other required documents to the respective agencies and following up until permits have been issued.

1.7 DRAWINGS AND SPECIFICATIONS

- A. Upon award of the Construction Contract, the Owner will furnish the Contractor, without charge, four (4) copies of the Drawings and Specifications. Additional copies requested by the Contractor will be furnished at cost.

1.8 ELECTRONIC DOCUMENTS

- A. With concurrence of the Owner, the Architect and Consultants will release to the Contractor project drawings in electronic format. As a condition of release, the Contractor shall sign an Electronic Data Transfer Indemnity Agreement prepared by the Architect, and reimburse the Architect and Consultants for the cost of formatting and transferring the electronic files.

1.9 ADMINISTRATIVE SUBMATERIALS

- A. Contractor will submit for approval within ten (10) calendar days of award of the Contract, the following, which may also be referred to in other portions of these Specifications:
1. Resume of the project superintendent indicating qualifications to provide project supervision.
 2. List of all subcontractors to be used on the project.
 3. Schedule of Values.
 4. Progress Schedule.
 5. Performance and Payment Bonds.
 6. Insurance Certificates.

1.10 BONDS

- A. The Contractor shall furnish to the Owner, in a form satisfactory to the Owner, at the Owner's request, a Performance Bond and a Labor and Materials Payment Bond, each in the sum of 100% of the Contract Sum, and with a Bond Rider naming the Contractor as principal, corporate surety satisfactory to the Owner, as surety and any construction lender

and lessee (if the Project is leasehold) as additional or dual obligees. The Contractor shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of his Power of Attorney.

1.11 CONTRACTOR'S AND SUBCONTRACTOR'S INSURANCE

- A. The Contractor shall not commence work under this Contract until he has obtained all insurance required hereunder, and such insurance has been submitted to the Owner. The Contractor shall not allow any subcontractor to commence work under his subcontract until all similar insurance required of the subcontractor has been obtained. Approval of the insurance by the Owner shall not relieve or decrease the liability of the Contractor hereunder.
- B. Workman's Compensation and Employer's Liability Insurance: The Contractor shall take out and maintain during the life of this Contract the statutory Workman's Compensation and Employer's Liability Insurance for all of his employees to be engaged in work on the Project under this Contract, and in case any such work is sublet, the Contractor shall require the subcontractor, similarly, to provide Workman's compensation and Employer's Liability Insurance for all of the subcontractor's employees to be engaged in the work.
- C. Bodily Injury Liability and Property Damage Liability Insurance: The Contractor shall take out and maintain during the life of this Contract such Bodily Injury Liability and Property Damage Liability Insurance as shall protect from claims for damages from personal injury, including accidental death, as well as from operations under this Contract, whether such operations be by himself or by any subcontractor or by anyone directly or indirectly employed by either of them, and the amount of such insurance shall not be less than:
 - 1. Bodily Injury Liability Insurance in an amount not less than One Hundred Thousand Dollars (\$100,000) per person for injuries including wrongful death, and in an amount not less than Three Hundred Thousand Dollars (\$300,000) for injuries including wrongful death resulting from one accident.
 - 2. Property Damage Insurance in an amount not less than Fifty Thousand Dollars (\$50,000) for damages resulting from any one accident, and in an amount not less than One Hundred Thousand Dollars (\$100,000) for damages resulting from all accidents.
- D. Owner's Protective Liability Insurance: The Contractor shall take out, furnish to the Owner and maintain during the life of this Contract, complete Owner's protective liability insurance in the amounts specified above for bodily injury liability insurance and for property damage liability insurance.
- E. Fire, Typhoon, Theft and Vandalism Insurance: The Contractor shall insure the building and other work included in this Contract against loss or damage by fire, typhoon, theft and vandalism, and against loss or damage covered by the standard extended coverage insurance endorsement, with an insurance company or companies acceptable to the Owner, the amount of the insurance at all times to be at least equal to the amount paid on account of work and materials plus the value of work and materials furnished or delivered but not yet paid for by the Owner. The policies shall be in the names of the Owner and the Contractor.
- F. Supplemental to Contractor's and Subcontractor's Insurance:
 - 1. Flood Hazard Insurance: For projects located on the shoreline or in a flood hazard zone, the Contractor, during the life of this Contract, shall secure and maintain Flood Hazard Insurance in the amount equivalent to 100 percent (100%) of the Contract amount, for all damages, The policies shall be in the names of the Owner

and the Contractor.

- G. A certificate of the insurance company as to the amount and type of coverage, terms of policies, etc., shall be delivered to the Owner before commencing work.

1.12 PROGRESS PAYMENTS

- A. Applications for progress payments shall be made monthly on AIA Document G702 and G703 - "Application and Certification for Payment". Retainage of ten percent (10%) of the completed work and stored materials will be withheld until final completion of the work. After the work is 50% complete and should the work be proceeding acceptable to the Owner, the contractor may request the owner to allow the retainage to continue at five percent (5%) of the total contract value.

1.13 AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES (ADAAG)

- A. All persons and entities providing work for this Project are required to be knowledgeable of the requirements of the Americans with Disabilities Act Accessibility Guidelines (ADAAG) as they affect their portion of the work. Do not install work which is not in compliance with ADAAG. Prior to fabrication or installation of any work not in compliance with ADAAG, the Contractor shall notify the Architect and secure design directions to resolve the noncomplying features.

1.14 WARRANTY

- A. All work shall be guaranteed, in writing, by the Contractor against defects resulting from the use of defective and inferior materials, equipment, and workmanship for a minimum of one (1) year from the date of substantial completion. Any maintenance service contracts and warranties for equipment in use shall begin the same date of the general warranty against defects described hereinabove.
- B. If, within the guaranty period, repairs or changes required in connection with the guaranteed work, which in the opinion of the Owner or Architect are rendered necessary as a result of the use of materials, equipment, or workmanship, which are inferior, defective, or not in accordance with the terms of the Contract, the Contractor shall within five (5) consecutive working days of request by the Owner or Architect, and without expense to the Owner, commence to, in every instance, place in satisfactory condition all such guaranteed work and correct all defects therein, and make good all damages to the building or work or equipment or contents thereof.
- C. Whenever a manufacturer's guaranty on any product exceeds one year, that guaranty shall become part of the Contract. The Contractor shall complete the warranty forms in the name of the Owner, and submit such forms to the manufacturer within such time as required to validate the warranty. The Contractor shall submit to the Owner a copy of the completed warranty forms for the Owner's record as evidence that such warranty form was filed with the manufacturer.
- D. Any manufacturer's warranty concerning any items installed will run to the benefit of the Owner, and the Contractor agrees to not void or impair or to allow subcontractors to void or impair any original warranty or guaranty existent or running to the benefit of the Owner, as to products or items installed in the Project, provided, however, if the Architect shall designate installation in a method or manner which shall void or impair the aforereferenced warranty, the Owner and Architect shall be advised, in advance, in writing, by the Contractor of such violation of the manufacturers recommended installation and impairment of warranty, and the Architect and Owner may change such installation to conform with the recommended procedures or confirm the method of installation applicable thereto, in writing, to the Contractor.

1.15 BUILDING AND OCCUPANCY PERMITS

- A. The Contractor shall make application for, process, pay all charges and obtain Building Permit(s) for the Project and provide a copy to the Architect and Owner.
- B. Upon Substantial Completion, the Contractor shall record the Substantial Completion Certificate with the Department of Public Works and deliver an unrestricted Occupancy Permit to the Architect and Owner.

1.16 COMPLIANCE WITH MECHANIC'S LIEN LAW

- A. The Contractor shall comply with provisions of the Government Code of Guam. Contractor shall make such submittals to the Owner, record the required documents, provide releases, publish such notices, post surety bonds, as required, and take other actions within the stipulated time frame, for full compliance with the law.

1.17 DEFAULT

- A. The Owner may declare the Contractor in default in accordance with, and in the manner described in the General Conditions of the Contract for Construction for:
 - 1. Failure to complete the work within the Contract period or any extension thereof.
 - 2. Failure or refusal to comply with an order of the Architect or Owner within a reasonable time.
 - 3. Failure or refusal to remove rejected materials from the Project Site.
 - 4. Failure or refusal to perform anew any defective or unacceptable work.
 - 5. Bankruptcy or insolvency, or the making of an assignment for the benefit of creditors.
 - 6. Failure to pay subcontractors and suppliers promptly.
 - 7. Repeated failure to provide a qualified superintendent, competent workmen or subcontractors to carry out the work in an acceptable manner.
 - 8. Failure to prosecute the work in accordance with the agreed schedule of completion.

END OF SECTION

SECTION 01068

REFERENCES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Specifications format and content.
 - 2. Quality assurance.
 - 3. Reference standards.
 - 4. Abbreviations.
 - 5. Definitions.
- B. Related Documents: The Contract Documents, as defined in Section 01010 - Summary of Work, apply to the work of this Section. Additional requirements and information necessary to complete the work of this Section may be found in other Documents.

1.2 SPECIFICATIONS FORMAT AND CONTENT

- A. Specifications Format: The Specifications are organized into Divisions and Sections based on the Construction Specifications Institute's (CSI) 16-Division format numbering system.
- B. The Bid and Contract Documents issued by the Owner are included with the Specifications. The Owner-issued documents will take precedence should there be any conflict between them and the Specifications.
- C. Specifications Content: The Specifications use certain conventions in language and intended meaning of certain terms, words and phrases when used in particular situations or circumstances. These conventions are explained as follows:
 - 1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated type. Words and meanings shall be interpreted as appropriate. Words that are implied, but not stated shall be interpolated as the sense required. Singular words will be interpreted as plural and plural words interpreted as singular where applicable and the context of the Contract Documents so indicates.
 - 2. Imperative and streamlined language is used generally in the Specifications. Requirements expressed in imperative mood are to be performed by the Contractor. At certain locations in the text, for clarity, subjective language is used to describe the responsibilities that must be fulfilled indirectly by the Contractor or by others when so noted.
 - a. The words "shall be" shall be included by inference wherever a colon (:) is used within a sentence or phrase.

1.3 QUALITY ASSURANCE

- A. For products or workmanship specified by association, trade, or other consensus standards, the Contractor shall comply with the requirements of the standard, except when more rigid requirements are specified or are required by applicable codes. Such standards are made a part of the Contract Documents by reference.
- B. Conform to the reference standards by the date of issue that was current on the original date of the Contract Documents.
- C. Obtain copies of the standards when required by the Contract Documents.
- D. Maintain a copy of the standards at the Project Site during submittals, planning and progress of the specific work until Final Acceptance.
- E. Should a specified reference standard conflict with the Contract Documents, request clarification from the Owner's representative before proceeding.
- F. Neither the contractual relationship, duties or responsibilities of the parties to the Contract nor those of the Owner's representative shall be altered from the Contract Documents by any mention or inference otherwise in any reference document.

1.4 INDUSTRY STANDARDS AND CODES:

- A. General Applicability of Standards: Applicable standards of the construction industry and Building Codes adopted by the governing agencies have the same force and effect (and are made a part of the Contract Documents by reference) as if copied directly into the Contract Documents, or as if published copies were bound herewith.
- B. Referenced Standards (referenced directly in the Contract Documents or by governing regulations) have precedence over non-referenced standards which are recognized in the industry for applicability to the work. Except as otherwise indicated, where compliance with an industry standard is required, comply with the standard 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, refer the requirements that are different but apparently equal, and uncertainties to the Owner's representative for 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. In complying with these requirements, the indicated numeric values are minimum or maximum, as appropriate for the context of the requirements. Refer uncertainties to the Owner's representative for a decision before proceeding.
- D. Copies of Standards: Each entity engaged in construction of the Project is required to be familiar with the industry standards applicable to that entity's construction activity. Copies of applicable standards are not bound within the Contract Documents.
 - 1. Where copies of standards are needed for the performance of a required construction activity, the Contractor shall obtain copies directly from the publication source.

1.5 ABBREVIATIONS

- A. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. Where such acronyms or abbreviations are used in the Specifications or other Contract Documents they mean the recognized name of the trade association, standards generating organization, authority having jurisdiction, or other entity applicable to the context of the text provision. Refer to the "Encyclopedia of Associations," published by Gale Research Company.

1.6 DEFINITIONS (People and Entities)

- A. Definitions specified herein are included in order to further clarify terms.
- B. Architect-Engineer (of Record): The Architect-Engineer is the person lawfully licensed to practice in professional disciplines such as architecture or civil, structural, mechanical, and electrical engineering.
- C. Installer: The Contractor or another entity engaged by the Contractor, either as employee, subcontractor or contractor of lower tier, to perform a particular construction activity, including installation, erection, application, unpacking, assembly, placing, finishing, curing, adjusting, cleaning, protection or similar operation. Installers are required to be experienced in the operations they are engaged to perform.
1. Experienced: The term "experienced," when used with the term "installer," means having a minimum number of years experience on projects similar in size and scope to this Project, being familiar with the special requirements indicated, and having complied with requirements of the authorities having jurisdiction.
 2. Trades: Using terms 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 the requirements specified apply exclusively to tradespersons of the corresponding generic name.
- D. Manufacturer: A person, firm or corporation who makes products.
- E. Owner: The individual, firm, corporation or government entity that owns the Project.
- F. Owner's Representative: The individual, firm or company administering the Contract on behalf of the Owner. Owner's representative may be the Owner him / herself, the Architect of Record, project engineer, Project Manager or other, as designated by the Owner, and includes a duly appointed successor or authorized representative.
- G. Project Field Superintendent: The Contractor's representative at the Project Site who is responsible for continuous field supervision, coordination, quality control, completion of the Project, and for the prevention of accidents, unless another person is designated, in writing, by the Contractor.
- H. Subcontractor: An individual, firm or corporation having a direct contract with the Contractor or with any other subcontractor for performance of a part of the work at the Project Site.
- I. Supplier: A manufacturer, fabricator, supplier, distributor, materialman or vendor having a direct contract with the Contractor or with any subcontractor to furnish materials or equipment to be incorporated into the work by the Contractor or any subcontractor, but does not perform labor at the Project Site.
- J. Separate Contractor: An individual, firm or corporation having a direct contract with the Owner for performance of part of the work at the Project Site.

- K. Testing Laboratory: An independent entity engaged to perform specific inspections or tests, either at the Project Site or elsewhere, and to report on and, if required, to interpret the results of those inspections or tests.
- L. Trade: See Installer.
- M. Utility: Local utility agency providing service to the Project..

1.7 DEFINITIONS (Things, Services, and Dispositions)

- A. Acceptable: Satisfactory to and approved by the Owner's representative.
- B. Approve: The term "approved," when used in conjunction with the Owner representative's action on the Contractor's submittals, applications and requests, is limited to the Owner representative's duties and responsibilities as stated in the Contract.
- C. Change Order: A modification to the Contract.
- D. Clarification Drawing: A graphic interpretation of a Drawing or other Contract Documents issued by the Architect through the Owner's representative.
- E. Construction Operations: Activities of the Contractor at the Project Site.
- F. Directed: Instructed by the Owner's representative.
- G. Experienced (Qualified): When used to describe the "installer", "fabricator" or similar terms; a person, firm or corporation skilled through observation or of participation in the particular activities required to complete the work or a portion of the work to the degree of quality specified.
- H. Final Connections: Complete plumbing, mechanical and electrical connections as required and recommended by the manufacturer for optimum operation of the equipment.
- I. Indicated: The term "indicated" refers to graphic representations, notes or schedules on the Drawings, or other paragraphs or Schedules in the Specifications, and similar requirements in the Contract Documents. Where terms such as "shown," "noted," "scheduled" and "specified" are used, it is to help the reader locate the reference. Location is not limited.
- J. Install: Operations at the Project Site including actual unloading, unpacking, assembly, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning and similar operations.
 - 1. Final Connections: Complete plumbing, mechanical and electrical connections as required and recommended by the manufacturer for optimum operation of equipment.
- K. Mobilization: To establish and commence work activity at the Project Site.
- L. Partial Occupancy: Partial Occupancy occurs when the Owner begins to occupy part of the Project for its own purposes, such as early fixture set-up, merchandising, etc. Partial Occupancy shall not constitute acceptance of work not in accordance with the Contract Documents.
- M. Premises: Space or property made available to the Contractor for constructing the work.

- N. Project Site: The space available to the Contractor for performing construction operations, 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.
- O. Receive: Accepting a delivery. (Entity responsible for accepting a delivery.)
- P. 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.
- Q. Reviewed: Examined and found acceptable by the Owner's representative.
- R. Substantial Completion: The stage in progress of the work when the work or a designated portion thereof is sufficiently complete in accordance with the Contract Documents so the Owner can occupy or utilize the work for its intended use.
- S. Substitution: A product that is exchanged for another of the same function and is of equal or better quality.
- T. Supply: To supply, deliver, unload and inspect for damage (same as Furnish).
- U. Unacceptable: Determined not satisfactory by the Owner's representative.

1.8 DRAWING:

- A. Except as otherwise indicated, graphic symbols used on the Drawings are those symbols recognized in the construction industry for the purposes indicated.
- B. Discrepancies: In the event of a discrepancy, as between small scale Drawings and larger scale Details, or between Drawings and Specifications, or within the Specifications, immediately bring the discrepancy to the attention of the Owner's representative / Architect / Engineer for a decision before proceeding with the particular work involved. Work carried out disregarding these instructions is subject to removal and replacement at the Contractor's expense.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01150

SCHEDULES, REPORTS, PAYMENTS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Coordination
 - 2. Progress Schedule
 - 3. Submittal Schedule
 - 4. Schedule of Values
 - 5. Payment Requests
- B. Related Documents: The Contract Documents, as defined in Section 01010 - Summary of Work, apply to the work of this Section. Additional requirements and information necessary to complete the work of this Section may be found in other Documents.

1.2 COORDINATION

- A. Coordinate both the procedural timing and listing (naming and sequencing) of reports / activities required by the provisions of this Section and other Sections, to afford consistency and logical coordination between submitted reports or lists. Maintain the coordination and correlation between the separate reports by updating on a regular basis. Make the appropriate distribution of each report and updated report to entities involved in the work including the Owner's representative / Architect / Engineer. In particular, provide close coordination of the progress schedule, schedule of values, listing of subcontracts, schedule of submittals, progress reports, and payment requests.

1.3 PROGRESS SCHEDULE

- A. The Progress Schedule to comply with requirements set forth in the "General Conditions of the Contract for Construction". Update the Schedule on a regular basis, but no less than every two months.

1.4 SUBMITTAL SCHEDULE

- A. General: Immediately following development and acceptance of a fully developed Progress Schedule, prepare a complete schedule of work- related Submittals. Correlate the Submittal Schedule with the listing of principal subcontractors, as required by the General Conditions, and with the "listing of products" or "procurement schedule" as specified in "Products and Substitutions" Section 01605 and elsewhere in the Contract Documents.
- B. Form: Show the category of the Submittal, name of the subcontractor, generic description of work covered, related Section number, activity or event number on the Progress Schedule, scheduled date for first submission, and blank columns for the actual date of submittal, re-submittal, and final release or acceptance by the Owner's representative / Architect / Engineer.

1.5 SCHEDULE OF VALUES

- A. General: Prepare a Schedule of Values acceptable to the Owner's representative, as required by the General and Supplementary Conditions, in coordination with preparation of the Progress Schedule. Correlate line items with other administrative schedules and forms required for the work, including Progress Schedule, payment request form, listing of subcontractors, schedule of allowances, schedule of alternates, listing of products and principal suppliers and fabricators, and Schedule of Submittals. Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of payment requests and progress reports. Break down the principal subcontract amounts into several line items. Round off sums to the nearest whole dollar, but with the total equal to the Contract Sum. Submit three (3) copies of the Schedule of Values to the Owner's representative / Architect / Engineer for review and comment.
- B. Unit Cost Allowances: Where required, identify line item values as a product of unit cost x measured quantity, as estimated from best indications in the Contract Documents.
- C. Schedule Updating: Update the Schedule of Values when Change Orders affect the listing, and when actual performance of the work involves necessary changes of substance to values previously listed.

1.6 PAYMENT REQUESTS

- A. General: Except as otherwise indicated, the sequence of progress payments is to be regular, and each must be consistent with previous applications and payments. It is recognized that certain applications involve extra requirements, including the initial application, application at the time of substantial completion, and the final payment application.
- B. Waivers of Lien: For each payment application, waivers of lien from subcontractors who could lawfully and possibly file a lien arising out of the Contract and related to work covered by payment, may be requested. Submit partial waivers for the amount requested (prior to deduction or retainage) on each item; and when the application shows completion of an item, submit final or full waivers. The Owner reserves the right to designate which entities involved in the work must submit waivers.
- C. Payment Application Times: The "date" for each progress payment is as indicated in the Owner-Contractor Agreement, or if none, as indicated therein - the 30th day of each month.
- D. Application for Payment Form: AIA Document G702 and G703 Continuation Sheets.
- E. Application for Payment Preparation: Except as otherwise indicated, complete every entry provided for on the form, including notarization and execution by an authorized person. Incomplete applications will be returned without action. Entries must match the current data of the Schedule of Values and Progress Schedule. Listings must include the amount of Change Orders approved prior to the last day of the "period of construction" covered by the Application.
- F. Application Transmittal: Submit four (4) signed copies of each Application for Payment, one copy which is to be completed with waivers of lien and similar attachments. Submit each copy with a transmittal form listing those attachments, and recording the appropriate information related to the Application in a manner acceptable to the Owner's representative / Architect / Engineer.
- G. Application Processing: Within ten (10) days of receipt of a properly documented Application, the Owner's representative / Architect / Engineer shall review and certify to the Owner the amount determined to be properly due, or if the form is incorrectly prepared,

return to the Contractor for correction. Upon receipt of a certified Application from the Owner's representative / Architect / Engineer, the Owner will make payment within the time allowed by the Contract Documents.

- H. Initial Payment Application: The principal administrative actions and submittals which must precede or coincide with submittal of the first Application for Payment can be summarized as follows, but not necessarily by way of limitation:
1. Listing of subcontractors, testing laboratory, principal suppliers and fabricators.
 2. Listing of Contractor's staff assignments and principal consultants.
 3. Copies of Building Permit (if Contractor's responsibility) and similar authorizations and permits from governing authorities.
 4. Progress Schedule.
 5. Performance and Labor and Materials Payment Bonds.
 6. Schedule of Values.
 7. Certificates of Insurance.
 8. Submittal Schedule.
- I. Application at Time of Substantial Completion: Following issuance of Owner representative's / Architect's / Engineer's final "Certificate of Substantial Completion," and also, in part, as applicable to prior Certificates on portions of completed work as designated, a "special" payment application may be prepared and submitted by the Contractor. The principal administrative actions and submittals which must proceed or coincide with such special applications can be summarized as follows, but not necessarily by way of limitation:
1. Occupancy Permit(s) and similar approvals or certifications by governing authorities and franchised services, assuring the Owner's full access and use of completed work.
 2. Final cleaning of the work.
 3. Coordination with the Owner on the change over of insurance coverage, including proof of extended coverage, as required.
 4. Change of door locks and other Contractor's access provisions to the Owner's property.
 5. Listing of the Contractor's incomplete work, recognized as exceptions to the Certificate of Substantial Completion.
- J. Final Payment Application: The administrative actions and submittals which must precede or coincide with submittal of a final Application for Payment can be summarized as follows, but not necessarily by way of limitation:
1. Warranties, (Guarantees), maintenance agreements, and similar provisions of the Contract Documents.
 2. Test / adjust / balance records, maintenance, instructions, meter readings, start-up performance reports, training, and similar change-over information germane to the

Owner's occupancy, use, operation and maintenance of completed work.

3. Turn-over of spare materials, parts and tools to the Owner, as specified herein.
4. Completion of items specified for completion beyond the time of Substantial Completion (regardless of whether or not a special payment application was previously submitted).
5. Release of liens and other assurances, satisfactory to the Owner that unsettled claims will be settled, and that work not actually completed and accepted will be completed without undue delay.
6. Transmittal of required project construction records to the Owner.
7. Proof, satisfactory to the Owner, that taxes, fees and similar obligations of the Contractor have been paid.
8. Satisfactory removal of temporary facilities, services, surplus materials, rubbish and similar elements.
9. Consent of surety for final payment, as required.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01205
PROCEDURES AND CONTROLS

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

- A. The Contractor shall be responsible for the control and coordination of all work by his forces, subcontractors and suppliers. Procedures and performance required for this purpose include:
1. Coordination and meetings including meeting minutes.
 2. Pre-Installation Conferences.
 3. Adequate administrative and supervisory personnel.
 4. Maintenance of surveys and records.
 5. Enforcement of tradespeople and workmanship standards.
 6. Coordination of the various trades and subcontractors.
 7. Conducting of inspections, tests and reports.
 8. Coordination of general installation provisions.
 9. Proper cutting and patching procedures and techniques.
 10. Cleaning and protection of the work.

1.2 COORDINATION AND MEETINGS

- A. General: Prepare and distribute to each entity performing work at the Project Site, a written memorandum of instructions on required coordination of activities, including required notices, reports and attendance at meetings. Prepare similar memoranda for separate contractors where the interfacing of work is required.
- B. Coordination Drawings: Where work by separate entities requires off-site fabrication of products and materials which must be accurately interfaced and closely intermeshed to produce the required results, prepare coordination drawings to interface and sequence the work shown by separate Shop Drawings.

1.3 PRE-INSTALLATION CONFERENCES

- A. General: Schedule and conduct pre-fabrication and pre-installation meetings as required by the Contract Documents. Pre-fabrication and pre-installation meetings are intended to assist the Contractor in determining before hand specific project requirements and to encourage coordination between the various trades. Schedule meetings at times appropriate to the type of work involved. Provide adequate notice to all parties to be involved.

1.4 ADMINISTRATIVE / SUPERVISORY PERSONNEL

- A. General: In addition to a general superintendent and other administrative and supervisory personnel required for performance of the work, provide specific coordination personnel as specified herein.
- B. Project Coordination: Provide a full-time Project Coordinator, who is experienced in the administration and supervision of building construction, including mechanical and electrical work, and who is hereby authorized to act as the general coordinator of interfaces between units of work. For purpose of this provisions, "interface" is defined to include the scheduling and sequencing of work, sharing of access to work spaces, installations, protection of each other's work, cutting and preparation of coordination drawings, inspections, tests, and temporary facilities and services.

1.5 SURVEYS AND RECORDS / REPORTS

- A. General: Working from lines and levels established by property survey, and as shown in relation to the work, establish and maintain bench marks and other dependable markers to set lines and levels for the work at each story of construction and elsewhere on-site as needed to properly locate each element of the entire project. Advise tradesmen performing the work, of the marked lines and levels provided for their use in the layout of work.
- B. Survey Procedures: Verify layout information shown on the Drawings, in relation to the property survey and existing bench marks before proceeding with layout of the actual work. As work proceeds, check every major element for line, level and plumb (where applicable), and maintain an accurate surveyor's log or record book of such checks, available for reference at reasonable times. Record deviations on the Record Drawings.

1.6 TRADESPEOPLE AND WORKMANSHIP STANDARDS

- A. General: Instigate and maintain procedures to ensure that persons performing work at the site are skilled and knowledgeable in the methods and craftsmanship needed to produce the required quality levels for workmanship in the completed work. Coordinate the work of trades and subcontractors. Remove and replace work which does not comply with the workmanship standards as specified and as recognized in the construction industry for the applications indicated. Remove and replace work damaged or deteriorated by faulty workmanship and lack of protection of the work.

1.7 INSPECTIONS, TESTS AND REPORTS

- A. General: Required inspection and testing services, as called for in the Specifications are intended to assist in the determination of probable compliance of the work with requirements, but do not relieve the Contractor of responsibility for compliance, or for general fulfillment of the requirements of the Contract Documents. The specified inspections and tests are not intended to limit the Contractor's quality control program. Afford reasonable access to agencies and companies performing tests and inspections. Provide adequate notification to the testing service of the schedule which impacts performance of the required tests.
- B. Contract Conforming Work:
 - 1. Resulting from Contract and Code Required Testing / Inspection: The Contractor to obtain and pay the cost of Testing / Inspection Services. Contractor to provide for work required to patch any damaged work.
 - 2. Resulting from Owner Required Testing / Inspection: The Owner to pay the cost for initial Testing / Inspection Services. Contractor to patch any damaged work as follows:

a. Non-conforming Work:

- 1) The Contractor to pay the cost for initial testing / inspection and other fair costs, if any, incurred by the Owner and Architect which directly result from the testing / inspection requirements of non-conforming work.
- 2) The Contractor to correct defective work to meet the Contract requirements. Pay for all subsequent costs including, but not limited to, further testing, as may be required. Requests for additional time will generally not be considered when resulting from the installation of and/or correction of defective work.

C. Qualification of Testing Agencies:

1. Except as otherwise indicated, and except where manufacturer's testing facilities are indicated as acceptable, engage independent testing laboratories specializing in the required services, and complying with "Recommended Requirements for Independent Laboratory Qualification" by American Council of Independent Laboratories (ACIL).

- D. Reports: Submit test / inspection reports, including agency's analysis of the results and recommendations, where applicable, in duplicate, except as otherwise indicated, and submit copies directly to the governing authorities where required or when requested.

1.8 DAMAGE CLAIMS

- A. The Contractor will be responsible for adequately securing materials stored at the Project Site, and the work in progress, and to conduct the work in such a way as to not create undue risk of injury or damage to persons or property. It is required that the Contractor adequately fence and sign the Project Site, as necessary, and / or arrange and provide for security personnel to adequately keep unauthorized persons from entering the construction area at any hour of the day or night. Notwithstanding anything to the contrary in the General Conditions, and without limiting the generality of anything contained in the General Conditions, Drawings or Specifications, the Contractor is responsible for all damages to persons and property, including damage to the work of other contractors, that occurs as a result of the Contractor's negligence or the negligence of its employees, agents, representatives, or subcontractors upon the Project, in connection with its operations, use of the Project, or prosecution of the work. The Contractor will indemnify and hold harmless the Owner and all of its officers, agents, employees and consultants from any liability, claims, demands or causes of action of any nature whatsoever for damages of any kind, as above set forth, and the Contractor agrees, at its expense, to defend any legal or other action brought against the Owner founded upon such liability, claim, demand or cause of action and to pay any attorneys' fees incurred by the Owner in connection therewith.

1.9 COORDINATION WITH OTHER CONTRACTORS

- A. Schedule work activity in coordination with all on-site contractors; make adjustments in work activities to accommodate the requirements of other contractors.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 GENERAL INSTALLATION PROVISIONS

- A. Pre-Installation Conferences: Well in advance of the start of installation of every major unit of work which requires coordination and interfacing with other work, meet at the Project Site with installers and representatives of manufacturers and fabricators involved in or affected by the unit of work, and in its coordination or integration with other work which has preceded or will follow. At each meeting review the progress of other work and preparations for the particular work under consideration, including requirements of the Contract Documents, options, related Change Orders, purchases, deliveries, Shop Drawings, product data, quality control samples, possible conflicts, compatibility problems, time schedules, weather limitations, temporary facilities, space and access limitations, structural limitations, governing regulations, safety inspection and testing requirements, required performance results, recording requirements, and protection. Record the significant discussions of each conference, record agreements and disagreements, along with a final plan of action. Distribute records of meetings promptly to everyone concerned, including the Owner's representative / Architect / Engineer.
- B. Installer's Inspection of Conditions: Require Installer of each major unit of work to inspect substrate to receive work, and conditions under which work will be performed, and to report (in writing to Contractor) unsatisfactory conditions. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to Installer.
- C. Manufacturer's Instructions: Where installations include manufactured products, comply with the manufacturer's applicable instructions and recommendations for installation to the extent these are more explicit or more stringent than requirements indicated in the Contract Documents.
- D. Inspect each item of materials and equipment immediately prior to installation, and reject damaged and defective items.
- E. Provide attachment and connection devices and methods for securing work properly as it is installed; true to line and level, and within recognized industry tolerances if not otherwise indicated. Allow for expansions and building movements, provide uniform joint widths in exposed work, organized for the best possible visual effect, as approved by the Architect.
- F. Re-check measurements and dimensions of the work as an integral step for starting each installation.
- G. Install work during conditions of temperature, humidity, exposure, forecasted weather, and status of project completion which will ensure the best possible results for each unit of work, and in coordination with the entire work. Isolate each unit of work from non-comparable work as necessary to prevent deterioration.
- H. Coordinate enclosure (closing-in) of the work with required inspections and tests to minimize the necessity of uncovering work for that purpose.
- I. Mounting Heights: Where mounting heights are not indicated, mount individual units of the work in compliance with ADAAG or industry-recognized standards for the applications indicated. Refer questionable mounting heights to the Owner's representative / Architect / Engineer for a final decision.

3.2 CUTTING AND PATCHING

- A. General: Do not cut-and-patch structural work in a manner that will result in reduction of

the load-carrying capacity or load / deflection ratio; submit proposed cutting and patching of structural elements to the Owner's representative / Architect / Engineer for structural approval before proceeding. Do not cut-and-patch operational elements and safety related components in a manner that will result in decreased operational life, increased maintenance, or decreased safety. Do not cut-and-patch work which is exposed on the exterior or exposed in occupied spaces, in a manner that will result in the reduction of visual qualities or result in substantial evidence of cut-and-patch work, both as judged solely by the Architect. Remove and replace work judged to be cut-and-patched in a visually unsatisfactory or otherwise objectionable manner.

- B. Materials: Except as otherwise indicated or approved, provide materials for cutting-and-patching which will result in equal-or-better work than the work being cut-and-patched, in terms of performance characteristics, and including visual effect, where applicable. Use materials identical to the original materials where feasible, and where recognized that satisfactory results can be produced thereby.
- C. Temporary Support and Protection: Provide adequate temporary support for work to be cut, to prevent failure. Do not endanger other work. Provide adequate protection of other work during cutting-and- patching, to prevent damage, and provide protection of the work from adverse weather exposure.
- D. Cut work by methods least likely to damage work to be retained and adjoining work.
 - 1. Where physical cutting action is required, cut the work with sawing and grinding tools, not with hammering and chipping tools. Core drill openings through concrete work.
 - 2. Comply with the requirements of applicable Division 2, Specifications Sections where cutting-and-patching requires excavating and backfilling.
- E. Restore exposed finishes of patched areas, and, where necessary, extend the finish restoration onto the adjoining retained work, in a manner which will eliminate evidence of patching.
 - 1. Where patching occurs in a smooth, painted surface, extend the final paint coat over the entire unbroken surface containing the patch after the patched areas have received prime and base coats.

3.3 CLEANING AND PROTECTION

- A. General: During handling and installation of work at the Project Site, clean and protect work in progress and the adjoining work on a basis of perpetual maintenance. Apply suitable protective covering over newly installed work where reasonably required to ensure freedom from damage and deterioration at the time of substantial completion; otherwise, clean and perform maintenance on newly installed work as frequently as necessarily throughout the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- B. Limiting Exposures of Work: To the extent possible through reasonable control and protection methods, supervise performance of the work in a manner and by means which will ensure that none of the work, whether completed or in progress, will be subjected to harmful, dangerous, damaging, or otherwise deleterious exposures during the construction period.

END OF SECTION

timely manner.

1.4 CONTRACTOR'S QUALITY CONTROL

- A. Perform project quality control in accordance with requirements in the Contract and as specified in Section 01450 - Quality Control.
- B. Coordinate the scheduling of inspections and testing required by the individual Specification Sections and in accordance with Section 01450 - Quality Control.

1.5 COORDINATION DRAWINGS

- A. Prepare and distribute coordination drawings where close coordination is required for the installation of products and materials fabricated off-site by separate entities, and where limited space availability requires maximum utilization of space for the efficient installation of different components. Show the interrelationship of components shown on separate Shop Drawings. Indicate the required installation sequences.

1.6 PROJECT COORDINATION

- A. Coordinate construction activities and the work of all trades under various Sections of these Specifications and work of the Contract to facilitate the orderly installation of each part of the work. Coordinate construction operations included under different Sections of the Specifications and the Contract that are dependent upon each other for proper installation, connection and operation.
- B. Coordinate the construction activities of this Contract with Contractors retained separately the Owner.
- C. Where installation of one part of the work is dependent upon installation of other components, either before or after that part of the work, schedule construction activities in a sequence to obtain an uninterrupted installation.
- D. Obtain drawings, manufacturer's product data, instructions, and other data to provide a proper and complete installation.
 - 1. Check field dimensions prior to installing products. Verify necessary clearances and means of access for equipment from storage to the final position.
 - 2. Make data and information available to all trades involved.
- E. Ensure that utility requirements of operating equipment are compatible with the building utilities. Coordinate the work of various Specification Sections for installation and final connection of the equipment.
 - 1. Ensure that mechanical, plumbing and electrical rough-ins have been installed and are properly sized and located.
- F. Coordinate space requirements and the installation of mechanical, plumbing and electrical work indicated diagrammatically on the Drawings. Follow the routing shown for pipes, ducts, conduits and wiring as closely as possible; make runs parallel with the lines of the building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- G. Where space is limited, coordinate the installation of different components to ensure maximum accessibility for required maintenance, service and repairs.

- H. Provide for installation of items scheduled for future installation.
- I. Where necessary, prepare memoranda for distribution to each party involved outlining special procedures required for coordination. Prepare memoranda for the Owner's representative, separate contractors, where coordination of their work is required.
- J. In finished areas, conceal pipes, ducts, conduit and wiring within the construction. Coordinate the location of fixtures and outlets with finish elements.
- K. Coordinate completion and clean up of the work of the separate Sections in preparation for completion of the Project.
- L. After occupancy, coordinate access to the Site for correction of defective work and work not in accordance with the Contract Documents, to minimize disruption of the Owner's / Tenant's activities.

1.7 PRE-CONSTRUCTION MEETING

- A. The Owner's representative will schedule a Pre-Construction Meeting after issuance of a Notice to Proceed.
- B. Attendance: Owner's representative, Architect, Engineers, Contractor, Project Superintendent and Contractor's Quality Control Representative and other contractors retained by the Owner.
- C. Agenda:
 - 1. Submission of executed Bonds and Insurance Certificates.
 - 2. Distribution of Contract Documents.
 - 3. Submission of the Schedule of Values.
 - 4. Designation of personnel representing the parties to the Contract.
 - 5. Procedures and processing of Requests for Information (RFI), field decisions, submittals, substitutions, applications for payment, change proposals, Change Orders, and contract closeout procedures.
 - 6. Scheduling.
 - 7. Construction facilities and temporary controls.
- D. The Contractor will record minutes of the meeting and distribute copies to the participants and those affected by the decisions made.

1.8 PROGRESS MEETINGS

- A. The Contractor will schedule and administer meetings throughout progress of the work at intervals to be determined.
- B. The Contractor will make arrangements for meetings, prepare an agenda, distribute copies to participants and preside over the meetings.
- C. Attendance: Job Superintendent, Contractor's Quality Control Representative, major

subcontractors and suppliers, Architect and the Owner's representative, engineers and subcontractors as appropriate to the agenda for each meeting.

D. Agenda:

1. Minutes of previous meetings.
2. Work progress.
3. Status of payments.
4. Field observations, problems, and decisions.
5. Submittals Schedule and the status of submittals.
6. Status of off-site fabrications and delivery schedules.
7. Progress Schedule.
8. Corrective measures to regain projected schedules, if necessary.
9. Planned progress during the succeeding work period.
10. Quality and work standards and pre-installation meetings.
11. Pending change proposals and effect of proposed changes on the progress schedule, and coordination.
12. Other business relating to the work.

D. The Owner's representative will record the minutes and distribute copies to the participants.

1.9 PRE-INSTALLATION MEETING

- A. When required by an individual Specifications Section, or as determined necessary by the Owner's representative, convene a Pre-Installation Meeting at the Project Site prior to commencing the work of that Section.
- B. Require attendance of the parties directly affecting, or affected by the work of the specific Specifications Section.
- C. Notify the Architect seven (7) days in advance of the meeting date.
- D. Prepare an agenda and preside at the meetings:
 1. Review requirements of the Contract Documents, conditions of installation, preparation, and installation procedures.
 2. Review coordination with related work.
- E. The Contractor shall record minutes of the meetings and distribute copies to the participants and those affected by the decisions made.

1.10 SCHEDULE OF VALUES

- A. Prior to submittal of the first payment application, submit a construction cost breakdown to the Architect in a form and format acceptable to the Architect.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01330

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Submittal procedures.
 - 2. Product data, Shop Drawings, samples and miscellaneous work.
 - 3. Assurance / Control submittals.
 - a. Certificates.
 - b. Manufacturer's installation instructions.
 - 4. Owner representative's action.
- B. Related Documents: The Contract Documents, as defined in Section 01010 - Summary of Work, apply to the work of this Section. Additional requirements and information necessary to complete the work of this Section may be found in other Documents.

1.2 DEFINITIONS

- A. Product Data: Includes manufacturer's standard printed information on materials, products and systems; not especially prepared for this Project, other than the designation of selections from among available choices printed therein.
- B. Shop Drawings: Include specially-prepared technical data for this Project, including drawings, details, diagrams, performance curves, data sheets, schedules, templates, patterns, reports, calculations, instructions, measurements and similar information not in standard printed form.
- C. Samples: Include both fabricated and unfabricated physical examination of materials, products and units of work; both as competed units and as smaller portions of units of work; either for limited visual inspection or, where indicated, for more detailed testing and analysis.
- D. Mock-Ups: A special form of samples, which are too large or otherwise inconvenient for handling in the specified manner for transmittal of sample submittals.
- E. Design Calculations: As required to show that component parts of a system meet the design criteria and performance requirements. Manufacturer's published calculations or as certified by a professional engineer. Subject to approval of the Owner's representative, manufacturer or fabricator certifications may be accepted in lieu of calculations.
- F. Miscellaneous Submittals: Includes warranties, maintenance agreements, workmanship bonds, project photographs, survey data and reports, physical work records, quality testing

and field measurement data, operating and maintenance materials, extra and overrun stock, devices and similar information; applicable to the work and not processed as product data, shop drawings or samples.

1.3 SUBMITTALS

- A. Submit two (2) copies of a proposed Schedule of Submittals to the Owner's representative within 30 days after receipt of a Notice to Proceed. List all items requiring submittal for review and approval by the Architect - Engineer / Owner's representative.
- B. Schedule of Submittals. Include the following:
 - 1. Indicate the type of submittal: Product Data, Shop Drawing, sample, certificate, warranty, technical representative's report or other submittal.
 - 2. Identify the Specifications Section number, Section paragraph number where the item is specified and a description of the item being submitted.
 - 3. Indicate the scheduled date for initial submittal, date for approval and date for possible re-submittal for each required submittal.
- C. Coordinate the Schedule of Submittals with the Construction Schedule.

1.4 SUBMITTAL PROCEDURES

- A. General:
 - 1. Coordination and Sequencing: Coordinate the preparation and processing of submittals with performance of the work so that the work will not be delayed by submittals. Coordinate and sequence different categories of submittals of the same work, and or interfacing units of work, so that one will not be delayed by coordination of the submittal review with another.
 - 2. Transmit each submittal to the Owner's representative on an Owner-approved transmittal form.
 - 3. On the Transmittal form, provide a place to indicate the Project name, date, ATo:@, AFrom:@; names of the Contractor, subcontractors, suppliers, manufacturers, pertinent drawings(s), detail number(s), Specifications Sections, category and type of submittal, purpose, description, distribution record (for both transmittal and submittals), and signature of the transmitter.
 - 4. Identify variations from the Contract Documents and product or system limitations which may affect successful performance of the completed work.
 - 5. Apply the Contractor's stamp, signed or initialed certifying that review, verification of the products required, field dimensions, adjacent construction work and the coordination of information, is in accordance with requirements of the work and the Contract Documents.
 - 6. Provide space for the Owner representative's remarks and AAction@ stamp.
 - 7. Sequentially number each transmittal form. Provide the original number and a sequential alphabetic suffix on each re-submittal.
 - 8. Package each submittal appropriately for transmittal handling.

9. Schedule submittals to comply with the scheduling requirements of the Construction Schedule.
10. On each re-submittal, identify all changes made since the previous submission.
11. Distribute copies of reviewed submittals to the field, subcontractors and suppliers, as appropriate. Instruct the parties to promptly report any inability to comply with the provisions.
12. Submittals not required will not be processed.
13. Submittals received from sources other than through the Contractor's office will be returned ~~A~~without action@.
14. Except as otherwise indicated in individual Specifications Sections, comply with the requirements specified herein for each indicated category of submittal. Provide and process intermediate submittals, where required between the initial and final submittals, similar to initial submittals.

B. Product Data:

1. Collect required data into one submittal for each unit of work or system; mark each copy to show which choices or options are applicable to the Project.
2. Include manufacturer's standard printed information such as catalog cuts, manufacturer's published instructions, standard color charts, roughing-in diagrams and templates, standard wiring diagrams, performance curves and other similar items. Include manufacturer's standard printed recommendations for application and use, compliance with standards, application of labels and seals, notation of field measurements which have been checked, and special coordination requirements.
3. Mark each copy to identify the applicable products, models, options, and other data. Supplement the manufacturers' standard data with information unique to this Project.
4. Indicate product utility and electrical characteristics, utility connection requirements, and the location of utility outlets for service to functional equipment and appliances.
5. Submit the number of copies the Contractor requires, plus four (4) copies to be retained by the Owner's representative. Submit six (6) sets of product data; three (3) sets will be returned. Maintain one (1) set of product data at the Project Site, available for reference.
6. Do not submit product data or permit its use on the Project until compliance with requirements of the Contract Documents has been confirmed by the Contractor.
7. Do not proceed with the installation of materials, products or systems until the final copy of applicable product data is in the possession of the installer.

C. Shop Drawings:

1. Provide newly prepared information on reproducible sheets, with graphic information at accurate scales, and with the name of the preparer indicated. Show

dimensions and notes based on field measurements. Identify materials and products in the work shown. Provide key plans or cross reference to room numbers to identify the location of multiple elements. Indicate compliance with standards and special coordination requirements. Identify deviations from the Contract Documents, check dimensions; check that trades have been coordinated and that no conflict will develop in its installation.

2. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service to functional equipment and appliances.
3. Shop Drawings: Submit for review. After review, produce copies and distribute in accordance with SUBMITTAL PROCEDURES above.
4. Submit in the form of one (1) translucent reproducible transparency and two (2) blue-line or blackline prints. The transparency will be returned to the Contractor after review.
5. Do not allow copies of shop drawings without appropriate final **Action** markings by the Owner's representative to be used in connection with the work.

D. Samples:

1. Submit samples to illustrate the functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
2. Include full Project information on each sample submitted.
3. Provide units identical to the final condition of the proposed materials or products of the work. Include **Range** samples of not less than three (3) units where unavoidable variations must be expected, and describe or identify variations between the units of each set. Provide a full set of optional samples where selection is required. Include information with each sample to show generic description, source or product name and manufacturer, limitations, and compliance with standards. Submit samples for review and confirmation of color, pattern, texture, and **Kind**.
4. Submit samples of finishes in the available colors, textures and patterns.
5. Submit the number of samples specified in the individual Specifications Sections; a minimum of two (2), one of which will be retained by the Owner's representative. At Contractor's option, provide preliminary submittal of a single set of samples for review and **Action**. Otherwise, initial submittals will be considered the final submittal unless returned with an **Action** mark that requires re-submittal. Submit three (3) sets of samples in the final submittal; two (2) sets will be returned.
6. Maintain one (1) final set of samples at the Project Site, in suitable condition and available for quality control comparisons.
7. The Owner's representative will not **Test** samples, except as otherwise indicated, for compliance with other requirements, which are the responsibility of the Contractor.

8. Returned samples intended or permitted to be incorporated into the work are so indicated in the individual Specifications Sections Samples; must be in an undamaged condition at the time of acceptance.
- E. Mock-Ups:
1. Mock-ups and similar samples indicated in individual Specifications Sections are recognized as a special type of sample. Comply with the requirements for Asamples@, to the greatest extent possible, and process transmittal forms to provide a record of activity.
- F. Certificates:
1. When specified in individual Specifications Sections, submit certification by the manufacturer Owner's representative in the quantities specified in Product Data above.
 2. Indicate that the material or product conforms to or exceeds the specified requirements. Submit supporting reference data, affidavits and certifications as appropriate.
 3. Certificates may be recent or previous test results on materials or products, but must be acceptable to the Owner's representative.
- G. Inspection and Test Reports:
1. Classify each as either Aproduct data@ or Ashop drawing@, depending upon whether the report is uniquely prepared for the Project or a standard publication or workmanship control testing at the point of production. Process accordingly.
- H. Manufacturer's Installation Instructions:
1. When specified in individual Specification Sections, submit printed instructions for delivery, storage, assembly, installation, adjusting, and finishing in the quantities specified in Product Data above.
 2. Indicate special procedures, perimeter conditions requiring special attention and special environmental criteria required for the application or installation.
- I. Warranties:
1. Refer to individual Specifications Sections for specific general requirements on warranties, product / workmanship bonds, and maintenance agreements. In addition to copies for the Contractor's use, furnish two (2) additional executed copies. Furnish two (2) additional copies when required for the maintenance manuals.
- J. Standards:
1. Where copy submittal is indicated, and except where specified integrally with AProduct Data@, submit two (2) copies for the Owner representative's use. Where workmanship at the Project Site and elsewhere is governed by standards, furnish additional copies to the fabricators, installers and others involved in performance of the work.
- K. Closeout Submittals:

2. Refer to individual Specifications Sections and to A closeout @ paragraphs for specific requirements on submittal of closeout information, materials, tools and similar items.
- L. Record Document Copies:
 1. Submit one (1) set.
- M. Maintenance / Operating Manuals;
 1. Submit two (2) bound sets.
- N. Materials and Tools:
 1. Refer to individual Specifications Sections for the required quantities of spare parts, extra and overrun stock, maintenance tools and devices, keys, and similar physical units to be submitted.
- O. Administrative Submittals:
 1. Submit three (3) copies. No copies will be returned.
- P. General Distribution:
 1. Provide additional distribution of submittals to the subcontractor, suppliers, fabricators, installers, governing authorities and others as necessary for proper performance of the work. Include such additional copies in the transmittal when required to receive an AAction@ marking before final distribution. Record distributions on the transmittal forms.

1.5 OWNER REPRESENTATIVE'S ACTION

- A. For submittals where action and return is required or requested, the Owner's representative will review each submittal, mark to indicate the action taken, if any, and return promptly, generally within 20 days, excluding delivery time to and from the Contractor. When a submittal is to be reviewed by an off-island consultant or when it must be held for coordination, 25 days will be required for review.
 1. Compliance with the specified characteristics is the Contractor's responsibility.
 2. No action will be taken on submittals for information, closeout documents, record documents and other submittals for similar purposes.
- B. Action Stamp: Owner's representative will stamp each submittal to be returned to the Contractor with a uniform, self-explanatory Action@ stamp. The stamp will be appropriately marked, as follows, to indicate the action taken:
 1. "Accepted" or AApproved@: Final Unrestricted Release. When a submittal is marked "Accepted" or AApproved@, that part of the work covered by the submittal may proceed provided it complies with the requirements of the Contract Documents; final acceptance will depend upon that compliance.
 2. "Accepted@ or AApproved as Noted": Final-But-Restricted Release. When a submittal is marked "Accepted' or AApproved as Noted", that part of the work

covered by the submittal may proceed provided it complies with the notations and corrections marked on the submittal and meets requirements of the Contract Documents; final acceptance will depend on that compliance.

3. "Rejected or Disapproved: Submit Specified Item" or "Revise and Resubmit": Returned for Re-submittal. When a submittal is marked "Rejected or Disapproved: Submit Specified Item", or "Revise and Resubmit," do not proceed with the work covered by the submittal, including purchasing, fabrication, delivery or other activity. Revise or prepare a new submittal in accordance with the notations; re-submit without delay. Repeat as necessary to obtain an acceptable action mark.
 - a. Do not permit submittals marked "Rejected or Disapproved: Submit Specified Item" or "Revise and Resubmit" to be used at the Project Site or elsewhere where work is in progress.
 4. "Returned: Not Required": Where a submittal is primarily for information or record purposes, special processing or other activity, the submittal will be returned, marked "Returned: Not Required".
- C. Any review and approval by the Owner's representative of any Product Data, Shop Drawings, or Samples is only for conformance to the general design concept of the work and does not extend to consideration of structural integrity, safety, detailed compliance with the Contract Documents or any other obligation of the Contractor. Review and approval of any such data does not relieve the Contractor from its obligation to meet his requirements under the Contract Documents, nor shall it give rise to any claim in favor of the Contractor or any third party against the Owner.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 06200
FINISH CARPENTRY

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Interior wood paneling.
 - 2. Wood door frames.
 - 3. Standing and running trim.
 - 4. Plastic laminate.
 - 5. Adjustable shelving.
- B. Related Documents: The Contract Documents, as defined in Section 01010 - Summary of Work, apply to the work of this Section. Additional requirements and information necessary to complete the work of this Section may be found in other Documents.
- C. Related Sections:
 - 1. Section 06100 - Rough Carpentry: Blocking and backing plates for anchorage.
 - 2. Section 06400 - Architectural Woodwork: Cabinetry.
 - 3. Section 08710 - Door Hardware: Hardware for wood doors.
 - 4. Section 09110 - Non-Load Bearing Steel Framing: Substrate framing.
 - 5. Section 09900 - Painting: Finishes.

1.2 DESCRIPTION OF WORK

- A. The extent of finish carpentry work is indicated on the Drawings and as specified herein, and includes providing and installing all finish woodwork, wood trim for bases, wall rails, crown moldings, ceiling battens, wood door and window frames, jambs and moldings and wood veneer paneling as required to complete the Project.

1.3 REFERENCES

- A. The publications listed below form a part of this Specification to the extent referenced. Publications are referred to in the text by basic designation only.
- B. American National Standards Institute (ANSI):
 - 1. ANSI A135.4 - Basic Hardboard.
 - 2. ANSI A208.1 - Mat Formed Wood Particleboard.
- C. Architectural Woodwork Institute (AWI):

1. AWI AWQS - Architectural Woodwork Quality Standards, 8th Edition, Version 2.0.
- D. American Society for Testing and Materials (ASTM):
 1. ASTM E 84 - Test Method for Surface Burning Characteristics of Building Materials.
- E. Americans with Disabilities Act Accessibility Guidelines (ADAAG):
 1. Accessibility Guidelines for Buildings and Facilities.
 2. Accessibility Guidelines for Schools.
- F. National Electric Manufacturer's Association (NEMA):
 1. NEMA LD3 - High Pressure Decorative Laminates.
- G. United States Department of Commerce Product Standard (PS):
 1. PS 20 - American Softwood Lumber Standard.
- H. Western Wood Products Association (WWPA):
 1. WWPA - Quality Standards.

1.4 DESIGN INTENT

- A. It is the design intent that similar woodwork throughout the Project match. Coordinate work between the separate installers providing similar woodwork to ensure that the design intent is achieved to the satisfaction of the Owner's representative.

1.5 SUBMITTALS

- A Section 01330 - Submittal Procedures: Procedures for submittals.
 1. Product Data: Manufacturer's specifications and installation instructions for each item of factory-fabricated paneling, wood veneer, finish hardware, anchorage devices and finish coating products.
 2. Shop Drawings: Show the location of each item, dimensioned plans and elevations, large scale details, attachment, anchorage and related components.
 3. Samples: For each species and cut or pattern of finish carpentry. Label each sample according to species, grade, grain cut and finish type.
 - a. Treated Wood: 12" long sample of termite, preservative and fire-retardant treated wood items.
 - b. Interior standing and running trim: 24" long x full board or molding width, unfinished.
 - c. Factory-Finished Plywood Veneer and Wood Paneling: 24" long x panel width.
 - d. Worked (Shaped) Pieces, Unfinished: Profile size x 12" lengths. For work requiring eased edges, submit samples of each size of eased edge

required. Samples for each species, grade, and grain cut need not be submitted.

e. Finished Samples: Representative board samples of 3/4" x 8-1/2" x 11" size with transparent finishes of each type, color and texture required; finished by the Paint applicator.

f. Hardware: One (1) complete unit of each type and finish required.

4. Wood Treatment Data: Chemical treatment manufacturer's instructions for handling, storage, installation and finishing treated materials.

a. Pressure Treatment and Termite Treatment: For each type specified, include certification by the treating plant stating the chemicals and process used, net amount of preservative retained and conformance with applicable standards.

b. Dip Treatment: For each type specified, include certification by the treating plant stating the chemical solutions used, submersion period and conformance with applicable standards.

c. Fire-Retardant Treatment: Include certification by the treating plant indicating the type of chemicals used and fire performance characteristics achieved.

5. Assurance / Control Submittals:

a. Manufacturer's certification that the fabricated woodwork complies with the quality grades and other requirements indicated.

b. Documentation of experience indicating compliance with the specified qualifications requirements.

B. Section 01780 - Closeout Submittals: Procedures for closeout submittals.

1. Warranty: Submit a written Warranty with forms completed in the name of the Owner and registered with the manufacturer.

1.6 COORDINATION

A. Pre-Installation Meeting: Convene a Pre-Installation Meeting at the Project Site prior to the delivery of finish carpentry materials to the Site.

1. Require attendance of the Contractor, Architect, Owner's representative and representatives of the installer of architectural woodwork, other finishes, painting and related mechanical and electrical work.

2. Review coordination and environmental controls required for proper installation and ambient conditions in areas to receive the work.

3. Review preparation and installation procedures, and the coordination and scheduling required with related work.

B. Support Work:

1. For support work not indicated in the Contract Documents, coordinate requirements with other installers, in a timely manner.

2. Provide work as necessary to ensure that all work has proper framing and reinforcing supports to ensure secure and solid installations.

1.7 QUALITY ASSURANCE

- A. Perform the work in accordance with AWI, Premium quality where designated, Custom quality all others
- B. Manufacturer: Company specializing in manufacturing the products specified with a minimum of five (5) years documented experience.
- C. Installer: Company experienced in performing the work of this Section with a minimum of five (5) years documented experience.

1.8 DELIVERY, STORAGE AND HANDLING

- A. Section 01600 - Material and Equipment: Transport, handle, store and protect to prevent damage.
- B. Deliver products to the Project Site in the manufacturer's original, unopened packaging.
- C. Do not deliver products to the Project Site until wet work, grinding, painting and similar operations which could damage, soil or deteriorate the finish carpentry has been completed in the installation areas, and humidity has been stabilized.
- D. If, due to unforeseen circumstances, finish carpentry materials must be stored in other than installation areas, store only in areas meeting the requirements specified for the installation areas.
- E. Protect installed finish carpentry from damage and excessive relative humidity until final acceptance.

1.9 JOB CONDITIONS

- A. Fabricator of the finish carpentry shall determine the optimum moisture content and the required temperature and humidity conditions.
- B. The installer shall advise the Contractor of the temperature and humidity requirements for the finish carpentry installation areas. Do not store or install finish carpentry until the required temperature and relative humidity has been stabilized and will be maintained in the installation areas.
- C. Stabilize temperature and humidity in installation areas as necessary to maintain the moisture content of the installed finish carpentry within a 1.0% tolerance of optimum moisture content, from the date of installation throughout the remainder of the construction period.

PART 2 PRODUCTS

2.1 GENERAL

- A. Finish Carpentry Standards:
 1. Comply with AWI, Premium quality where designated, Custom quality grade for trim, jambs, frames and detailing.

2. Lumber shall be best grade for clear finishes.
3. Moisture content of lumber shall be no more than 13%.
4. Minimum lengths for trim and frames shall be:
 - a. One continuous piece for openings.
 - b. Joints no closer than 12 feet apart in running trim.
5. Sizes and profiles as called for on the Drawings.

B. Backpriming:

1. Back prime work immediately upon arrival of the units at the Project Site with a single coat of spar varnish or other acceptable sealer for fabricated units to be installed as an exterior component or where against portland cement plaster, gypsum plaster, or against exterior facing walls of concrete or masonry.
2. Ensure that the sealer does not contaminate surfaces requiring a transparent finish.

2.2 MATERIALS

A. Millwork:

1. Wood door and window frames, trim and plywood, ceiling frames and panels, and solid paneling shall be the species and cut designated in finish schedules, drawings and details; best clear Premium quality where designated, Custom quality grade, for transparent finish; sized and fabricated as detailed.
2. Exterior wood fascia boards, [screens], [trellis frames], shall be clear, all heart Redwood.

B. Panels: Fiberboard or fiberboard core plywood, construction balanced.

C. Plywood: For exterior use and interior use exposed to moisture shall be marine grade.

D. Veneers: Species, cut and matching as indicated or selected, grade 1, factory-finished.

2.3 WOOD TREATMENT

A. Preservative Treatment: For all exterior and interior wood, comply with applicable requirements of AWWA, Standards C2 (Lumber), C9 (Plywood), and of AWPB, Quality Marks Requirements.

B. Preservative Treatment Types:

1. Ammoniacal Copper Zinc Arsenate (ACZA).
2. Pentachlorophenol (Penta).
3. Fluor Chrome Arsenate Phenol (FCAP).

C. Pressure-treat above ground items with water-borne preservatives complying with AWPB LP-2.

- D. Dip-treat interior wood.
- E. Apply in accordance with OSHA and EPA requirements and regulations and in accordance with AWP, P-9. Treatment shall not discolor finished wood exposed to view.
- F. Fire-Retardant Treatment:
 - 1. Where fire-retardant wood is specified or required, provide materials which comply with AWP standards for pressure impregnation with fire-retardant chemicals, and which have a flame spread rating of not more than 25 when tested in accordance with UL Test 723 or ASTM E 84, and shows no increase in flame spread and significant progressive combustion upon continuation of the test for an additional twenty (20) minutes.
 - 2. Where treated items are exposed to the exterior or to high humidity or are to have a transparent stain or sealer finish, provide appearance grade materials which show no change in the fire-hazard classification when subjected to standard rain test in accordance with UL 790 or ASTM B 2898.
 - 3. Use fire-retardant treatment which will not bleed through or adversely affect the type of finish indicated, and which does not require brush treatment of field made cuts to maintain the fire-hazard classification.
- G. Products Scheduled for Transparent Finish:
 - 1. Treatment color shall be compatible with products scheduled for a transparent finish. Provide samples of treatment with finish applied for review.
 - 2. Where a transparent finish is indicated, use the type of treatment and species which permits milling of the lumber after treatment without altering the indicated fire-hazard classification, as determined by fire testing.
- H. Incised Materials: Do not use incised materials where finished work will be exposed to view.

2.4 INTERIOR WOOD PANELING

- A. Veneer plywood for transparent finish, clear plain cut Mahogany, color and grain matched for consistency between panels and with the trim.
- B. Stain and transparent finish.

2.5 WOOD DOOR FRAMES

- A. Grade:
 - 1. Opaque Painted: AWI, Custom.
 - 2. Transparent: AWI, Premium.
- B. Wood: Same species as the wood door face veneer. Ease edges.

2.6 STANDING AND RUNNING TRIM

- A. Grade:

1. Opaque Painted: AWI, Custom.
 2. Transparent: AWI, Premium.
- B. Trim, boards and plywood for painted finish: Softwood suitable for the exposure and use.
- C. Trim and boards for transparent finish: Wood species as selected.
- D. Back Construction: Rout or groove the backs of flat trim members, kerf backs of other wide flat members, except for members with ends exposed in finish work.

2.7 PLASTIC LAMINATE

- A. Manufacturers: Subject to compliance with the Project requirements, manufacturers offering products which may be incorporated into the work include the following:
1. Formica Corp.
 2. Nevamar Corp.
 3. Wilsonart International.
- B. High-Pressure Laminate: NEMA LD3, Grade 50, General Purpose, fire-rated, 0.048" thick.
- C. Section 01600 - Product Requirements: Product Options: Substitutions permitted.

2.8 ADJUSTABLE SHELVING

- A. Shelving: Softwood plywood; PS 1, graded in accordance with AWI; veneer cover core sides, edges and ends with plastic laminate; cover medium density particle board with factory-applied finish, as selected. 3/4" thick x depth shown on the Drawings x maximum possible length.
- B. Standards: Heavy-duty, 2" slot adjustments, length as required. Knape & Vogt # 87 or comparable product as approved. Color as selected.
- C. Brackets: Heavy-duty, for 2" slots, nylon cam lock lever, length as required. Knape & Vogt # 186 / 187 or comparable product as approved. Color as selected.

2.9 RELATED MATERIALS

- A. Closet Rod: 1-1/16" diameter stainless steel round tubing with chrome-plated mounting end flanges, Knape & Vogt # 660 or comparable product as approved. Provide support brackets when required by the manufacturer; of the same material and finish.
- B. Anchorage Devices, General: Nails, screws, toggle bolts, expansion shields, and other devices, of type, size and finish required for each use to ensure strong connections. Where products are subject to moisture, provide hot-dipped galvanized products, otherwise electroplated zinc or cadmium anchorage devices are acceptable.

2.10 FABRICATION, GENERAL

- A. Field Measurements:
1. Before proceeding with the fabrication of finish carpentry products, obtain field measurements and verify dimensions.

B. Wood Products:

1. Fabricate finish carpentry products to the dimensions, profiles and details indicated with the construction and materials complying with referenced standards of the specified AWI grades.
2. Where necessary for fitting at the Project Site, provide reasonable allowance for scribing, trimming and fitting. Pre-cut openings, where possible, to receive hardware, and mechanical and electrical work.
3. Ease edges of rectangular solid wood components to a 1/16" radius for members less than 1" in nominal thickness; 1/8" radius for edges of members over 1" in nominal thickness.
4. Conceal all anchorage devices except where decorative fasteners are approved.

2.11 OTHER

- A. General: Where the quality of workmanship may not be specifically indicated, comply with the applicable provisions of AWI as follows as applicable to the grade of material, construction and finish:
1. Scheduled for Opaque Painting: AWI, Custom Grade.
 2. Scheduled for Transparent Finish: AWI, Premium Grade.
- B. Finish: Exposed wood surfaces (except resawn surfaces) shall be sanded and free of tool marks and similar blemishes. Hand sand inside the building after installation until all defects have been entirely removed. Any material showing machinery, tool, sandpaper or other defacing marks will be rejected.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01700 - Execution Requirements: Verification of existing conditions before starting the work.
- B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required and ready to receive the work.
- C. Report, in writing, prevailing conditions that will adversely affect satisfactory execution of the work of this Section. Do not proceed with the work until the unsatisfactory conditions have been corrected.

3.2 FABRICATION

- A. Fabricate trim, moldings, bases and frames to the dimensions and profiles shown. Route and groove the backside of members to be applied to flat surfaces, except for members with ends exposed in the finished work.
- B. Condition wood materials to the average prevailing humidity conditions in the installation areas prior to installing.

- C. Backprime wood with scheduled finish material exposed on the exterior or, to high the moisture and high relative humidities on the interior.
- D. Comply with the requirements of Section 09900 for primers and their application.

3.3 INSTALLATION

- A. Discard items which are unsound, warped, bowed, twisted, improperly treated, not adequately seasoned or are too small to fabricate work with a minimum number of joints or optimum jointing arrangements, or which are of defective manufacturer with respect to surfaces, sizes or patterns.
- B. Install work in accordance with AWI, AWQS, Section 1700 - Installation of Woodwork.
- C. Install the work plumb, level and straight without distortions. Shim as required using concealed shims. Install to a tolerance of 1/8" in 8'-0" for plumb and level countertops; and with 1/64" maximum offset in flush adjoining surfaces; 1/32" maximum offsets in revealed adjoining surfaces.
- D. Scribe and cut the work to fit adjoining work. Refinish cut surfaces or repair damaged finish at cuts. Provide a neat, tight joint where work specified in this Section adjoins other work.
- E. Anchor work items to nailers or blocking or directly to the substrate using concealed fasteners, to the extent possible.
- F. Install standing and running trim with the minimum number of joints possible, using full-length pieces (from maximum length lumber available) to the greatest extent possible. Stagger joints in adjacent and related members. Cope at returns, miter at corners to produce tight fitting joints with full surface contact throughout the length of joints. Use scarf joints for end-to-end jointing.
- G. Secure finish carpentry work to anchorage devices or blocking built-in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nail as required for a complete installation. Except where prefinished matching fastener heads are required, use fine finishing nails for exposed nailing, countersink and fill flush with the finished surface. Match the final finish where a transparent finish is indicated.
- H. Apply sealant at all joints between finish carpentry work and adjacent walls and flooring to prevent intrusion by vermin and moisture into concealed spaces.
- I. Install hardware in accordance with the manufacturer's published instructions.
- J. Install shelving units, standards and brackets at locations indicated on the Drawings.
- K. Finish: AWI quality standard. Leave finish carpentry in a paint-ready condition for final finishing by the painting applicator.

3.4 ADJUSTING AND TESTING

- A. Section 01700 - Execution Requirements: Adjusting and testing the installed work.
- B. Adjust installed work.
- C. Test the installed work for rigidity and ability to support loads.

- D. Adjust joinery for uniform appearance.
- E. Touch-up shop-applied finishes to restore damaged and soiled areas.
- F. Repair damaged and defective work wherever possible to eliminate defects functionally and visually; where repairs cannot be made to the satisfaction of the Owner's representative, replace the finish cabinetry.
- G. Adjust moving or operating parts to function smoothly and correctly.

3.5 FIELD QUALITY CONTROL

- A. Section 01450 - Quality Control: Field inspection.
- B. Inspect finish carpentry work for plumb, level, alignment and secure attachment.

3.6 CLEANING

- A. Section 01700 - Execution Requirements: Cleaning the installed work.
- B. Clean exposed and semi-exposed surfaces.

3.7 PROTECTION

- A. Installer shall advise the Contractor and painting applicator of procedures required to protect the finish carpentry during the remainder of the construction period to ensure that the work will be without damage and deterioration at the time of final acceptance, and will be comparable to the final finish scheduled for the work.
- B. Installer shall return to the Project prior to substantial completion, repair any damage to the work, and readjust the hardware.

END OF SECTION

SECTION 06400
ARCHITECTURAL WOODWORK

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Wood faced casework and trim.
2. Plastic laminate faced casework and shelving.
3. Plastic laminate countertops.
4. Solid polymer fabrications.
5. Marble and Granite countertops.
6. Wood shelving.
7. Preparation for installation and connection of utilities.

B. Related Documents: The Contract Documents, as defined in Section 01010 - Summary of Work, apply to the work of this Section. Additional requirements and information necessary to complete the work of this Section may be found in other Documents.

C. Related Sections:

1. Section 06100 - Rough Carpentry: Blocking and backing plates in walls for anchorage.
2. Section 06200 - Finish Carpentry: Adjustable shelving.
3. Section 06640 - Solid Polymer Fabrications: Countertops.
4. Section 09110 - Non-Load Bearing Steel Framing: Blocking and backing plates.
5. Section 09900 - Painting: Woodwork finishes.
6. DIVISIONS 15 and 16: Service fittings and connections.

1.2 DESCRIPTION OF WORK

A. The extent of architectural woodwork is indicated on the Drawings and as specified herein, and includes providing, fabricating and installing all wood faced and plastic laminate faced architectural woodwork, trim and countertops, wood shelving, installations and utility connections.

1.3 REFERENCES

A. The publications listed below form a part of this Specification to the extent referenced. Publications are referred to in the text by basic designation only.

- B. American National Standards Institute (ANSI):
 - 1. ANSI A135.4 - Basic Hardboard.
 - 2. ANSI A208.1 - Mat Formed Wood Particleboard.
- C. Americans with Disabilities Act Accessibility Guidelines (ADAAG):
 - 1. Accessibility Guidelines for Building and Facilities.
 - 2. Accessibility Guidelines for Schools.
- D. Architectural Woodwork Institute (AWI):
 - 1. AWI AWQS - Architectural Woodwork Quality Standards, 6th Edition,
[Premium] [Custom] Grade, except as otherwise indicated.
- E. National Electric Manufacturer's Association (NEMA):
 - 1. NEMA LD3 - High Pressure Decorative Laminates.
- F. United States Department of Commerce Product Standard (PS):
 - 1. PS 1 - Construction and Industrial Plywood.
 - 2. PS 20 - American Softwood Lumber Standard.

1.4 DESIGN INTENT

- A. It is the design intent that similar woodwork throughout the Project match. Coordinate work between the separate installers providing similar woodwork to ensure that the design intent is achieved to the satisfaction of the Owner's representative.

1.5 DEFINITIONS

- A. Exposed Surfaces: The exposed portions of woodwork, including surfaces visible when doors and drawers are closed. Bottoms of woodwork more than 4'-0" above the floor shall be considered as exposed. Visible members in open cases or behind glass doors also shall be considered as exposed. The front and both sides of all storage cabinets shall be considered as exposed, even when one or both side panels are against a wall or an adjacent cabinet.
- B. Semi-exposed Surfaces: Semi-exposed portions of woodwork includes members behind opaque doors, such as shelves, dividers, interior face of ends, wood back, drawer sides, backs and bottoms, and the inside face of doors. Tops of woodwork 6'-6" or more above the floor shall be considered as semi-exposed.
- C. Unexposed Surfaces: Unexposed portions of woodwork includes sleepers, web frames, dust panels and other surfaces not usually visible after installation.

1.6 SUBMITTALS

- A. Section 01330 - Submittal Procedures: Procedures for submittals.

1. Product Data: Fabricator's specifications and installation instructions for each item of factory-fabricated woodwork, wood veneer counter tops, finish hardware and finish coating products.
 - a. Wood veneers and finishes.
 - b. Data for hardware and accessories indicating the material, type, function, attachment and finish.
2. Shop Drawings: Show the location of each item on dimensioned plans, sections, elevations, and large scale details. Indicate materials used, wood species, component profiles, assembly methods, joint details, fastening methods, accessory listings, hardware location and schedule of finishes. Submit for the following:
 - a. Cabinet work, base and overhead.
 - b. Counter work, base and overhead.
 - c. Shelving units.
 - d. Vanities.
 - e. Submit fabricators product information including Shop Drawings for fabricator's standard units.
3. Samples: For each species and cut or pattern of architectural woodwork:
 - a. General:
 - 1). Two 12" x 12" solid wood and plywood or hard board samples with factory-applied transparent or opaque finish for each finish system and color required.
 - 2). Two samples of each countertop material.
 - 3). One unit of each type and finish of cabinet hardware.
 - b. Initial Samples: Unless specific products are scheduled, submit 2" x 2", minimum, size samples of the complete range of colors, patterns, and finishes available for initial selection.
 - c. Final Samples:
 - 1). Color, Pattern and Finish Samples: Submit 6" x 6" final samples matching those initially selected.
 - 2). Fused Joint Sample: On project products that would least likely obscure joints, submit 6" x 10" samples showing fused joint work.
4. Assurance / Control Submittals:
 - a. Fabricator's certificate that the products meet or exceed the specified requirements.

- b. Documentation of experience indicating compliance with the specified qualifications requirements.

B. Section 01780 - Closeout Submittals: Procedures for closeout submittals.

- 1. Warranty: Submit a written Warranty with forms completed in the name of the Owner and registered with the fabricator.

1.7 COORDINATION

A. Pre-Installation Meeting: Convene a Pre-Installation Meeting at the Project Site prior to the delivery of architectural woodwork materials to the Site.

- 1. Require attendance of the Contractor, Architect, Owner's representative, and representatives of the installer of finish carpentry, other finishes, painting and related mechanical and electrical work.
- 2. Review coordination and environmental controls required for proper installation, and ambient conditions in areas to receive the work.
- 3. Review preparation and installation procedures, and the coordination and scheduling required with related work.

B. Support Work:

- 1. For support work not indicated in the Contact Documents, coordinate the requirements with other installers, in a timely manner.
- 2. Provide work as necessary to ensure that all work has proper framing, backing and reinforcing supports to ensure secure and solid installations.

1.8 QUALITY ASSURANCE

A. Qualifications:

- 1. Fabricator: Company specializing in manufacturing the products specified with a minimum of five (5) years documented experience.
- 2. Installer: Company experienced in performing the work of this Section with a minimum of five (5) years documented experience.

B. Quality Standards:

- 1. Woodwork shall comply with the requirements of AWI Architectural Woodwork Quality Standards Illustrated®, Eighth Edition, 200, except where more stringent requirements are specified herein.

C. Style: Fabricate, as indicated, utilizing the following:

- 1. [Conventional Flush Construction with face frame.]
- 2. [Conventional Flush Construction without face frame.]
- 3. [Flush Overlay Construction.]
- 4. [Reveal Overlay Construction.]

5. Wood faced casework - [Premium] [Custom] grade.
6. Countertop, casework and shelving - [Premium] [Custom] grade.
7. Wood shelving - [Premium] [Custom] grade.

1.9 DELIVERY, STORAGE AND HANDLING

- A. Section 01600 - Product Requirements: Transport, handle, store and protect the products.
- B. Package architectural woodwork in water-tight containers for transport to the Project Site to prevent damage, water damage, soiling and deterioration and for storage in a location other than inside the building, if necessary.
- C. Do not store woodwork on the Project Site for a long period of time. If, due to unforeseen circumstances, the woodwork must be stored in other than the installation areas, store only in areas meeting the requirements specified for the installation areas.
- D. Do not deliver woodwork until wet work, grinding, painting and similar operations which could damage, soil or deteriorate the woodwork has been completed in the installation areas, and humidity has been stabilized.
- E. Deliver products to the Project Site in the fabricator's original, new, unopened packaging, crates or containers.

1.10 JOB CONDITIONS

- A. The fabricator of woodwork shall determine the optimum moisture content and required temperature and humidity conditions.
- B. The installer shall advise the Contractor of the temperature and humidity requirements for the architectural woodwork installation areas. Do not install woodwork until the required temperature and relative humidity has been stabilized and will be maintained in the installation areas.
- C. Stabilize temperature and humidity in installation areas, as necessary, to maintain the moisture content of the installed woodwork within a 1.0% tolerance of optimum, from the date of installation throughout the remainder of the construction period.
- D. Unless instructed otherwise by the Installer, maintain the spaces to receive woodwork between 65E F and 80E F, with a relative humidity of 50% or less for 72 hours prior to, during and after installation until the date of Substantial Completion.

1.11 WARRANTY

- A. Section 01780 - Closeout Submittals: Procedures for closeout submittals.
- B. Fabricator's Warranty: Provide fabricator's standard Warranty against defects in product materials and workmanship.

PART 2 PRODUCTS

2.1 WOOD FACED CASEWORK AND TRIM

- A. AWI, [premium] [custom] grade, natural finish.
- B. Trim and Solid Stock: Solid, kiln dried, [premium] [custom] grad, wood species as selected.
- C. Core Stock: 3/4" plywood or medium density melamine particleboard, veneer finish at exposed faces, melamine or matching veneer finish at semi-exposed faces, outside and inside drawers, cabinet backs, shelves, etc.
- D. Species and Cut: Lumber and veneer for transparent and opaque finish shall be as indicated herein or in the Finish Schedule, interior drawings and details, or as selected.
- E. Factory Finished: Casework shall be factory finished per AWI 1500, System #5, catalyzed polyurethane, satin medium rubbed effect, filled finish.
- F. Backpriming: Back prime the work with a single coat of spar varnish or other acceptable sealer for fabricated units to be installed as an exterior component or where against portland cement plaster, gypsum plaster or against an exterior facing wall of concrete or masonry. Ensure that the sealer does not contaminate surfaces requiring a transparent finish.

2.2 PLASTIC LAMINATE FACED CASEWORK AND SHELVING

- A. Core Stock: Material shall be 45 pound density hard board, industrial grade.
 - 1. Minimum core thickness shall be 3/4" except:
 - a. Hidden cabinet backs may be 1/4" thick hardboard.
 - b. Exposed backs and drawer bottoms may be 1/4" thick.
 - c. Drawer sides may be 1/2" thick.
 - d. Backs of free standing cabinets may be 1/2", 5/8" or 3/4" thick, as indicated or required.
 - e. Cabinet bases (toe spaces) may be solid kiln-dried wood, unfinished for finish applications by others.
 - f. Shelf thickness shall be 1" for any shelf over 36" long.
 - 2. Laminated Plastic. Where Plam is indicated for exterior cabinet finish, all visible exposed faces and edges shall be covered with laminated plastic, unless otherwise specified herein. Provide backer as necessary to balance plastic laminate installation at concealed locations.
 - a. Fabricators: Subject to compliance with the Project requirements, fabricators offering products which may be incorporated into the work include the following:
 - 1). Formica Corporation.
 - 2). Nevamar Corporation.
 - 3). Wilsonart International.

- b. High-Pressure Decorative Laminate: NEMA LD-3, GP-50, General Purpose:
 - 1). Nominal 0.050" thick for horizontal and high usage exposures.
 - 2). 0.028" thick for vertical and medium usage exposures.
 - 3). 0.020" thick, liner grade, for all semi-exposed faces inside drawers, doors, backs, shelves, etc.
 - 4). Color(s) as selected.
- c. Section 01600 - Product Requirements: Product Options: Substitutions permitted.
- 3. Laminated Plastic Adhesive: Type recommended by the laminated plastic manufacturer; bonded by machine application and pressure of not less than 100 pounds per square inch.
- 4. Edge Treatment: Top edges of drawer sides and drawer backs; edge of doors, fixed panels, visible frame parts and drawer face tops and edges shall be matching laminate faced or shall be resilient polyvinylchloride 0.024" thick, machine bonded with hot melt glue, factory edges trimmed, superfinished, buffed and polished.

2.3 PLASTIC LAMINATE COUNTERTOPS

- A. Plastic Laminate Tops:
 - 1. Core thickness of countertop substrate shall be 3/4" or 1" as indicated. Backsplash core shall be 3/4" or 1/2" in two-piece countertop applications.
 - 2. Finish wear surfaces, including all edges, shall be 0.050" plastic; velvet or satin finish, pattern or solid color, as selected from the manufacturer's standards.
 - 3. Underside of decks and back side of backsplashes shall have 0.02" balance sheet bonded to the substrate whether or not the countertop is in Awet@ or Adry@ usage.
 - 4. Backsplash to deck joints shall be shoulder rabbited, glued, mechanically fastened, and sealed during assembly with a silicone compound; backsplash color shall be compatible with the deck color.
 - 5. Transverse deck joints shall be spaced as far apart as material limitations allow, shall be job sealed during installation with silicone compound, and shall be securely drawn together with concealed mechanical joint fasteners.
 - 6. Where noted on the Drawings, chemical-resistant countertop surfacing with solid-core edge banding shall be used when severe resistance to reagents is required.
 - 7. Use acid-resistant plastic laminate at Science Laboratories, Art Rooms and adjacent Storage Room counters.

2.4 SOLID POLYMER FABRICATIONS

- A. Provide fabrications of cast solid polymer material composed of acrylic polymer with mineral fillers and pigments where indicated. Material shall not be coated or laminate to

substrates. Superficial damage to a depth of 1/64" shall be repairable by sanding or polishing. Products by:

1. Avonite Surfaces.
2. DuPont Corian.

B. Size:

1. Width / Height: Fabricator's standards of size best meeting the project requirements. Backsplash to be 4" in height, unless otherwise indicated.
2. Thickness:
 - a. Horizontal surfaces - 3/4" minimum.
 - b. Vertical surfaces - 1/2" minimum; backsplashes - 3/4".

C. Finish: Polished, unless otherwise indicated. Top, backsplash and fascia shall be one-piece. Color, edge detail and pattern shall be as selected from the fabricator's standards.

D. Color / Pattern: The basis of design is products by Avonite or approved comparable color / pattern.

E. Related Materials:

1. Panel Adhesive: Fabricator's standard specifically recommended for the Project application. Adhesives used at installations exposed to water or high humidity conditions to be water-resistant type.
2. Joint Adhesive: Fabricator's standard capable of fusing each joint and creating inconspicuous and non-porous joints.
3. Sealant: Fabricator's recommended mildew resistant, FDA / UL recognized silicone sealant, in colors custom matched to each component where sealant is required.
4. Mounting Hardware: Provide mounting hardware including sink / bowl clips, inserts and fasteners for the attachment of undermount sinks and lavatories.
5. Anchorage Devices: Fabricator's approved clips, inserts, and anchorage devices . Ferrous products to be hot-dipped galvanized. Do not use metal types not specifically approved by the fabricator for their products.

F. Fabrication:

1. Factory fabricate components to the greatest extent possible, to the sizes and shapes indicated, in accordance with the approved Shop Drawings. Where indicated, factory fabricate side and back splashes with 1/2" cove at intersections.
2. Form joints between components using the fabricator's standard acrylic joint adhesive. Joints shall be inconspicuous, non-porous, and reinforced with strips of solid polymer material in accordance with the fabricator's printed instructions.
3. Tolerances:

- a. Variation of component size: +/- 1/8".
 - b. Location of openings: +/- 1/8" from the required location.
- 4. Provide factory cutouts for plumbing and accessories as indicated. Reinforce heated or cooled cutouts in accordance with the Approved Shop Drawings and the fabricator's printed instructions.
 - 5. Cut an finish components edges with clean returns. Round edges of cutouts to 1/8" radius. Round corners of cutouts with 1/2" minimum radius. Use router to form all cutouts. Provide thick edges where indicated using strips of solid polymer material and fabricator's acrylic joint adhesive. All joints to be inconspicuous and non-porous. All exposed surfaces to have a uniform finish and gloss.
 - 6. Countertop Joint Layout: Provide a monolithic look to the greatest extent possible. Where joints in the work is required due to fabrication limitations or required for proper performance of the product, work with the Owner's representative to establish satisfactory joint locations.

2.5 MARBLE AND GRANITE COUNTERTOPS

- A. Thickness shall be 3/4", minimum.
- B. Edge detail shall be as selected.
- C. Top, backsplash and fascia shall be a color and pattern selected from the fabricator's standards. Location of joints shall be shown on shop drawings.

2.6 WOOD SHELVING

- A. Softwood plywood, PS 1, graded in accordance with AWI.
- B. Veneer cover core sides and ends with plastic laminate, color as selected.
- C. Cover medium density particleboard with factory-applied finish, as selected.
- D. Dimensions: 3/4" thick x depth shown on the Drawings x maximum possible length.

2.7 CABINET HARDWARE AND ACCESSORY MATERIALS

- A. General: Provide complete cabinet hardware and accessory materials associated with the architectural woodwork, except for units specified as Adoor hardware® in other Sections of these Specifications.
- B. Hardware References: Except as otherwise indicated, comply with ANSI A156.9
A American National Standard for Cabinet Hardware®.
- C. Cabinet Door Hardware: Provide hinges and pulls of the types indicated, to accommodate each door size and style. Hinges concealed A European® style; Pulls - EPCO DP-418 x 3-1/2® wire pull or as indicated or approved.
 - 1. Each cabinet door up to 36" in height shall have one pair of hinges; up to 48" in height, 1-1/2 pair hinges; over 48" in height, two pair of hinges. Each cabinet shall be equipped with sound dampening cushions to minimize noise.

- D. Drawer Hardware: Provide slides and pulls of the types indicated, to accommodate each drawer size and style.
 - 1. Equip each drawer with side-mounted, full-extension, ball-bearing, nylon roller drawer slides with a load capacity of 75 pounds per pair; provide *Δstay-closedΔ* feature for lift out removal.
- E. Locks: Provide standard pin-type or disc-type (five pins or discs) tumbler locks, keyed individually, except as otherwise indicated.
- F. Shelf Supports: Where shelving is indicated as *ΔadjustableΔ*, provide pin-type or slotted-type standards and brackets of a type required to support shelves with a uniform load of 40 pounds per square foot; recessed for premium construction, surface-mounted for custom and economy construction.

2.8 ACCESSORIES

- A. Adhesive: Type recommended by AWI to suit the application.
- B. Fasteners: Size and type to suit the application.
- C. Bolts, Nuts, Washers, Lags, Pins and Screws: Of the size and type to suit the application.
- D. Concealed Joint Fasteners: Threaded, hot-dipped galvanized steel.
- E. Sealant: Manufacturer's recommended mildew resistant, FDA / UL recognized silicone sealant in colors custom matched to each component where sealant is required.
- F. Anchorage Devices: Fabricator's project approved clips, inserts, and anchorage devices. Ferrous products to be hot-dipped galvanized. Do not use metal types not specifically approved by the fabricator for their products.

2.9 FABRICATION

- A. Field Measurements:
 - 1. Before proceeding with the fabrication of architectural woodwork products, obtain field measurements and verify dimensions.
- B. Wood Products:
 - 1. Fabricate architectural woodwork products to the dimensions, profiles and details indicated, with construction and materials complying with the referenced standards of the specified AWI grades. Where necessary for fitting at the Project Site, provide reasonable allowance for scribing, trimming and fitting. Pre-cut openings, where possible, to receive hardware and mechanical and electrical work.
 - 2. Conceal all anchorage devices, except where decorative fasteners are approved.
- C. Fire-Retardant Treatment:
 - 1. Where fire-retardant wood is specified or otherwise indicated, provide materials which comply with AWPAs standards for pressure impregnation with fire-retardant chemicals, and which have a flame spread rating of not more than 25 when tested in accordance with UL 723 or ASTM E 84, and show no increase in flame spread

and significant progressive combustion upon continuation of the test for an additional twenty (20) minutes.

2. Where treated items are exposed to the exterior or to high humidity or are to have a transparent stain or sealer finish, provide appearance grade materials which show no change in the fire hazard classification when subjected to standard rain test per UL 790 or ASTM B 2898.
3. Use fire-retardant treatment which will not bleed through or adversely affect the type of finish indicated, and which does not require brush treatment of field made end cuts to maintain the fire-hazard classification.

D. Products Scheduled for Transparent Finish:

1. Treatment color shall be compatible with products scheduled for a transparent finish. Provide samples of treatment with finish applied for review.
2. Where a transparent finish is indicated, use the type of treatment and species which permits milling of the lumber after treatment without altering the indicated fire-hazard classification, as determined by fire testing.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01700 - Execution Requirements: Verification of existing conditions before starting the work.
- B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required and ready to receive the work.
- C. Report, in writing, prevailing conditions that will adversely affect satisfactory execution of the work of this Section. Do not proceed with the work until the unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Condition woodwork to the average prevailing humidity conditions in the installation areas before installing.
- B. Install concrete inserts and similar anchoring devices to be built into substrates well in advance of the time the substrates are to be built.
- C. Prior to the installation of architectural woodwork, examine shop fabricated units for completion, and complete work as required, including back priming and removal of packing.

3.3 INSTALLATION

- A. Set and secure fixtures in place at the locations indicated on the Drawings.
- B. Cabinets and countertops shall be installed by factory-trained personnel, or by personnel experienced in installing the type of countertops and splashes required.

- C. Install the work plumb, level, true and straight with no distortions. Shim as required using concealed shims.
- D. Scribe and cut work to fit adjoining work; refinish cut surfaces or repair damaged finishes at cuts in strict accordance with the fabricator's instructions.
- E. Secure woodwork to anchorage devices or blocking built-in or directly attach to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nail as required for a complete installation. Except where prefinished matching fastener heads are required, use fine finishing nails for exposed nailing, countersink and fill flush with the woodwork surface. Match the final finish where transparent finish is indicated.
- F. Casework: Install without distortion so doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete the installation of hardware and accessory items as indicated. Maintain the indicated veneer sequence matching of casework with transparent finish.
- G. Secure fixtures to the floor using appropriate angles and anchorages.
- H. Countertops: Anchor securely to base units and other supports as indicated, in strict accordance with the fabricator's instructions.
- I. Wood Storage Shelving: Complete the assembly of units and install in the locations indicated, including hardware and accessories, as indicated.
- J. Finish: AWI quality standard. Leave woodwork in paint ready condition for final finishing by the painting applicator.
- K. Apply sealant at all joints between architectural woodwork and adjacent floor and walls.

3.4 CONSTRUCTION

- A. Interface with Other Work:
 - 1. Coordinate the installation sequence of fixtures with the trades providing utilities to the units.
- B. Tolerances:
 - 1. Fabrication: Variation of Components Size: + 1/8". Location of Openings: + 1/8" from the required location.
 - 2. Installation: 1/8" in 8'-0" for plumb and level, including countertops, and with 1/64", maximum, offset in flush adjoining surfaces; 1/32" maximum offsets in revealed adjoining surfaces.
- C. Finishing:
 - 1. Repair damaged and defective woodwork wherever possible to eliminate defects functionally and visually. Where not possible to repair to the satisfaction of the Owner's representative, replace the woodwork.
 - 2. Touch-up shop applied finishes to restore damaged and soiled areas.
 - 3. Adjust joiner for a uniform appearance.

4. Complete the finishing work specified as work of this Section, to whatever extent not completed in the shop or prior to installation of the woodwork.

3.5 ADJUSTING

- A. Section 01700 - Execution Requirements: Adjusting the installed work.
- B. Lubricate and make final adjustment of moving and operating parts for smooth and correct operation.

3.6 FIELD QUALITY CONTROL

- A. Section 01450 - Quality Control: Field inspection.
- B. Inspect woodwork installations for flush, plumb, level, alignment and secure attachment to substrates.

3.7 CLEANING

- A. Section 01700 - Execution Requirements: Cleaning and protection of installed work.
- B. Clean casework, counters, shelves, hardware, fittings and fixtures.
- C. Clean woodwork on exposed and semi-exposed surfaces.

3.8 PROTECTION

- A. Installer shall advise the Contractor and paint applicator of the procedures required to protect the woodwork during the remainder of the construction to ensure that the work will be without damage and deterioration at the time of final acceptance.
- B. Installer shall return to the Project prior to substantial completion, repair any damage to the work and readjust the hardware.

END OF SECTION

SECTION 06650
SOLID POLYMER FABRICATIONS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Countertops.
 - 2. Work surfaces.
 - 3. Vanities.
 - 4. Window sills.
 - 5. Preparation for installation and connection of utilities.
- B. Related Documents: The Contract Documents, as defined in Section 01010 - Summary of Work, apply to the work of this Section. Additional requirements and information necessary to complete the work of this Section may be found in other Documents.
- C. Related Sections:
 - 1. Section 06400 - Architectural Woodwork: Support for countertops, work surfaces and vanities.
 - 2. Section 07900 - Joint Sealers: Sealants for joints.
 - 3. Section 09110 - Non-Load Bearing Steel Framing: Blocking and backing plates in walls.
 - 4. Section 09250 - Gypsum Board: Adjacent wall substrate.
 - 5. Section 12305 - Science Casework and Laboratory Equipment: Support for countertops.
 - 6. Division 15 - Plumbing Fixtures.
 - 7. Division 16 - Wiring Devices.

1.2 DESCRIPTION OF WORK

- A. The extent of Solid polymer fabrications work is indicated on the Drawings and as specified herein, and includes providing, fabricating and installing cast synthetic polymer fabrications, splashes, inlays, adhesive, sealant, mounting accessories and preparation for installation of plumbing fixtures, and mechanical and electrical services by other trades.

1.3 REFERENCES

- A. The publications listed below form a part of this Specification to the extent referenced. Publications are referred to in the text by basic designation only. Comply with the

applicable standards of the following, as referenced herein.

B. American National Standards Institute (ANSI):

1. ANSI Z124.3 - Plastic Lavatories.
2. ANSI Z124.6 - Plastic Sinks.

C. American Society for Testing and Materials (ASTM):

1. ASTM C 501 - Test Method for Relative Resistance to Wear of Unglazed Ceramic Tile by the Taber Abraser.
2. ASTM D 256 - Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics.
3. ASTM D 570 - Test Method for Water Absorption of Plastics.
4. ASTM D 638 - Test Method for Tensile Properties of Plastics.
5. ASTM D 696 - Test Method for Coefficient of Linear Thermal Expansion of Plastics Between -30°C and 30°C With a Vitreous Silica Dilatometer.
6. ASTM D 785 - Test Method for Rockwell Hardness of Plastics and Electrical Insulating Materials.
7. ASTM D 790 - Test Method for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
8. ASTM D 2583 - Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor.
9. ASTM E 84 - Test Method for Surface Burning Characteristics of Building Materials.
10. ASTM G 21 - Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.
11. ASTM G 155 - Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials.

D. Americans with Disabilities Act Accessibility Guidelines (ADAAG):

1. Accessibility Guidelines for Buildings and Facilities.
2. Accessibility Guidelines for Schools

E. National Electrical Manufacturers Association (NEMA):

1. NEMA LD3 - High Pressure Decorative Laminates.

F. National Fire Protection Association (NFPA):

1. NFPA 255 - Method of Test for Surface Burning Characteristics of Building Materials.

- G. Underwriters Laboratories, Inc. (UL):
 - 1. UL 723 - Test for Surface Burning Characteristics of Building Materials.
- H. U. S. Environmental Protection Agency (EPA):
 - 1. Method 24 - Determination of Volatile Matter Content.

1.4 SUBMITTALS

- A. Section 01330 - Submittal Procedures: Procedures for submittals.
 - 1. Product Data: Manufacturer's current product literature for each product indicated.
 - 2. Shop Drawings: Show the location of each item, dimensioned plans, elevations, large scale details, construction joint locations, termination points, attachment devices and other components. Show locations and sizes of furring, blocking, including concealed blocking and reinforcement specified in Section 09110. Show locations and sizes of cutouts and hole for plumbing fixtures, faucets, soap dispensers, waste receptacle and other items to be installed in the solid surface.
 - 3. Samples:
 - a. Initial Samples: Unless specific products are scheduled, submit 2" x 2", minimum, size samples of the manufacturer's complete range of colors, patterns, and glosses for initial selection.
 - a. Final Samples:
 - 1). Submit two (2) 6" x 6" final samples matching the color, patten and gloss of those initially selected.
 - 2). Fused Joint Sample: Submit 6" x 10" samples showing fused joint work.
 - 3). One sample or each will be retained at the Project Site as the standard for the work.
 - 4. Assurance / Control Submittals:
 - a. Manufacturer's certificate that the products meet or exceed the specified requirements.
 - b. Manufacturer's Material Safety Data Sheets (MSDS).
 - c. Manufacturer's / Fabricator's certification that the products supplied comply with applicable federal and local regulations controlling the use of volatile organic compounds (VOC).
 - d. Manufacturer's Instructions indicating procedures and conditions requiring special attention, and cautionary procedures required during fabrication.
 - e. Documentation of experience indicating compliance with the specified qualifications requirements.

- f. Signed copy of the Fabricator's certificate, acknowledging that he / she has been trained and approved by the manufacturer.
 - B. Section 01780 - Closeout Submittals: Procedures for closeout submittals.
 - 1. Warranty: Provide a written special Warranty with forms completed in the name of the Owner and registered with the fabricator.
 - C. Maintenance Data: Submit Manufacturer's care and maintenance data, including repair and cleaning instructions.
- 1.5 QUALITY ASSURANCE
- A. Qualifications:
 - 1. Manufacturer: Company specializing in manufacturing the products specified with a minimum of five (5) years documented experience.
 - 2. Fabricator / Installer: Certified by the manufacturer, and has successfully completed fabrications of the type required for this Project, and has been continuously engaged in this type of work for not less than five (5) years.
 - B. Field Measurements: When possible, take field measurements prior to the preparation of Shop Drawings and fabrication to ensure proper fitting of the work, otherwise, indicate field measurements on the final Shop Drawings.
 - C. Installation to be by the Fabricator of the products, for single source responsibility.
- 1.6 DELIVERY, STORAGE AND HANDLING
- A. Section 01600 - Product Requirements: Transport, handle, store and protect the products.
 - B. Package products in packages, crates or containers for transport to the Project Site to prevent damage, water damage, soiling and deterioration.
 - C. Deliver sheets, fabricated items, materials and components to the Project Site in the fabricator's original, new, unopened, undamaged packages, crates or containers with identification labels intact.
 - D. Do not deliver products until wet work, grinding, painting and similar operations have been completed in the installation areas.
 - E. If, due to unforeseen circumstances, the fabrications must be stored in other than the installation areas, store only in areas meeting the requirements specified for the installation areas.
- 1.7 JOB CONDITIONS
- A. The Installer shall advise the Contractor of the temperature requirements for the installation areas.
 - B. Do not install the fabrications until the required temperature has been stabilized and will be maintained in the installation areas.
- 1.8 WARRANTY

- A. Section 01780 - Closeout Submittals: Procedures for closeout submittals.
- B. Special Warranty:
 - 1. Submit a written Warranty jointly signed by the solid polymer manufacturer and the fabricator certifying that the products and the installation is free of defective materials and workmanship, and will repair or replace any defective component or the fabrication, in whole or in part, as necessary to restore the product to its original intended state and integrity.
 - 2. Warranty Period: Ten (10) years from the date of Substantial Completion.

1.9 MAINTENANCE

- A. Section 01780 - Closeout Submittals: Procedures for closeout submittals.
- B. Provide manufacturer's maintenance kit for finishes.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with the Project requirements, manufacturers offering products which may be incorporated into the work include the following:
 - 1. Avonite Surfaces by Aristech Acrylics LLC..
 - 2. Corian by DuPont, Inc.
- B. Section 01600 - Product Requirements: Product Options: Substitutions: Not permitted.

2.2 MATERIALS

- A. General:
 - 1. Studio Collection by Avonite.
 - 2. D Series Corian by DuPont.
- B. Description:
 - 1. Non-porous, homogeneous material maintaining the same composition throughout, with a composition of polyester or acrylic polymer, aluminum trihydrate filler and pigment.
 - 2. Thickness: 3/4", unless shown otherwise specified.
 - 3. Colors and patterns, as selected, from the manufacturer's full line of standard colors and patterns
 - 4. Adhesive: Water-based adhesive as recommended by the polymer manufacturer for the substrate and conditions.
 - 5. Sealant: Mildew-resistant, FDA-compliant as recommended by the manufacturer; color to match the solid surface material.

2.3 FABRICATION

A. General:

1. Factory fabricate by a solid polymer manufacturer's certified fabricator.
2. Comply with the details shown for profile and construction of fabrications. Where not otherwise shown, comply with the manufacturer's written instructions.
3. Provide separate countertops for installation on casework or other support systems, as indicated.
3. Measurements: Before proceeding with fabrications required to be fitted to other construction, obtain measurements and verify the dimensions and Shop Drawings details, as required for an accurate fit. Where measuring substrates before fabrication would delay the project, proceed with the fabrication and provide sufficient borders and edges to allow for subsequent scribing and trimming for an accurate fit.
4. Fabricate from single piece material, except where the required length exceeds the maximum length produced by the manufacturer. Locate joints at even intervals through the material, aligned with other adjacent joints, and as approved on the final Shop Drawings. Form joints using the manufacturer's recommended adhesives for a smooth even appearance with matching color for an inconspicuous appearance. Provide joints of an equal or greater strength than the material being joined.
5. Pre-Cut Openings: Pre-cut openings in fabrications, wherever possible, to receive plumbing fixtures, electrical work and similar items. Locate the openings accurately, and use templates or roughing-in diagrams for the proper size and shape. Smooth edges of cutouts and, where located in countertops and similar exposures, seal the edges of cutouts with a water-resistant material.
6. Cutouts for sinks and lavatories shall be smooth and uniform without saw marks. The top and bottom of openings shall be finished smooth. Where edges are exposed, fabricate with 1/16" radius; 1/4" radius at cutouts, or as indicated.
7. Fabricate to accommodate plumbing fixtures, trim and drains.

A. Countertops and Work Surfaces:

1. Fabricate tops from 3/4" thick material with 1/2" thick x 6" high splashes and 2" skirts, unless otherwise indicated. Include 3/4" thick solid support braces with aluminum angle clips for interconnection of components.

C. Vanities:

1. Fabricate tops from 3/4" thick material with 1/2" thick x 6" high splashes and 4" skirt, unless otherwise indicated.

D. Window Sills:

1. Provide sizes and profiles as detailed. Where joints are required, locate at the center of openings or at the center line of window mullions.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01700 - Execution Requirements: Verification of existing conditions before starting the work.
- B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive the work.
- C. Report, in writing, prevailing conditions that will adversely affect satisfactory execution of the work of this Section. Do not proceed with the work until the unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General:
 - 1. Comply with manufacturer's recommendations.
 - 2. Cure fabrications for 24 hours, minimum, before exposure to moisture or pressure.
 - 3. Install the work plumb, level, true and straight with no distortions. Shim as required, using concealed shims. Install to a tolerance of 1/64" in 8'-0" for plumb and level; and with 1/32" maximum offsets in revealed adjoining surfaces.
 - 4. Scribe and cut work to fit adjoining work. Refinish cut surfaces and repair damaged finish at cuts.
- B. Anchorage:
 - 1. Anchor fabrications to anchors or blocking built-in or directly attached to substrates as detailed. Secure to grounds, stripping and blocking with concealed fasteners as required for a complete installation.
 - 2. Securely anchor countertops to base units and other support systems as indicated.
- C. Countertops, Work Surfaces and Vanities:
 - 1. Anchor units to supports using concealed fasteners. Do not use continuous adhesive application. Field cut as required for plumbing fixtures and fittings. Plumbing fixtures, trim, drains, and connections are specified in Division 15. At recesses, install loose splashes with adhesive. Seal joints and perimeter with matching acrylic sealant as specified in Section 07900 - Joint Sealers, except at Vanities, use matching mildew-resistant silicone sealant as specified in Section 07900.
- D. Window Sills:
 - 1. Anchor window sills to substrate with non-staining adhesive as recommended by both stool and adhesive manufacturer. Cut and trim to fit with joints only at

approved locations. Make seamless joints. Fill joints between stools and other materials with acrylic sealant as specified in Section 07900.

3.3 ADJUSTING

- A. Section 01700 - Execution Requirements: Adjusting the installed work.
- B. Repair soiled, damaged and defective fabrications wherever possible to eliminate defects functionally and visually; where not possible to repair properly, replace the fabrications.

3.4 FIELD QUALITY CONTROL

- A. Section 01450 - Quality Control: Field inspection.
- B. Inspect installations for level, inconspicuous joints, tight fit to adjacent surfaces and secure attachment to substrates.

3.5 CLEANING

- A. Section 01700 - Execution Requirements: Cleaning the installed work.
- B. Clean exposed and semi-exposed surfaces.
- C. Remove adhesives, sealants and other stains.

3.6 PROTECTION

- A. The Fabricator / Installer shall advise the Contractor of the protection and maintained conditions necessary to ensure that the work will be without damage or deterioration at the time of final acceptance.

END OF SECTION

SECTION 07110
WATERPROOFING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Below grade walls waterproofing.
2. Existing below grade walls affected by new construction waterproofing.
3. Planters waterproofing.
4. Concrete parking and traffic decks waterproofing.
5. Horizontal roof slabs supporting earth waterproofing.
6. Split concrete slabs waterproofing.

B. Related Documents: The Contract Documents, as defined in Section 01010 - Summary of Work, apply to the work of this Section. Additional requirements and information necessary to complete the work of this Section may be found in other Documents.

C. Related Sections:

1. Section 03300 - Cast-In-Place Concrete: Substrate for waterproofing.
2. Section 04230 - Reinforced Unit Masonry: Substrate for waterproofing.
3. Section 04400 - Natural Stone: Dampproofing under natural stone.
4. Section 07190 - Water Repellents (Sealer): Water repellents and slurry coat dampproofing.
5. Section 09300 - Tile: Dampproofing under ceramic and quarry tile flooring.

1.2 DESCRIPTION OF WORK

- A. The extent of each type of waterproofing is indicated on the Drawings and as specified herein, and includes providing and installing all waterproofing materials. Similar work used as an exposed finish is excluded by definition and, if required, is specified as roofing, flooring, special coating or other appropriate category.

1.3 REFERENCES

- A. The publications listed below form a part of this Specification to the extent referenced. Publications are referred to in the text by basic designation only.
- B. American Society for Testing and Materials (ASTM):
1. ASTM C 642 - Test Method for Water Absorption.
 2. ASTM D 56 - Test Method for Flash Point by Closed Cup Tester.

3. ASTM D 3960 - Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings.
4. ASTM E 514 - Test Method for Water Penetration and Leakage Through Masonry.
- C. U. S. Environmental Protection Agency (EPA):
 1. Method 24 - Determination of Volatile Matter Content.

1.4 SUBMITTALS

- A. Section 01330 - Submittals: Procedures for submittals.
 1. Product Data: Submit manufacturer's specifications, recommendations for water repellents for each surface specified, performance data, surface preparation and application instructions, precautions for materials which can contaminate the system, limitations to coating, protection and cleaning instructions and VOC content. Include recommendations for sealing penetrations, cracks and control, construction and expansion joints. Submit color charts for products required to be integrally colored.
 2. Shop Drawings: Indicate details critical to water tightness of the membrane, including, but not necessarily limited to, membrane transitions / terminations at perimeters, drains, sleeves and other penetrating elements.
 3. Samples: For each type of waterproofing system, submit a 8-1/2" x 11" board sample of each complete system. Where the membrane is a layered system, expose at least 1" of each succeeding layer. Top coats to be provided with Project required colors as selected.
 4. Assurance / Control Submittals:
 - a. Manufacturer's certificate that the products meet or exceed the specified requirements.
 - b. Manufacturer's Material Safety Data Sheets (MSDS).
 - c. Manufacturer's certification that the products supplied comply with applicable federal and local regulations controlling the use of volatile organic compounds (VOC).
 - d. Manufacturer's Instructions indicating procedures and conditions requiring special attention, and cautionary procedures required during application.
 - e. Documentation of experience indicating compliance with the specified qualifications requirements.
- C. Section 01780 - Closeout Submittals: Procedures for closeout submittals.
 1. Warranty: Submit a written special Warranty with forms completed in the name of the Owner and registered with the manufacturer.

1.5

QUALITY ASSURANCE

- A. Qualifications:

1. Manufacturer: Company specializing in manufacturing the products specified with a minimum of five (5) years documented experience, and has a record of successful in-service performance.
 2. Applicator: Company experienced in applying the types of waterproofing required for this Project for not less than five (5) years, and is acceptable to the primary waterproofing materials manufacturer. Employees assigned to the Project shall have been trained by an approved waterproofing materials manufacturer.
- B. Mockup: Apply water repellent to a mockup, either partial or full coverage, as directed, before proceeding with the application. Comply with the application requirements contained herein.
- C. Regulatory Requirements: Comply with applicable rules and regulations of the pollution-control regulatory agency having jurisdiction regarding volatile organic compounds (VOC) and use of hydrocarbon solvents.
- D. General: Obtain the primary materials from a single manufacturer. Provide secondary materials only as recommended by the manufacturer of the primary materials.
- E. Manufacturer's Technical Representative:
1. The primary waterproofing materials manufacturer to make a Technical Representative available to monitor the on-going work to ensure proper application of the waterproofing system. The manufacturer must maintain the same Technical Representative for the duration of the Project.
 2. Pre-Application Review: Prior to the start of work and the purchase of any materials, the Manufacturer's Technical Representative, who is to certify each application, shall visit the Project Site, review existing conditions, and review the Contract Document for appropriateness of the requirements with the specified manufacturer's system including, but not necessarily limited to membrane requirements, substrate preparation, membrane terminations, reinforcements, flashing conditions, penetrations, including multiple penetration requirements, joints required and treatment and protection of the membrane.
 3. Certification: After the Manufacturer's Technical Representative's review, submit written certification of the appropriateness of the requirements, or submit other or additional specific recommendations, if any, to assure that the specified system is appropriate for the use intended and complete in scope to assure its intended performance. This should be coordinated with the Shop Drawing Submittal.
 4. Substrate Certification: Submit the Technical Representative's written certification of compliance that the prepared substrate is in conformance with requirements necessary for the system installation. Certification of the substrate is to be accomplished just prior to the start of application of the membrane system.
 5. Technical Representative's Field Review of Work:
 - a. Number of Site Visits: Submit the manufacturer's recommended minimum number of times the Technical Representative is to field review the work to ensure success of the installation. Indicate when such visits are to be made.
 - b. Field Reports: For each visit, the Technical Representative shall submit a detailed Field Report assessing each application. Field Reports to

indicate the date, time of day, length of each visit, weather condition during the visit, condition of the substrate at the time of application, application procedures, and other important aspects that affect success of the application. Submit Reports within seven (7) days after each Site visit.

- F. Performance Requirements: It is required that the waterproofing membrane be watertight, and not deteriorate in excess of the limits published by the membrane manufacturer.

1.6 COORDINATION

- A. Pre-Application Conference: Prior to start of the application of materials, meet at the Project Site with the Owner's representative, Architect, Contractor, Applicator and subcontractors whose work penetrates the surfaces to be waterproofed. Review the conditions, methods and procedures necessary for application of the work, including inspections of the areas of work, requirements of the Specifications and the manufacturer's literature; review submittals and schedules.
- B. Tolerances / Finish of Substrates: Coordinate with other trades providing substrates over which the waterproofing is scheduled for the required tolerances, conditions and finish of the substrates necessary to ensure successful application of the work of this Section. Coordinate in a timely manner so other trades can implement their requirements in accordance with the Job Schedule. Submit documentation of the coordination, including the date of the coordination, with whom coordinated, and the requirements specified.
- C. Control Joints: Control joints are indicated on the Drawings. Where additional or other configuration for control joints is required in substrates other than what is currently required to ensure success of each membrane application, submit the requirements to the Owner's representative for review, and arrange with the substrate installer for installation of such control joints.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Section 01600 - Product Requirements. Transport, handle, store, and protect the products.
- B. Deliver products to the Project Site in the manufacturer's original, new and unopened packages or containers with seals and labels intact; dry and undamaged, bearing the product name, color, manufacturer's lot number, directions for use and precautionary labels.
- C. Store materials not in actual use, in tightly covered containers. Maintain containers used in the storage of materials, in a clean condition, free of foreign materials and residue.
- D. Store materials in a well ventilated area, and in compliance with the manufacturer's published instructions.
- E. Store and handle materials to prevent deterioration and damage due to moisture, temperature changes, contaminants, and other causes.
- F. Protect against fire hazards and spontaneous combustion.
- G. Keep storage areas neat and orderly. Remove waste daily.
- H. Take all precautions to ensure that workmen and the work areas are adequately protected from health hazards resulting from handling, mixing and application of the materials.

1.8 JOB CONDITIONS

- A. Proceed with the waterproofing work only after the substrate construction and penetrating work has been completed.
- B. Environmental Requirements: Do not apply products under any of the following conditions, except with the written recommendation of the manufacturer:
 - 1. Substrate surfaces cured less than thirty (30) days.
 - 2. Surfaces not dry for a minimum of 24 hours.
 - 3. Rain predicted within 24 hours.

1.9 WARRANTY

- A. Section 01780 - Closeout Submittals: Procedures for closeout submittals.
- B. Special Warranty:
 - 1. Provide a joint and severable written Warranty signed by the waterproofing materials manufacturer, Contractor and the Applicator, agreeing to repair or replace defective materials and workmanship, defined to include leakage of water, ruptures caused by cracking substrate up to 1/16", abnormal aging or deterioration of materials, and other failures of membranes to perform as required within the warranty period. Warranty shall include responsibility for removal and replacement of other work which conceals the waterproofing membrane.
 - 2. During the warranty period, repairs and replacements required because of acts of God and other events beyond the Contractor's / Applicator's control, and which exceed the performance requirements, shall be completed by the Contractor / Applicator and paid for by the Owner at the prevailing rates.
 - 3. Warranty Period: Five (5) years from the date of Substantial Completion of the waterproofing work.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with the Project requirements, manufacturers offering products which may be incorporated into the work include the following:
 - 1. Urethane Polymers International (UPI).
 - 2. Carlisle Coatings and Waterproofing, Inc. (CCW).
- B. Section 01600 - Product Requirements: Product Options: Substitutions permitted.

2.2 SYSTEM

- A. The following specifications are based on Urethane Polymers International products to establish quality.
- B. Other acceptable manufacturer's systems shall be equivalent.

2.3 WATERPROOFING MATERIALS

- A. WP-1 (for vertical and horizontal surfaces below grade, masonry backer walls and inside planters): Single component, fluid-applied, modified elastomeric waterproof membrane, UPI System BG-7011-90 Mil by Urethane Polymers or approved equal; 90 mils thickness for walls and vertical surfaces.
- B. WP-2 (for horizontal roof slabs supporting earth or paving and split slab construction): UPI System BG-7011-R-90 Mil or approved equal.
- C. WP-3 (for exposed concrete parking and vehicular traffic decks): Single component, moisture-curing, polyurethane elastomeric membrane UPI Uradek System #70-S for parking stalls; Uradek System #70-H or approved equal for entrances, ramps and drives.
- D. Caulking Compound: Single component, polyurethane as recommended by the primary waterproofing materials manufacturer.
- E. Aggregate: As recommended by the manufacturer and approved by the Owner's representative.
- F. Other materials as recommended by the manufacturer of the prime materials.

2.4 PROTECTION / DRAINAGE BOARD

- A. Composite structure of a molded, three-dimensional, high impact-resistant polymeric sheet with a filter fabric bonded to the open side. ACCW MiraDRAIN 6000" as manufactured by Carlisle Coatings or approved equal.
 - 1. Attach panels to the substrate with an adhesive recommended by the manufacturer.

2.5 MISCELLANEOUS MATERIALS

- A. Parge Coat: Where the manufacturer requires a portland cement parge coat over rough or porous substrates, the Contractor shall provide such parge coat as required at no additional cost. Failure of the parge coat or the absence of a parge coat will be considered as failure of the membrane system to perform as the parge coat is a required condition for the membrane's success over substrates requiring a parge coat.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01700 - Execution Requirements: Verification of existing conditions before starting the work.
- B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive the work.
 - 1. Verify that joint sealants are installed and cured.
 - 2. Verify that surfaces to be coated are dry, clean, and free of efflorescence, oil, and other matter detrimental to application of the coating.
- C. Report, in writing, prevailing conditions that will adversely affect satisfactory execution of the work of this Section. Do not proceed with the work until the unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrate surfaces of projections and substances detrimental to the work, acid etch smooth surfaces, fill all voids to comply with recommendations of the prime materials manufacturer. Stripe coat all cracks up to 1/16" wide, rout and patch cracks larger than 1/16".
- B. Moisture Content Testing: Just prior to application, test substrates with an electronic moisture meter. Do not proceed until the moisture content is within the manufacturer's acceptable tolerances.
- C. Protection of Other Work: Do not allow liquid or mastic compounds to enter and clog drains, sleeves or conductors. Prevent spillage and migration onto other surfaces of the work by masking or otherwise protecting the adjoining work.

3.3 INSTALLATION

- A. General: Comply with the manufacturer's instructions, except where more stringent requirements are shown or specified, and except where Project conditions require extra precautions or provisions to ensure satisfactory performance of the work.
- B. Thickness Testing: Monitor mil thickness application by a monitoring method recommended by the Manufacturer's Technical Representative for each specific system.
- C. Reinforcement: Unless otherwise acceptable, or as otherwise recommended, in writing, by the Manufacturer's Technical Representative, reinforcement is to be provided as follows and in the manner indicated:
 - 1. Material: Manufacturer's recommended elastomeric sheet and / or polyester fabric fully encapsulated in the primary membrane coating of a thickness equal to the total thickness required for the primary membrane, unless otherwise recommended by the manufacturer, and has been reviewed and approved on submittals.
 - 2. Transitions: At transitions from vertical to horizontal, at inside and outside corners, and at other similar transitions that are not expansion / control joints, penetrations, or cracks, embed reinforcement of a width that extends 6", minimum, onto each surface on each side of the intersection.
 - 3. Expansion / Control Joints: Embed reinforcement of a width necessary to extend the material 6", minimum, on each side of the joint, plus additional materials, as necessary, to accommodate movement of the joint. Small joints are to be bridged over backer rods placed in the joints. Reinforcement is to be looped down into the joints with backer rod placed in the loop.
 - 4. Penetrations: 36" square reinforcement, but not less than necessary to extend out in all directions from the penetration a distance of 12", minimum, beyond the flange of each penetration.
 - a. Pipes, Conduits, and Similar Components: Construct a form fitting elastomeric boot 6", minimum, in height and with an integral elastomeric flange extending 6", minimum, onto the wall or deck. The boot shall be fully adhered to the penetrating element and fully encapsulated at the interface with the wall or deck. Apply 36" square reinforcement material over this, fully encapsulated in the primary membrane material.

- b. Cracks: Encapsulated reinforcement of a width necessary to extend the material 6", minimum, on each side of the crack.

3.4 APPLICATION

- A. WP-1: Prime coat the substrate surface at the rate of 250 - 300 sq. ft. / gallon. Apply with rollers, two or more coats of (30 dry mils) at the rate of 4.5 gallons / 100 sq. ft. to produce 90 dry mils total thickness at vertical surfaces. Allow 18 hours curing time between coats.
 - 1. Attach Protection / Drainage Boards to all vertical and horizontal surfaces with adhesive per the manufacturer's recommendations. Set panels with the fabric toward the earth side. Lap fabric a minimum of 2". Install at below grade walls and retaining walls. Lap fabric at the top of the highest course and embed in waterproofing to ensure that loose material cannot enter and accumulate behind the protection / drainage board. Backfill against boards with approved material.
- B. WP-2: Apply a surface conditioner to concrete substrates in accordance with the manufacturer's instructions. Apply membrane in three (3) applications at a rate to provide a continuous monolithic coating of 30 dry mils, average thickness per coat, and 90 mils total thickness. Provide flashing in accordance with the manufacturer's standard details. Where protection board is required, embed into the membrane to ensure good bond. Place protection boards in a staggered pattern and butt boards tightly together.
- C. WP-3: Prime and apply a 30 mil thick coating to cover and overlap shrinkage cracks, integral flashings, caulked expansion joints and construction joints. Apply a 25 mil base coat, 25 mil intermediate coat, and two (2) 10 mil top coats to produce 70 mils total thickness, exclusive of aggregate. Broadcast aggregate in the first top coat.

3.5 MEMBRANE TESTING

- A. Water Test: Conduct water containment tests to ensure that the membranes are watertight.
- B. Horizontal Membranes: For installations where the primary membrane is horizontal, contain waterproofed areas in a manner to prevent 2", minimum, depth of water from escaping by damming any open perimeters and sealing the drains.
- C. Pan Membranes: For installations where the primary membrane forms a continuous container with the bottom and all vertical sides enclosed, such as planters, seal the drains and fill the container to within 1" of the top termination of the membrane.
- D. Method of Containment: Dams, seals, and other methods used to contain water should be capable of fully containing water for the period of time required. The method of containment should not damage the adjacent work.
- E. Period of Containment: 48 hours without loss of water, except for that by natural evaporation, and without evidence of failure in the membrane in any manner.
- F. Report: Submit a report of tests to the Owner's representative indicating the location of the test, date and time of the test, weather conditions and results.

3.6 PROTECTION

- A. Contractor's Operations: The Contractor to verify the kinds of operations that will be conducted around or over installed membranes. The Owner's representative will advise the Contractor of the measures that must be implemented to ensure that the membranes will be without damage at the time of Substantial Completion.

- B. Buried Installations: At the time of backfill / fill, at the time of installation of irrigation and landscaping over buried membranes, and at any other time where the Contractor's operations may have an adverse effect on a buried membrane system, the Manufacturer's Technical Representative shall observe to ensure that the Contractor's operations are being conducted in a manner that will protect the membranes from damage.

3.7 FIELD QUALITY CONTROL

- A. Section 01450 - Quality Control: Field inspection.
- B. Inspect installations for tight and waterproof joints and proper thickness of membrane applications.

3.8 CLEANING

- A. Section 01700 - Execution Requirements: Cleaning the installed work.
- B. Clean all spills. Do not leave splatters or drips.
- C. Do not allow seepage of waterproofing through joints.

END OF SECTION

SECTION 07120
FLUID-APPLIED URETHANE ROOFING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Fluid-applied, elastomeric polyurethane membrane roofing system for new and existing, exposed concrete roof slabs.
 - 2. Walking surfaces over concrete roof slabs.
- B. Related Documents: The Contract Documents, as defined in Section 01010 - Summary of Work, apply to the work of this Section. Additional requirements and information necessary to complete the work of this Section may be found in other Documents.
- C. Related Sections:
 - 1. Section 03300 - Cast-In-Place Concrete: Substrate for roofing materials.

1.2 DESCRIPTION OF WORK

- A. The extent of fluid-applied waterproofing over new and existing concrete roof slabs, including walking surfaces is indicated on the Drawings and as specified herein, and includes providing and applying all the required products.

1.3 REFERENCES

- A. The publications listed below form a part of this Specification to the extent referenced. Publications are referred to in the text by basic designation only.
- B. American Society for Testing and Materials (ASTM):
 - 1. ASTM C 501 - Test Method for Relative Resistance to Wear of Unglazed Ceramic Tile by the Taber Abraser.
 - 2. ASTM C 957 - Specification for High-Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane With Integral Wearing Surface.
 - 3. ASTM D 412 - Test Methods for Vulcanized Rubber and Thermoplastic Elastomers - Tension.
 - 4. ASTM D 624 - Test Methods for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers.
 - 5. ASTM D 822 - Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings.
 - 6. ASTM D 903 - Test Method for Peel or Stripping Strength of Adhesive Bonds.
 - 7. ASTM D 1004 - Test Method for Tear Resistance (Graves Tear) of Plastic Film and Sheeting.

8. ASTM D 2240 - Test Method for Rubber Property - Durometer Hardness.
9. ASTM E 96 - Test Methods for Water Vapor Transmission of Materials.
- C. National Roofing Contractors Association (NRCA):
 1. Roofing and Waterproofing Manual.
- D. Underwriters Laboratories Inc.:
 1. UL 790 - Test Method for Fire Test of Roof Coverings.
- E. U. S. Environmental Protection Agency (EPA):
 1. Method 24 - Determination of Volatile Matter Content.

1.4 SUBMITTALS

- A. Section 01330 - Submittal Procedures: Procedures for submittals.
 1. Product Data: Provide data for primer, membrane roofing, flexible flashings, joint and crack sealants and temperature range for application of the waterproofing membrane.
 2. Shop Drawings: Sequence drawings and details for special conditions not covered by the manufacturer's standard details.
 3. Samples: Not less than 6" x 6" in size showing the applied thickness, texture and color.
 4. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.
 5. Assurance / Control Submittals:
 - a. Manufacturer's certificate that the products meet or exceed the specified requirements.
 - b. Manufacturer's Material Safety Data Sheets (MSDS).
 - c. Manufacturer's certification that the products supplied comply with applicable federal and local regulations controlling the use of volatile organic compounds (VOC).
 - d. Manufacturer's instructions indicating procedures and conditions requiring special attention, and cautionary procedures required during application.
 - e. Documentation of experience indicating compliance with the specified qualifications requirements.
- B. Section 01780 - Closeout Submittals: Procedures for closeout submittals.
 1. Warranty: Submit a written special Warranty with forms completed in the name of the Owner and registered with the manufacturer.

1.5 QUALITY ASSURANCE

- A. Qualifications:
1. Manufacturer: Company specializing in manufacturing aromatic and aliphatic urethane roofing systems materials with a minimum of five (5) years documented experience in high temperature, high UV and high humidity environments.
 2. Authorized Applicator: Company specialized in, and has successfully completed applications of the same or similar type of materials for not less than five (5) years.
 - a. Applicator shall be specifically approved as a factory-authorized Applicator, in writing, by the roofing system manufacturer.
 - b. Submit the manufacturer's written approval and certification of the Applicator.
 - c. Applicator's equipment and training shall conform to the manufacturer's standards.
 - d. As applicable, assign work closely associated with waterproofing, including, but not limited to, waterproofing accessories, flashing in connection with waterproofing, expansion joints in membranes, and insulation and protection courses in membranes, to the waterproofing Applicator for undivided responsibility.
 - e. Applicator shall conform strictly to the manufacturer's ^AQuality Assurance Program[®] requirements.
- B. Source Quality Control: Obtain the primary waterproofing materials from a single manufacturer. Provide secondary materials only as recommended by the primary materials manufacturer.
- C. Manufacturer's Technical Representative:
1. The primary waterproofing materials manufacturer to make a Technical Representative available to monitor the on-going work to ensure proper application of the roofing system. The manufacturer must maintain the same Technical Representative for the duration of the Project.
 2. Pre-Application Review: Prior to the start of work and the purchase of any materials, the Manufacturer's Technical Representative, who is to certify each application, shall visit the Project Site, review existing conditions, and review the Contract Document for appropriateness of the requirements with the specified manufacturer's system including, but not necessarily limited to, the substrate and application conditions.
 3. Certification: After the Manufacturer's Technical Representative's review, submit written certification of the appropriateness of the requirements, or submit other or additional specific recommendations, if any, to assure that the specified system is appropriate for the use intended and complete in scope to ensure its intended performance. This should be coordinated with the Shop Drawing Submittal.
 4. Substrate Certification: Submit the Technical Representative's written certification of compliance that the prepared substrate is in conformance with requirements necessary for application of the system. Inspection and certification of the substrate is to be accomplished just prior to the start of application of the membrane system.

5. Technical Representative's Field Review of Work:

- a. Number of Site Visits: Submit the manufacturer's recommended minimum number of times the Technical Representative is to field review the work to ensure success of the application. Indicate the stages of work when such visits are to be made.
 - b. Field Reports: For each visit, the Technical Representative shall submit a detailed Field Report assessing each application. Field Reports to indicate the date, time of day, length of each visit, weather conditions during the visit, condition of the substrate at the time of application, application procedures, and other important aspects that affect success of the application. Submit Reports within seven (7) days after each Site visit.
- D. Regulatory Requirements: Comply with the applicable rules and regulations of the EPA and the local pollution control regulatory agency having jurisdiction regarding volatile organic compounds (VOC) and the use of hydrocarbon solvents.
- E. Performance Requirements: It is required that the fluid-applied waterproofing membrane be watertight, and not deteriorate in excess of the limits published by the membrane manufacturer.
- F. Caution: Do not apply fluid-applied waterproofing membrane to on-grade slabs, split slabs with buried membrane or on slabs over unvented metal pans without prior approval of the roofing membrane manufacturer.

1.6 COORDINATION

- A. Pre-Application Conference: Prior to start of the application of materials, meet at the Project Site with the Owner's representative, Architect, Contractor, Applicator and subcontractors whose work penetrates the surfaces to be roofed. Review the conditions, methods and procedures necessary for application of the work, including inspection of the areas of work, requirements of the Specifications and the manufacturer's literature; review submittals and schedules.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Section 01600 - Product Requirements: Transport, handle, store, and protect the products.
- B. Deliver products to the Project Site in the manufacturer's original, new and unopened packages and containers with seals and labels intact; dry and undamaged, bearing the product name, color, manufacturer's lot number, directions for use and precautionary labels.
- C. Store materials not in actual use, in tightly covered containers. Maintain containers used in the storage of materials, in a clean condition, free of foreign materials and residue.
- D. Store materials in a well ventilated area, and in compliance with the manufacturer's written instructions.
- E. Keep storage areas neat and orderly. Remove waste daily.
- F. Protect against fire hazards and spontaneous combustion.
- G. Take all precautions to ensure that workmen and the work areas are adequately protected from health hazards resulting from handling, mixing and application of the materials.

1.8 JOB CONDITIONS

- A. Proceed with the work only after the substrate construction and penetrating work has been completed.
- B. Proceed with the work only when existing and forecasted weather conditions will permit work to be performed in accordance with the manufacturer's recommendations. Do not apply products under the following conditions:
 - 1. Substrate surfaces have cured less than thirty (30) days.
 - 2. Rain is predicted within 24 hours.
 - 3. Surfaces have not been dry for a minimum of 24 hours.
- C. Provide adequate ventilation to prevent the accumulation of hazardous fumes during the application of solvent-based components in enclosed spaces; maintain ventilation until the coatings have thoroughly cured.
- D. Warn personnel against breathing vapors and contact of materials with the skin and eyes.
- E. Ensure that workmen wear the appropriate approved respiratory gear and protective clothing.
- F. Ensure that all gas flames and electrical apparatus are shut down during the coating application and curing.

1.9 SAFETY / COORDINATION

- A. All application, material handling and associated equipment shall conform to, and be operated in conformance with OSHA safety requirements.
- B. Manufacturer's Material Safety Data Sheets (MSDS) shall be read, understood and the instructions adhered to.
- C. A sufficient number of filled and operating fire extinguishers meeting current standards must be on the roof deck at all times during application of the roofing materials.

1.10 WARRANTY

- A. Section 01780 - Closeout Submittals: Procedures for closeout submittals.
- B. Special Warranty:
 - 1. Provide a written joint and severable Warranty signed by the roofing materials manufacturer, Contractor and Applicator, agreeing to repair or replace defective materials and workmanship, defined to include leakage of water, ruptures caused by cracking substrate up to 1/16", abnormal aging or deterioration of materials, and other failures of the membrane to perform as required within the warranty period. Warranty shall include responsibility for removal and replacement of other work which conceals the membrane waterproofing.
 - 2. During the warranty period, repairs and replacements required because of acts of God and other events beyond the Contractor's / Applicator's control, and those which exceed the performance requirements, shall be completed by the Contractor / Applicator and paid for by the Owner at the prevailing rates.
 - 3. Warranty Period: Five (5) years from the date of Substantial Completion of the

roofing work.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with the Project requirements, manufacturers offering products which may be incorporated into the work include the following:
1. Urethane Polymers International, Inc.
 2. Carlisle Coatings & Waterproofing.
- B. Section 01600 - Product Requirements: Product Options: Substitutions not permitted.

2.2 SYSTEM

- A. The following specifications are based on Urethane Polymers International, AM-C-Thane 4556 - 60 Mil@ system to establish quality.
- B. Other acceptable manufacturer's systems shall be equivalent.

2.3 ELASTOMERIC ROOFING MATERIALS

- A. Primer: UI-7012 water-based, or UI-7112 solvent-based, Epoxy-Polyamide, low viscosity, two-component primer / sealer; as recommended by the membrane manufacturer.
- B. Base Membrane: UI-7013 single-component, high-adhesion, moisture-cured, polyurethane membrane. Meet or exceed the following typical properties:

<u>Property</u>	<u>Typical Value</u>	<u>Test Method</u>
Composition	Aromatic Urethane	
Weight Solids	86 +/- 2%	
VOC Content	Less than 200 gm / l	
Hardness, Shore A	65 +/- 5	ASTM D 2240
Tensile Strength	900 +/- 100 psi	ASTM D 412
Ultimate Elongation	650 +/- 100%	ASTM D 412
Tear Resistance	150 +/- 25 lbs / in.	ASTM D 1004
Weather Resistance	Slight checking@ 500 hours	ASTM D 822
Adhesion to Concrete	30 pli	ASTM D 903

- C. Elastomeric Membrane: UI-7013-HT, single component, high tensile strength, moisture-cured, liquid elastomeric polyurethane. Meet or exceed the following typical properties:

<u>Property</u>	<u>Typical Value</u>	<u>Test Method</u>
Composition	Aromatic Urethane	
Weight Solids	81 +/- 2%	
VOC Content	Less than 250 gm / l	
Hardness, Shore A	80 +/- 5	ASTM D 2240
Tensile Strength	2500 +/- 250 psi	ASTM D 412
Ultimate Elongation	450 +/- 50%	ASTM D 412
Tear Resistance	250 +/- 50 lbs / in.	ASTM D 1004
Weather Resistance	Slight chalk @ 1,000 hrs.	ASTM D 822

Adhesion to Base Coat 30 pli ASTM D 903

- D. Top Coat: UI-7016-HS, single-component, high tensile strength, abrasion-resistant, weather-resistant, aliphatic polyurethane. Meet or exceed the following typical performance properties:

<u>Property</u>	<u>Typical Value</u>	<u>Test Method</u>
Composition	Aliphatic, Saturated Polyester Urethane	
Weight Solids	75 +/- 2%	
VOC Content	Less than 250 gm / l	
Hardness, Shore A	90 +/- 5	ASTM D 2240
Tensile Strength	3500 +/- 300 psi	ASTM D 412
Ultimate Elongation	250 +/- 50%	ASTM D 412
Tear Resistance	300 +/- 50 lbs / in.	ASTM D 1004
Water Permeability	Less than 0.1 Perm	ASTM E 96 / E 96M
Weather Resistance	No chalking @ 2000 hrs.	ASTM D 822
Abrasion Resistance	Negligible change, CS-17 wheels, 1000 cycles, 1,000 gm. load	ASTM C 501
Color	White, or as selected	

2.4 ACCESSORIES

- A. Flexible Flashing: 45-60 mils, thickness neoprene sheet or non-woven reinforcing fabric, or as recommended by the roofing materials manufacturer.
- B. Embedded Flashing / Reinforcing: Non-woven fabric as recommended by the roofing materials manufacturer.
- C. Joint and Crack Sealant: One- or two-component polyurethane compound, as recommended by the roofing membrane manufacturer.
- D. Caulking Compound: One- or two-component polyurethane compound as approved by the roofing membrane manufacturer.
- E. Aggregate: Rounded, non-angular, pre-blended 20 / 30 mesh, flint shot silica, ground glass, Monterey sand, or equivalent washed and kiln-dried aggregate; free of foreign materials; hard and stable to atmospheric conditions.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01700 - Execution Requirements: Verification of existing conditions before starting the work.
- B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive the work.
 - 1. Roofing Applicator, Manufacturer's Technical Representative and the Owner's Representative must jointly examine the substrates and conditions under which the roofing work is to be done.
 - 2. Verify that substrate surfaces are durable, free of matter detrimental to adhesion

and application of the roofing materials.

3. Verify that substrate surfaces are smooth, free of honeycomb and pitting, and not detrimental to full contact bond of the waterproofing materials.
 4. Verify that items which penetrate surfaces to receive the roofing are installed and secured in-place.
- C. Report, in writing, prevailing conditions that will adversely affect satisfactory execution of the work of this Section. Do not proceed with the work until the unsatisfactory conditions have been corrected.

3.2 CONDITION OF CONCRETE SURFACES

- A. Concrete surfaces shall have a steel troweled finish, free of fins, ridges, voids and air entraining holes.
- B. Cured at least 28 days or until completely dry by the water curing method. Curing compounds or chemical curing agents shall not be used without prior approval of the roofing manufacturer.
- C. Surfaces shall be sloped for proper drainage.
- D. Saw-cut control joints and / or expansion joints shall have been properly installed at strategic locations throughout the field of the deck.
- E. Required crickets and drains shall be cast monolithic with the main roof deck.
- F. Concrete decks poured over precast AT's®, planks or slabs, shall have control joints placed directly over all corresponding joints and openings in the precast units.
- G. Coordinate with Section 03300 - Cast-In-Place Concrete.

3.3 PREPARATION

- A. Finish voids, rock pockets and excessively rough surfaces with epoxy grout or grind to match the unrepaired areas.
- B. Apply bond breaker per the manufacturer's recommendations, fill voids and seal joints with polyurethane sealant; pay particular attention to construction joints.
- C. Clean, prime, install backing rod and caulk all expansion and contraction joints with elastomeric polyurethane sealant.
- D. Repair of concrete cracks and spalls:
 1. All cracks over 1/16" in width and all moving cracks less than 1/16" in width shall be routed out to 1/4" minimum, width and depth, and filled flush with polyurethane elastomeric sealant.
 2. Joints less than 1/2" in width and all caulked cracks shall be stripe-coated with a 30 mil preparatory coat of Base Membrane for a width of 3" on either side of the crack.
 3. Apply 45 to 60 mil thick neoprene flashing or non-woven reinforcing fabric over all cracks as recommended by the membrane manufacturer.
- E. Treatment of Roof Penetrations:

1. Caulk around and along the perimeters of duct and pipe penetrations with polyurethane elastomeric sealant.
 2. Apply a 3/4" cant of sealant around all pipes, drains and vertical junctions.
 3. Apply 30 mils of polyurethane membrane coating 6" vertically, 6" horizontally on surfaces around roof penetrations.
- F. Correct ponding water locations for smooth flow into roof drains; use epoxy topping where required to build up slopes.
- G. Clean concrete substrate of projections and substances detrimental to the work.
- H. Thoroughly clean and dry concrete surfaces free of laitance, surface contaminants and cleaning residue. Clean and prepare surfaces to receive roofing in accordance with the manufacturer's published instructions.
- I. Protect adjacent surfaces not scheduled to receive roofing. Mask off surfaces to effectively prevent spillage and overspray of liquid materials outside the membrane area.
- J. Protect landscaping, property, personnel and vehicles from over spray and drift.

3.4 FLASHING REINFORCEMENT

- A. Install all required metal and neoprene flashings and fabric flashing reinforcement; install all sealant cants.
- B. Deliver all metal shop primed, then field prime with Epoxy Primer prior to coating with the Base Membrane. Prime metal surfaces which exhibit adhesion difficulties first with a zinc chromate type of epoxy primer.
- C. Base Membrane is used as an adhesive for polyester reinforcing fabric. Reinforcing fabric shall be laid into wet Base Membrane with roller, brush or broad blade knife. Fabric shall be laid relaxed, smooth and wrinkle-free; over-coat with Base Membrane.
- D. Coat flashings and polyester reinforcing fabric with Base Coat and Top Coat with each application.

3.5 APPLICATION

- A. The roofing Applicator shall have the sole right of access to specific areas of the roof for the time required to complete the application and to effect adequate cure.
- B. Comply with the manufacturer's instructions, except where more stringent requirements are shown or specified, and except where the Project conditions require extra precautions or provisions to ensure satisfactory performance of the work.
- C. Start application of the waterproofing membrane only in the presence and with the advice of the Manufacturer's Technical Representative.
- D. Stir and mix separately packaged components using a mixing paddle on a slow speed drill motor, in accordance with the manufacturer's instructions. Protect the components from sun and rain.
- E. Apply uniform coatings of waterproofing to substrates and surfaces indicated to receive membrane.

- F. Apply coatings by spray, squeegee or roller.
- G. Primer:
 - 1. Apply Primer at the approximate rate of 250 sq. ft. per gallon. Allow primer to dry until tack-free. Within 16 hours of primer application, apply Base Coat. If the base coat cannot be applied within 16 hours then re-prime the surfaces.
- H. Base Membrane:
 - 1. Apply Base Membrane in one uniform coat at the rate of 60 to 65 sq. ft. per gallon, minimum, or as needed to obtain a minimum dry film thickness of 20 mils. Allow 16 to 48 hours curing time before applying the next coat. Do not apply coating over joints greater than 1/2" in width.
- I. Elastomeric Membrane:
 - 1. Apply in one uniform coat at the approximate rate of 60 to 65 sq. ft. per gallon, minimum, or as needed to obtain an average dry film thickness of 18 mils. Allow 16 hours curing time before applying the next coat.
 - 2. If the preceding layers of membrane become dirty or contaminated or lose their surface tack, wipe clean with xylene immediately before applying the next coating.
 - 3. Apply a second coat of Elastomeric Membrane in one uniform coat at the rate of 100 sq. ft. per gallon, or as needed to obtain an average dry film thickness of 12 mils.
 - 4. At locations shown on the Drawings, or if not shown, as directed, while the second coat is still fluid, uniformly broadcast aggregate onto the coating at the rate of 25 lbs. per 100 sq. ft.
 - 5. Allow 16 to 36 hours curing time before applying the next coat.
- J. Top Coat:
 - 1. Apply one uniform coat at the rate of 100 sq. ft. per gallon, minimum, to obtain an average dry film thickness of 10 mils, and to completely encapsulate the aggregate.
 - 2. For walkway surfaces and around roof-mounted equipment, provide aggregate additive for a tough non-slip surface. Apply in colors and patterns as designated by the Architect.
- K. Spray coats over flashings; embed with fabric when plastic flashings are spanning voids greater than 3/4".
- L. The application of membrane waterproofing materials shall be continued up onto vertical surfaces 6", minimum, and over the tops of fascias and parapets. Apply extra thickness waterproofing material at corners, intersections, angles, cants, penetrations and over cracks.
- M. If waterproofing is applied on unscheduled surfaces, remove immediately by a method approved by the membrane manufacturer.
- N. The overall dry film thickness of the completed waterproofing system, exclusive of aggregate, shall average 60 mils.

- O. Permit the membrane to cure under conditions which will not contaminate or deteriorate the waterproofing materials. Block off all traffic and protect the membrane from physical damage.
- P. Remove protective coverings.

3.6 FIELD QUALITY CONTROL

- A. Section 01450 - Quality Control: Field inspection and testing.
- B. Inspect the fluid-applied roofing application.
- C. Test for required dry film thickness.

3.7 PROTECTION

- A. Section 01700 - Execution Requirements: Protection of the applied work.
- B. Do not permit traffic on the membrane during the first 24 hours after application and no heavy traffic within four (4) days after the final coat has been applied, or until accepted by the Owner's representative.
- C. Do not permit traffic over unprotected or uncovered membrane.

END OF SECTION

SECTION 07190
WATER REPELLENTS (SEALER)

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Surface preparation and application of clear penetrating water repellent coating to the following exposed surfaces:
 - a. WR-1: Exterior and interior concrete walks and floors.
 - b. WR-2: Slurry coating for dampproofing vertical walls.
- B. Related Documents: The Contract Documents, as defined in Section 01010 - Summary of Work, apply to the work of this Section. Additional requirements and information necessary to complete the work of this Section may be found in other Documents.
- C. Related Sections:
 - 1. Section 03300 - Cast-in-Place Concrete: Sealers and curing agents.
 - 2. Section 04400 - Natural Stone: Sealers and curing agents.
 - 3. Section 07900 - Joint Sealers: Joint fillers and sealers.
 - 4. Division 7 Sections - Roofing and Waterproofing.

1.2 DESCRIPTION OF WORK

- A. The extent of each type of waterproofing work is indicated on the Drawings and as specified herein, and includes providing and applying waterproofing on concrete surfaces. Similar work used as an exposed finish is excluded by definition and, if required, is specified as roofing, flooring, special coating or other appropriate category.

1.3 REFERENCES

- A. The publications listed below form a part of this Specification to the extent referenced. Publications are referred to in the text by basic designation only.
- B. American Society for Testing and Materials (ASTM):
 - 1. ASTM C 642 - Test Method for Water Absorption.
 - 2. ASTM D 56 - Test Method for Flash Point by Closed Cup Tester.
 - 3. ASTM D 3960 - Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings.
 - 4. ASTM E 514 - Test Method for Water Penetration and Leakage Through Masonry.
- C. U. S. Environmental Protection Agency (EPA):

1. Method 24 - Determination of Volatile Matter Content.

1.4 SUBMITTALS

A. Section 01330 - Submittal Procedures: Procedures for submittals.

1. Product Data: Manufacturer's specifications, recommendations for water repellents for each surface specified, surface preparation and application instructions, precautions for materials which can contaminate the system, limitations to coating, protection and cleaning instructions. Include recommendations for sealing penetrations, cracks and control, construction and expansion joints. Submit color charts for products required to be integrally colored.
2. Shop Drawings: Indicate details critical to water tightness of the membrane, including, but not necessarily limited to, membrane transitions / terminations at perimeters, drains, sleeves and other penetrating elements.
3. Samples: 16" x 16" samples of each substrate indicated to receive water repellent with the specified repellent treatment applied to half of each sample.
4. Assurance/Control Submittals:
 - a. Manufacturer's certification that the materials specified are recommended by the manufacturer for the applications indicated.
 - b. Manufacturer's certificate that the products meet or exceed the specified requirements.
 - b. Manufacturer's Material Safety Data Sheets (MSDS).
 - c. Manufacturer's certification that the products supplied comply with applicable federal and local regulations controlling the use of volatile organic compounds (VOC).
 - d. Manufacturer's Instructions indicating procedures and conditions requiring special attention, and cautionary procedures required during application.
 - e. Documentation of experience indicating compliance with the specified qualifications requirements.

B. Section 01780 - Closeout Submittals: Procedures for closeout submittals.

1. Warranty: Submit a written special Warranty with forms completed in the name of the Owner and registered with the manufacturer.

1.5 QUALITY ASSURANCE

A. Qualifications:

1. Manufacturer: Company specializing in manufacturing the products specified with a minimum of five (5) years documented experience, and has a record of successful in-service performance.
2. Applicator: Company experienced in applying the types of waterproofing required for this Project for not less than five (5) years, and is acceptable to the primary

- B. Mockup: Apply water repellent to a mockup, either partial or full coverage, as directed, before proceeding with the application. Comply with the application requirements contained herein.
- C. Regulatory Requirements: Comply with applicable rules and regulations of the pollution-control regulatory agency having jurisdiction regarding volatile organic compounds (VOC) and use of hydrocarbon solvents.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Section 01600 - Product Requirements: Transport, handle, store, and protect the products.
- B. Deliver products to the Project Site in the manufacturer's original, new and unopened packages or containers with seals and labels intact; dry and undamaged, bearing the product name, color, manufacturer's lot number, directions for use and precautionary labels.
- C. Store materials not in actual use, in tightly covered containers. Maintain containers used in the storage of materials, in a clean condition, free of foreign materials and residue.
- D. Store materials in a well ventilated area, and in compliance with the manufacturer's published instructions.
- E. Store and handle materials to prevent deterioration and damage due to moisture, temperature changes, contaminants, and other causes.
- F. Protect against fire hazards and spontaneous combustion.
- G. Keep storage areas neat and orderly. Remove waste daily.
- H. Take all precautions to ensure that workmen and the work areas are adequately protected from health hazards resulting from handling, mixing and application of the materials.

1.7 JOB CONDITIONS

- A. Environmental Requirements: Do not apply products under any of the following conditions, except with the written recommendation of the manufacturer:
 - 1. Substrate surfaces cured less than thirty (30) days.
 - 2. Surfaces not dry for a minimum of 24 hours.
 - 3. Rain predicted within 24 hours.
 - 4. Windy conditions such that the repellent might be blown onto vegetation or onto substrates not intended to be coated.

1.8 WARRANTY

- A. Section 01780 - Closeout Submittals: Procedures for closeout submittals.
- B. Special Warranty:
 - 1. Provide a joint and severable written Warranty signed by the water repellent materials manufacturer, Contractor and the Applicator, agreeing to repair or

SECTION 07210
BUILDING INSULATION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Semi-rigid insulation at underside of roofs at interior spaces.
 - 2. Board insulation for split slabs and under decks.
 - 3. Batt insulation at exterior stud walls of air conditioned spaces and at interior stud walls for sound control.
 - 4. Semi-rigid board insulation at shafts and chases.
 - 5. Exposed wall and ceiling insulation at Mechanical Rooms.
 - 6. Spray-applied thermal and acoustical insulation for exposed ceilings.
- B. Related Documents: The Contract Documents, as defined in Section 01010 - Summary of Work, apply to the work of this Section. Additional requirements and information necessary to complete the work of this Section may be found in other Documents.
- C. Related Sections:
 - 1. Section 03300 - Cast-In-Place Concrete: Substrate for installation of insulation.
 - 2. Section 09110 - Non-Load Bearing Steel Framing: Support for installation of insulation.

1.2 DESCRIPTION OF WORK

- A. The extent of each type of building insulation is indicated on the Drawings and as specified herein, and includes providing and installing thermal, acoustical and spray-on insulation, and safing and smoke stops.

1.3 REFERENCES

- A. The publications listed below form a part of this Specification to the extent referenced. Publications are referred to in the text by basic designation only.
- B. American Society for Testing and Materials (ASTM):
 - 1. ASTM C 518 - Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
 - 2. ASTM C 612 - Specification for Mineral Fiber Block and Board Thermal Insulation.
 - 3. ASTM C 665 - Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
 - 4. ASTM D 5113 - Test Method for Determining Adhesion Attack of Rigid Cellular Foam.

5. ASTM E 84 - Test Method for Surface Burning Characteristics of Building Materials.
6. ASTM E 119 - Test Method for Fire Tests of Building Construction and Materials.

1.4 SUBMITTALS

- A. Section 01330 - Submittal Procedures: Procedures for submittals.
 1. Product Data: Manufacturer's product specifications and installation instructions for each type of insulation and vapor barrier material required. Indicate product characteristics, performance criteria and limitations.
 2. Assurance / Control Submittals:
 - a. Manufacturer's certificate that the products meet or exceed the specified requirements.
 - b. Documentation of experience indicating compliance with the specified qualifications requirements.

1.5 QUALITY ASSURANCE

- A. Qualifications:
 1. Manufacturer: Company specializing in manufacturing the products specified with a minimum of five (5) years documented experience.
 2. Installer: Company experienced in performing the work of this Section with a minimum of five (5) years documented experience.
 3. Use adequate number of skilled workmen, thoroughly trained and experienced in the necessary crafts and are completely familiar with the specified requirements and methods for proper performance of the work of this Section.
- B. Regulatory Requirements: Conform to the flame spread and smoke developed requirements of the local authority having jurisdiction.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Section 01600 - Product Requirements: Transport, handle, store and protect the products.
- B. Deliver products to the Project Site in the manufacturer's original, unopened packages, containers or bundles, bearing brand name, identification of the manufacturer, and material identification.
- C. Store inside, under cover, and in a manner to keep dry.
- D. Protect from weather, direct sunlight, moisture, surface contamination, and damage from construction traffic and other causes.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with the Project requirements, manufacturers offering products which may be incorporated into the work include the following:

1. CertainTeed.
2. Owens-Corning.
3. Dow Chemical.
4. Manville-Schuller International.
5. International Cellulose Corporation.

- B. Section 01600 - Product Requirements: Product Options: Substitutions permitted.

2.2 THERMAL INSULATION

- A. Concealed Glass Fiber Insulation Boards: Unfaced glass fiber thermal insulation, semi-rigid boards, friction-fit, 48" x 96" x 2-1/2" thick, R-13 or as indicated, ASTM C 612, Type 1A and 1B. Maximum flame spread rating 25, maximum smoke developed 50 when tested in accordance with ASTM E 84. AType 703" by Owens-Corning or approved equal.
- B. Polystyrene Insulation Boards: High density extruded polystyrene foam insulation, 48" x 96" x 1-1/2" thick, R-5.6, square edge, 1/2" x 1/4" drainage channels on bottom long edge, for installation over waterproofing membrane. Plaza Deck STYROFOAM Brand PLAZAMATE Insulation by Dow Chemical Co.
- C. Concealed Wall Batt Insulation: Unfaced glass fiber thermal insulation, friction-fit, 16" or 24" widths as required x 3-1/2" thick, ASTM C 665, Type I. R-11 when tested in accordance with ASTM C 518. Maximum flame spread 10, maximum smoke developed 10 when tested in accordance with ASTM E 84. AThermal Batt Insulation@ by Owens-Corning or approved equal.

2.3 ACOUSTICAL INSULATION

- A. Concealed Noise Barrier Batt Insulation: Unfaced glass fiber acoustical insulation, friction-fit, 16" or 24" widths as required x 3-1/2" thick, ASTM C 665, Type I. Maximum flame spread 10, maximum smoke developed 10 when tested in accordance with ASTM E 84. ASound Attenuation Batts@ by Owens-Corning or approved equal.
- B. Chase Wall Insulation: Unfaced glass fiber acoustical insulation, semi-rigid, friction-fit, 24" x 96" x 1-1/2", ASTM C 665, Type I. R-5.8 when tested in accordance with ASTM C 518. ASTM E 119 for 1-hour fire rated partitions. Maximum flame spread 20, maximum smoke developed 20 when tested in accordance with ASTM E 84 and UL 723. AShaftwall Insulation@ by Owens-Corning or approved equal.
- C. Exposed Generator Room Walls and Ceiling: FRK (foil) faced glass fiber thermal insulation, semi-rigid, 1-1/2" thick, ASTM C 612, Type 1A and 1B. Maximum flame spread 25, maximum smoke developed 50 when tested in accordance with ASTM E 84. AType 703@ by Owens-Corning or approved equal.

2.4 SPRAY-ON INSULATION

- A. Exposed Thermal-Acoustical Spray-Applied Cellulose: Textured fibered cellulose with chemical binder and adhesives, mildew and mold treated, spray-applied, 3" thick, R-4.5 per

inch, NRC of 1.0, Class I. Class AA@ flame spread rating per ASTM E 84. FMRC Category I. AK-13" by International Cellulose Corp. or approved equal. Color as selected.

- B. Exposed Acoustical Spray Applied Cellulose: Textured fibered cellulose with chemical binder, mildew and mold treated, spray applied. NRC .90 at 1" thick, AK-13 fc@ by International Cellulose Corp. or approved equal. Color as selected.

2.5 OTHER MATERIALS

- A. Insulation Anchors: Impaling pin-type with 2" diameter flat anchor head and wire spindles, self- locking holding washers; designed for adhesive application to the underside of roof decks. Adhesive as supplied or approved by the insulation manufacturer.
- B. Provide other materials, not specifically described but required for a complete and proper installation, as recommended by the insulation manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01700 - Execution Requirements: Verification of existing conditions before starting the work.
- B. Verification of Conditions: Verify that the areas, surfaces, substrates and conditions are as required, and ready to receive the work.
 - 1. Board Insulation:
 - a. Verify that the substrate and adjacent materials are dry and ready to receive the insulation and adhesive.
 - b. Verify that the insulation boards are dry, unbroken and free of damage.
 - 2. Batt Insulation:
 - a. Verify that the adjacent materials are dry and ready to receive the installation.
 - b. Verify that mechanical and electrical services within the walls have been installed, are properly placed, and has been tested.
 - 3. Spray-applied Insulation:
 - a. Verify that the substrate and adjacent surfaces are dry and ready to receive the insulation.
 - b. Verify that all equipment is operating properly.
- A. Remove or protect against projections in the construction framing which might damage or prevent the proper installation or application of materials.
- B. Report, in writing, prevailing conditions that will adversely affect satisfactory execution of the work of this Section. Do not proceed with the work until the unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install the work of this Section in strict accordance with the original design, requirements of government agencies having jurisdiction, and the manufacturer's recommended installation procedures as approved. Anchor all components firmly into position.

3.3 INSTALLATION - ROOF INSULATION

- A. Apply with stick pins, adhesively secured to the underside of the roof. Provide a minimum of 8 pins per 4' x 8' board and 6 pins per 4' x 4' board, spaced per the manufacturer's instructions. Butt all edges and ends of insulation tightly.

3.4 INSTALLATION - SPLIT SLABS AND UNDER DECKS

- A. Set in an approved waterproof roof coating in accordance with the manufacturer's recommendations. Protect insulation from weathering, sunlight and traffic until the top deck has been placed.

3.5 INSTALLATION - WALL INSULATION

- A. Install batt insulation in accordance with the manufacturer's instructions, without gaps or voids.
- B. Wall Insulation: Friction fit for installation within metal framing. Carry around water and waste piping, electrical junction boxes, outlets, conduit and other elements to ensure a complete acoustical barrier.
- C. Trim insulation neatly to fit the spaces. Use batts free of damage. Fit insulation tight in the spaces and tight to the exterior side of mechanical and electrical services within the plane of the insulation.
- D. When faced, install the insulation with the factory-applied membrane facing the warm side of the building space. Lap ends and side flanges of the membrane. Attach insulation in place to the framing. Tape seal butt ends and lapped side flanges. Tape seal tears and cuts in the membrane.

3.6 INSTALLATION - MECHANICAL ROOM WALLS AND CEILINGS

- A. Install with impaling pins; bend prongs of pins inward so they are not a hazard. Tape joints. Stop insulation 4" from light fixtures and heat producing equipment.

3.7 INSTALLATION - SPRAY-APPLIED INSULATION

- A. Apply by authorized applicator utilizing authorized fiber machines and nozzles for control of the fiber / binder ratio. Prime or seal surfaces before applying as required by the insulation manufacturer. Apply the manufacturer's standard fire-retardant mildew-resistant overspray.

3.8 FIELD QUALITY CONTROL

- A. Section 01450 - Quality Control: Field inspection.
- B. Inspect work for proper thickness, secure attachment to the substrate and in accordance with the manufacturer's instructions.

END OF SECTION

SECTION 07620
SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Metal base flashings and counter flashings.
 - 2. Penetration flashing.
 - 3. Built-in metal scuppers.
 - 4. Gutters.
 - 5. Downspouts.
 - 6. Miscellaneous sheet metal accessories.
- B. Related Documents: The Contract Documents, as defined in Section 01010 - Summary of Work, apply to the work of this Section. Additional requirements and information necessary to complete the work of this Section may be found in other Documents.
- C. Related Sections:
 - 1. Section 03300 - Cast-In-Place Concrete: Substrate for securing flashing.
 - 2. Section 04230 - Reinforced Unit Masonry: Substrate for securing flashing.
 - 3. Section 07410 - Preformed Metal Roofing: Substrate for securing flashing.

1.2 DESCRIPTION OF WORK

- A. The extent of each type of flashing and sheet metal work is indicated on the Drawings and as specified herein, and includes providing and installing flashings, metal scuppers, gutters, downspouts and miscellaneous accessories.

1.3 REFERENCES

- A. The publications listed below form a part of this Specification to the extent referenced. Publications are referred to in the text by basic designation only.
- B. American Iron and Sheet Institute (AISI):
 - 1. North American Specification for the Design of Cold-Formed Steel Structural Members.
- C. American Society of Civil Engineers (ASCE):
 - 1. ASCE / SEI 7 - Minimum Design Loads for Buildings and Other Structures.
- D. American Society for Testing and Materials (ASTM):

1. ASTM A.167 - Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip.
 2. ASTM A 361 - Steel Sheet, Zinc-Coated (galvanized) by the Hot-Dip Process for Roofing and Siding.
 3. ASTM A 527 / A 527M - Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Lock-Forming Quality.
 4. ASTM A 653 - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 5. ASTM A 792 / A 792M - Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot Dip Process.
 6. ASTM B 32 - Specification for Solder Metal.
 7. ASTM B 209 - Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
 8. ASTM B 221 - Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles and Tubes.
 9. ASTM B 370 - Specification for Copper Sheet and Strip for Building Construction.
 10. ASTM B 486 - Specification for Paste Solder.
 11. ASTM C 920 - Specification for Elastomeric Joint Sealants.
- E. International Code Council:
1. International Building Code (IBC), 2009.
- F. Metal Building Manufacturer's Association (MBMA):
1. Metal Building Systems Manual.
- G. National Roofing Contractors Association (NRCA):
1. The NRCA Roofing and Waterproofing Manual.
- H. Sheet Metal and Air Conditioning Contractors National Association (SMACNA):
1. Architectural Sheet Metal Manual.
- I. Society for Protective Coatings (formerly Structural Steel Painting Council):
1. SSPC-Paint 12 - Cold-Applied Asphalt Mastic (Extra Thick Film).
- 1.4 SUBMITTALS
- A. Section 01330 - Submittal Procedures: Procedures for submittals.
1. Product Data: Manufacturer's product specifications, gauges and thickness, installation instructions and general recommendations for each specified sheet material and fabricated product.

2. Shop Drawings: Show layout, joining, profiles, and anchorage of fabricated work, including valley flashings, major counter flashings, trim / fascia units, gutters, downspouts, scuppers and expansion joint systems; layouts at 1/4" scale, details at 3" scale.
 3. Samples: Submit 8" square samples of the specified sheet materials that will be exposed as finished surfaces.
 4. Assurance / Control Submittals:
 - a. Manufacturer's certificate that the products meet or exceed the specified requirements.
 - b. Calculations indicating that the products and anchorage satisfies the performance requirements.
 - c. Documentation of experience indicating compliance with the specified qualifications requirements.
- B. Section 01780 - Closeout Submittals: Procedures for closeout submittals.
1. Warranty: Submit a written limited Warranty with forms completed in the name of the Owner and registered with the manufacturer.

1.5 QUALITY ASSURANCE

- A. Qualifications:
1. Fabricator: Company specializing in manufacturing the products specified with a minimum of five (5) years documented experience.
 2. Installer: Company experienced in performing the work of this Section with a minimum of five (5) years documented experience.

1.6 DESIGN AND PERFORMANCE CRITERIA

- A. Thermal Movement:
1. The 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 the structure, anchors or fasteners, or reducing performance ability.
 2. The interface between panels and clips shall provide for a minimum of 3" of thermal movement in each direction along the longitudinal direction.
 3. The location of metal roofing rigid connectors shall be designed to meet the job conditions by the metal roof system manufacturer.
- B. Wind Load Requirements:
1. Provide the capacity to withstand the following loading requirements:
 - a. Design, fabricate and install to resist combined positive and negative windloading in accordance with IBC 2009, Section 1609 with a Vmph or 170, qs of 74.0 psf, exposure [B] [C] [D], and importance factor of [1.0] [1.25] [1.5], as applicable per ASCE 7.

1.7 FACTORY TESTS

- A. The manufacturer shall have conducted tests on previously manufactured sheets of the same type and finish as proposed for this project to assure conformance. Sheets shall have passed the following tests:
1. Salt Spray: Withstand a salt spray test for a minimum of 1,000 hours in accordance with ASTM B 117, including the scribe requirement in the test. Immediately upon removal of the panel from the test, the coating shall have receive a rating of 10 with no blistering, as determined by ASTM D 1654, Rating Schedule No. 1.
 2. Formability: When subjected to a 180 degree bend over a 1/8" diameter mandrel (3/8" diameter mandrel for coatings 4 mils or greater in thickness) in accordance with ASTM D 522, the exterior coating film shall show only slight microchecking of the exterior film, and no loss of adhesion.
 3. Accelerated Weathering: Withstand a weathering test of 2,000 hours, minimum, in accordance with ASTM G 152 or ASTM D 2565 without cracking, peeling, blistering, loss of adhesion of the protective coating, or corrosion of the base metal. Protective coating that can be readily removed from the base metal with a penknife blade or similar instrument shall be considered as an indication of the loss of adhesion.
 4. Chalking Resistance: After a 2,000 hours weatherometer test, the exterior coating shall not chalk greater than No. 8 rating when measured in accordance with ASTM D 4214.
 5. Color Change: After a 2,000 hours weatherometer test, the exterior color change shall not exceed 2 NBS units when measured in accordance with ASTM D 2244.
 6. Abrasion Resistance for Color Coating: When subjected to the falling sand test in accordance with ASTM D 968, the coating system shall withstand a minimum of 100 liters of sand before appearance of the base metal.
 7. Humidity: When subjected to a humidity cabinet test in accordance with ASTM D 2247 for 1,000 hours, a scored panel shall show no signs of blistering, cracking, creepage, or corrosion.
 8. Fire Hazard: Factory-fabricated sheets shall be 30 to 70 at an angle of 60 degrees, when measured in accordance with ASTM D 523.

1.8 DELIVERY, STORAGE AND HANDLING

- A. Section 01600 - Product Requirements: Transport, handle, store, and protect the products.
- B. Protect components during fabrication, shipment, storage, handling, and erection from mechanical abuse, stains, discoloration and corrosion.
- C. Inspect materials upon delivery to the Project Site. Reject and remove physically damaged and marred materials.
- D. Store materials off the ground, providing for drainage; under cover providing for air circulation; protected from wind, foreign material contamination, mechanical damage, cement, lime and other corrosive substances.
- E. Prevent contact with materials which may cause discoloration or staining.

- F. Handle materials to prevent damage to surfaces, edges and ends of sheet metal items. Damaged materials shall be rejected and removed from the Project Site.

1.9 JOB CONDITIONS

- A. Coordinate the work of this Section with interfacing and adjoining work for the proper sequencing of each installation.
- B. Determine that work of other trades will not hamper or conflict with necessary fabrication and storage requirements.
- C. Ensure the best possible weather resistance and durability of the work, and protection of materials and finishes.

1.10 WARRANTY

- A. Section 01780 - Closeout Submittals: Procedures for closeout submittals.
- B. Limited Warranty:
 - 1. Manufacturer's Warranty against checking, crazing, peeling, chalking, fading and adhesion.
 - 2. Warranty Period:
 - a. Manufacturer's twenty (20) years Warranty covering refinishing of the finish coating from the date of Substantial Completion.
 - b. Installer's two (2) years Warranty covering the installation and watertightness from the date of Substantial Completion.

PART 2 PRODUCTS

2.1 SHEET METAL FLASHING AND TRIM MATERIALS

- A. Stainless Steel: AISI Type 302 / 304, #6 satin finish, 24 gauge, soft except where hard temper is required for forming or performance. ASTM 167.
- B. Aluminum Sheet: Prefinished aluminum alloy sheet, .032" thickness except as otherwise indicated, temper appropriate to the end use. ASTM B 209. Exposed aluminum shall have a baked-on, factory-applied color coating of polyvinylidene fluoride (PVF2) or other equivalent fluorocarbon coating per AMA 605.2, applied after the metal substrates have been cleaned and pretreated. Finish coating dry-film thickness shall be 1.0 - 1.3 mils. Color as selected.
- C. Zinc-Coated Steel: Commercial quality with 0.20% copper, ASTM A 653, except ASTM A 527 for lock-forming, G90 hot-dip galvanized, mill phosphatized where indicated for painting, 26 gauge except as otherwise indicated.

2.2 MISCELLANEOUS MATERIALS AND ACCESSORIES

- A. Metal Accessories: Provide sheet metal clips, straps, anchoring devices and similar accessory units as required for installation of the work, matching or compatible with the product material being installed, non-corrosive, size and gauge as required for performance.

- B. Reglets: Metal or plastic units of the type and profile indicated, compatible with the flashings indicated, non-corrosive.
- C. Fasteners: Same metal as the flashing / sheet metal or stainless steel, as recommended by the sheet manufacturer. Match finish or exposed heads with the material being fastened.
- D. Solder: For use with steel; provide 50 - 50 tin / lead solder with rosin flux. ASTM B 32.
- E. Adhesives: Type recommended by the flashing sheet manufacturer for waterproof / weather-resistant seaming and adhesive application of flashing sheet and substrate.
- F. Elastic Flashing Filler Rods: Closed-cell polyethylene or other soft closed-cell material recommended by the elastic flashing manufacturer as filler under flashing loops to ensure movement with minimum stress on the flashing sheet.
- G. Mastik Sealant: Polyisobutylene; non-hardening, non-skinning, non-drying, non-migrating sealant.
- H. Elastomeric Sealant: Generic type as recommended by the manufacturer of the metal or fabricator of the components being sealed.
- I. Gutter and Conductor-Head Guards: .032" aluminum or 20 gauge bronze or non-magnetic stainless steel mesh, or fabricated units, with salvaged edges and non-corrosive fasteners. Select materials for compatibility with the gutters and downspouts.
- J. Unit Plumbing Vent: Integral stack pipe flashing with elastomeric base, for flat or pitched roof applications, size as required by the pipe size.
- K. Protective Backing Paint: Bituminous.

2.3 FABRICATED UNITS

- A. General Material Fabrication: Shop fabricate work to the greatest extent possible. Comply with the details shown, and with the applicable requirements of SMACNA Architectural Sheet Metal Manual, and other recognized industry practices. Fabricate for waterproof and weather-resistant performance, with expansion provisions for running work; sufficient to permanently prevent leakage, damage and deterioration of the work. Form work to fit the substrates. Comply with the material manufacturer's instructions and recommendations. Form exposed sheet metal work without excessive oil-canning, buckling and tool marks, true to line and levels as indicated, with exposed edges folded back to form hems.
- B. Flashings, Counter Flashings, Copings, Expansion Joints, Scuppers: Fabricate from 20 oz. / sq. ft. copper sheet unless otherwise indicated.
- C. Aluminum Gutter: .075" conforming to ASTM B 221 with baked-on, factory-applied color coating of polyvinylidene fluoride (PVF2) or other equivalent fluorocarbon coating per AMA 605.2, applied after the metal substrates have been cleaned and pretreated. Finish coating dry-film thickness shall be 1.0 - 1.3 mils. Color as selected.
- D. Downspouts: Fabricate from .032" aluminum; form in continuous lengths.
- E. Seams: Fabricate non-moving seams in sheet metal as flat-lock type. For metal other than aluminum, tin the edges to be seamed, form seams, and solder. Form aluminum seams with epoxy seam sealer; rivet joints for additional strength where required.
- F. Expansion Provisions: Where lapped or bayonet-type expansion provisions cannot be used, or would not be sufficiently water / weatherproof, form expansion joints of intermeshing

hooked flanges, not less than 1" deep, filled with mastic sealant, concealed within the joints.

- G. Sealant Joints: Where movable, non-expansion type joints are indicated or required for proper performance of the work, form the metal to provide for proper installation of elastomeric sealant in accordance with SMACNA standards.
- H. Separations: Provide for the separation of metal from non-compatible metal or corrosive substrates by coating concealed surfaces at locations of contact, with a bituminous coating or other permanent separation as recommended by the manufacturer / fabricator.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01700 - Execution Requirements: Verification of existing conditions before starting the work.
- B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive the work.
 - 1. Verify that roof openings, curbs, pipes, sleeves, ducts, and vents through the roof are solidly set, reglets in place, and nailing strips located.
 - 2. Verify that roofing termination and base flashings are in place, sealed, and secure.
- C. Report, in writing, prevailing conditions that will adversely affect satisfactory execution of the work of this Section. Do not proceed with the work until the unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Install starter and edge strips, and cleats before starting the installation.
- B. Install concrete inserts, reglets and similar anchoring devices to be built into substrates and walls prior to the time the flashing installation is to begin.
- C. Install surface-mounted reglets true to lines and levels. Apply sealant along the top of reglets.

3.3 INSTALLATION

- A. Comply with the manufacturer's installation instructions and recommendations, and with SMACNA "Architectural Sheet Metal Manual".
- B. Fit flashings, gutters, and downspouts tight in place, make corners square, surfaces true and straight in planes, and lines accurate to the profiles.
- C. Anchor units securely in place by the methods indicated, providing for thermal expansion of metal units.
- D. Secure work in place using concealed fasteners where possible.
- E. Set units true to line and level as indicated.
- F. Install work with laps, joints and seams to be permanently watertight and weatherproof.

- G. Install reglets to receive counter flashings in a manner and by the methods indicated. Where shown in concrete, furnish reglets to the concrete trade for installation as the work of Sections of Division 3. Where shown in masonry, furnish reglets to the masonry trade for installation as the work of Division 4 Sections.
- H. Install counterflashings in reglets, either by shape-in seal arrangement, or by wedging in place and filling the reglet with mastic or elastomeric sealant, as indicated, depending on the degree of sealant exposure.
- I. Expansion and Contraction: Provide expansion and contraction joints at not more than 30 foot intervals. Space joints evenly and as approved.
- J. Install elastic flashings in accordance with the manufacturer's recommendations. Where required, provide for movement at joints by forming loops or bellows the full width of the flashing. Locate cover or filler strips at joints to facilitate complete drainage of water from the flashings. Seam adjacent flashing sheets with adhesive, seal and anchor edges in accordance with the manufacturer's recommendations.
- K. Install continuous gutter guards on gutters. Provide hinged units to swing open for cleaning the gutters. Install beehive type strainer-guards at conductor heads, removable for cleaning downspouts.

3.4 ISOLATION REQUIREMENTS

- A. Where stainless steel or aluminum is to be installed directly on cementitious or wood substrates, install a course of paper slip sheet and a course of polyethylene underlayment.
- B. Concrete Contact: Coat the underside of sheet metal over horizontal concrete surfaces, with asphaltum cement.
- C. Dissimilar Metals: Insulate the juncture between dissimilar metals with a heavy coat of insulating film. Where drainage from a dissimilar metal passes over aluminum, paint the dissimilar metal with a non-lead pigmented paint.
- D. Wood Contact: Isolate sheet metal from cedar, redwood, oak and acid-treated lumber by means of an unbroken 6 mil polyethylene construction sheet, or a heavy coating of metal protective paint.

3.5 PROTECTION

- A. The Installer shall advise the Contractor of required procedures for surveillance and protection of the flashings and sheet metal work during the remainder of the construction, to ensure that the work will be without damage or deterioration, other than natural weathering, at the time of Substantial Completion.

3.6 ADJUSTING

- A. Section 01700 - Execution Requirements: Adjusting the installed work.
- B. Touch-up exposed fasteners using paint furnished by the metal manufacturer, and matching the exposed metal surface finish.
- C. Touch-up minor abrasions and scratches in surface finishes.
- D. Scratches, abrasions and minor surface defects to the finish may be repaired in accordance with the manufacturer's printed instructions. Replace items which cannot be repaired.

3.7 FIELD QUALITY CONTROL

- A. Section 01450 - Quality Control: Field inspection.
- B. Inspection the installations for proper support, alignment, watertight and weatherproof.

3.8 CLEANING

- A. Section 01700 - Execution Requirements: Cleaning the installed work.
- B. Remove excess sealants as approved by the metal manufacturer.
- C. Clean exposed metal surfaces to remove all substances which might cause corrosion or metal or deterioration of finishes.
- D. Leave the entire installation in a clean condition on the date of Substantial Completion.

END OF SECTION

SECTION 07840
FIRESTOPPING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Firestop sealant and safing insulation for the following locations:
 - a. All pipes, ductwork, conduit and other penetrations through a fire-rated walls, floor assemblies and roof assemblies.
 - b. Head of wall firestopping at full-height, fire-rated partitions.
 - c. Closure of penetrations for acoustic purposes.

B. Related Documents: The Contract Documents, as defined in Section 01010 - Summary of Work, apply to the work of this Section. Additional requirements and information necessary to complete the work of this Section may be found in other Documents.

C. Related Sections:

1. Section 03300 - Cast-In-Place Concrete: Substrate for firestopping.
2. Section 04230 - Reinforced Unit Masonry: Substrate for firestopping.
3. Section 07210 - Building Insulation: Wall and roof insulation.
4. Section 07900 - Joint Sealers: Non-firestopping joint sealers.
5. Section 09250 - Gypsum Board: Substrate for firestopping.

1.2 DESCRIPTION OF WORK

A. The extent of each type of firestopping is indicated on the Drawings and as specified herein, and includes providing and installing fire safing at penetrations thru fire-rated assemblies, roofs and head of wall firestopping at full-height, fire-rated partitions.

1.3 REFERENCES

A. The publications listed below form a part of this Specification to the extent referenced. Publications are referred to in the text by basic designation only.

B. American Society for Testing and Materials (ASTM):

1. ASTM C 612 - Specification for Mineral Fiber Block and Board Thermal Insulation.
2. ASTM E 84 - Test Method for Surface Burning Characteristics of Building Materials.
3. ASTM E 119 - Test Methods for Fire Tests of Building Construction and Materials.
4. ASTM E 136 - Test Method for Behavior of Materials in a Vertical Tube Furnace at

750E C.

5. ASTM E 814 - Test Method for Fire Tests of Through-Penetration Fire Stops.
6. ASTM E 2307 - Test Method for Determining Fire Resistance of Perimeter Fire Barrier Systems Using Intermediate-Scale, Multi-story Test Apparatus.

C. Underwriters' Laboratories, Inc. (UL):

1. UL 1479 - Tests of Through-Penetration Firestops.
2. UL 2079 - Tests for Fire Resistance of Building Joint Systems.

1.4 DEFINITIONS

- A. Firestopping: Sealing materials and assemblies installed in spaces between building materials to prevent movement of smoke, heat, gasses, and fire through wall openings.

1.5 SYSTEM DESCRIPTION

- A. Firestopping Materials: ASTM E 119, ASTM E 814, UL 1479 to achieve the fire rating indicated on the Drawings.

1.6 SUBMITTALS

A. Section 01330 - Submittal Procedures: Procedures of submittals.

1. Product Data: Manufacturer's specifications for each joint firestop sealer, grout and safing insulation product required, including instructions for joint preparation and joint sealer application for insulation installation, product characteristics, performance, and limitations.
2. Assurance / Control Submittals:
 - a. Manufacturer's certificate that the products meet or exceed the specified requirements and are suitable for the intended use.
 - b. Certified Test Reports showing compliance with the specified performance values, including r-values (aged values for plastic insulations), densities, compression strengths, fire performance characteristics, perm rating, water absorption ratings and similar properties.
 - c. Product Test Reports for each type of joint firestop sealer evidencing compliance with requirements.
 - d. Documentation of experience indicating compliance with the specified qualifications requirements.

B. Section 01780 - Closeout Submittals: Procedures for closeout submittals.

1. Warranty: Provide a written special Warranty with forms completed in the name of the Owner and registered with the manufacturer.

1.7 QUALITY ASSURANCE

A. Qualifications:

1. Manufacturer: Company specializing in manufacturing the products specified with a minimum of five (5) years documented experience.
 2. Installer: Company that has successfully completed at least three (3) sealer applications similar in type and size within the last three (3) years, and is approved by the manufacturer for this type of installation.
- B. Pre-Installation Meeting: Prior to beginning the installation of materials, meet at the Project Site with the Owner's representative, Contractor, Installer and subcontractors of the affected trades. Review conditions, methods and procedures necessary for proper installation of the work, including inspections of areas of work, requirements of the Specifications, and the manufacturer's literature; review submittals and the installation schedule.

1.8 DELIVERY, STORAGE AND HANDLING

- A. Section 01600 - Product Requirements: Transport, handle, store and protect the products.
- B. Deliver products to the Project Site in the manufacturer's original, unopened containers or packages with labels intact, identifying the manufacturer, product name and designation, expiration date for use, pot life, curing time, and mixing instructions for multi-component materials.
- C. Store and handle materials in compliance with the manufacturer's recommendations to prevent deterioration and damage due to moisture, high or low temperatures, contaminants or other causes.
- D. Protect insulations from physical damage from becoming wet or soiled.

1.9 JOB CONDITIONS

- A. Environmental Requirements:
1. Maintain the manufacturer's recommended minimum temperature before, during, and for 3 days after installation of the materials.
 2. Keep products away from heat, open flame, sparks, and other sources of ignition until curing is complete.
 3. Install only when adequate ventilation is provided.
 4. Do not proceed with installation of firestop joint sealers when ambient and substrate conditions are outside the limits permitted by the manufacturer when substrates are wet due to rain, condensation, or other causes.
 5. Do not proceed with installation of firestop joint sealers until contaminants capable of interfering with adhesion has been removed from the joint substrates.

1.10 WARRANTY

- A. Section 01780 - Closeout Submittals: Procedures for closeout submittals.
- B. Special Warranty:
1. Contractor to warrant that the firestopping systems will provide a permanent installation.

2. Warranty Period: Life of the building.

PART 2 PRODUCTS

2.1 FIRE-RESISTANT JOINT SEALERS

- A. Firestop materials shall have been tested with and shall be in compliance with the minimum requirements of ASTM E 814, UL 1479, and UL 2079, as applicable. Products used shall be as listed below, as suitable for the intended application and as required to produce the fire rating shown on the Drawings and to conform to the Firestopping Schedule at the end of this Section.
- B. General: Provide manufacturer's standard fire-stopping sealants, with the necessary accessory materials, having fire resistance ratings indicated, as established by testing identical assemblies per ASTM E 814 by Underwriters Laboratories Inc. or other testing and inspecting agency acceptable to the authorities having jurisdiction.

2.2 MANUFACTURERS

- A. Subject to compliance with the Project requirements, manufacturers offering firestopping materials which may be incorporated into the work include the following:
 1. Nelson Firestop Products.
 2. Hilti, Inc.
 3. The RectorSeal Corp.
 4. Specified Technologies, Inc. (STI).
 5. 3M Fire Protection Products.
 6. Tremco Firestop Systems.
- B. Section 01600 - Product Requirements: Product Options: Substitutions not permitted.

2.3 MATERIALS

- A. Intumescent Latex or Acrylic Sealant: Single-component, intumescent, latex or acrylic formulation.
 1. LBS by Nelson Firestop.
 2. FS ONE or CP 606 by Hilti.
 3. Metacaulk 950 or 1000 by RectorSeal.
 4. SpecSeal SSS100 by STI.
 5. CP 25WB+ by 3M.
 6. TREMstop WBM by Tremco.
- B. Intumescent Solvent-Release-Curing Sealant: Single component, intumescent, synthetic-polymer based, non-sag grade.

1. CP 25 N/S by 3M.
 2. TREMstop WBM by Tremco.
- C. Intumescent Wrap / Strip: Single-component, elastomeric sheet with aluminum foil on one face.
1. WRS by Nelson Firestop.
 2. CP 645 Wrap Strip by Hilti.
 3. Metacaulk Wrap Strip by RectorSeal.
 4. SpecSeal SSWRED Wrapstrip by STI.
 5. FS-195+ Wrap / Strip by 3M.
 6. TREMstop WS by Tremco.
- D. Intumescent Putty: Single-component, non-hardening, dielectric.
1. FSP by Nelson Firestop.
 2. CP 618 Putty Stick or CP 617/ 617L Putty Pad by Hilti.
 3. CP 645 Wrap Strip by Hilti.
 4. CP 658 Firestop Plug by Hilti.
 5. Metacaulk Fire Rated Putty by RectorSeal.
 6. SpecSeal Putty by STI.
 7. Moldable Putty+ by 3M.
- E. Silicone Sealant: Single-component, moisture-curing, silicone-based elastomeric, non-sag grade.
1. CLK N/S by Nelson Firestop.
 2. CP 601S by Hilti.
 3. Metacaulk 835 by RectorSeal.
 4. SpecSeal PEN 300 by STI.
 5. 2000+ Silicone by 3M.
 6. FRYE SIL by Tremco.
- F. Silicone or Polyurethane Foam: Two-component, liquid elastomer that, when mixed, expands and cures in place to produce a flexible, non-shrinking foam.
1. SpecSeal PEN 200 by STI.
 2. 2001 Silicone RTV Foam by 3M.

3. CP 620 Fire Foam by Hilti.
- G. Intumescent Collar: Factory-fabricated, intumescent collar.
 1. PCS by Nelson Firestop.
 2. CP 642 or CP 643 by Hilti.
 3. Metacaulk Pipe Collar by RectorSeal.
 4. SpecSeal SSC Collars by STI.
 5. Plastic Pipe Device by 3M.
 6. TREMstop D by Tremco.
- H. Intumescent Composite Sheet, Pillows and Mortar or Blocks: Products used to firestop large openings.
 1. CPS by Nelson Firestop.
 2. FS 657 Fireblocks by Hilti.
 3. CP 637 Firestop Mortar by Hilti.
 4. CP 675T Firestop Board by Hilti.
 5. SpecSeal SSB Pillows and SpecSeal SSM Firestop Compound by STI.
 6. CS-195+ Composite Sheet by 3M.
 7. TREMstop PS by Tremco.
- I. Sprayable Fire-Rated Mastic: Products used to firestop construction joints.
 1. CP 672 Speed Spray by Hilti.
 2. SpecSeal Elastomeric Spray by STI.
 3. Firedam Spray by 3M.
- J. Packing Material: Manufacturer's standard mastic, putty, ceramic fiber blanket, or mineral wool to be used as fill or backing material for firestopping.
 1. FSB or Mineral Wool by Nelson Firestop.
 2. Mineral Wool by Hilti.
 3. Fire Safing or Backer Rod by RectorSeal.
 4. Mineral Wool by STI.
 5. FireMaster Mastic, FireMaster Putty, or FireMaster Bulk by 3M.
 6. Cerablanket by Tremco, Canada.
 7. CP 777 Speed Plugs by Hilti (preformed mineral wool designed for top of wall

fluted metal deck packing material).

- K. Safing and Smoke Stop: Thermafiber Safing Insulation, 4" thick, 4 pcf high melt point, mineral wool, unfaced and thermafiber Smoke Stop System with Smoke Seal compound as required for the use and location.
- L. Accessory Materials for Fire-Stopping Sealants: Provide forming, joint fillers, packing and other accessory materials required for installation of fire-stopping sealants as applicable to the installation conditions indicated.

2.4 FIRE INSULATING MATERIALS

- A. General: Provide insulating materials which comply with the requirements indicated for materials, compliance with the referenced standards, and other characteristics.
- B. Semi-Refractory Fiber Board Safing Insulation: Semi-rigid boards designed for use as a firestop at openings between edge of slab and exterior wall panels at the top of rated walls as shown; produced by combining semi-refractory mineral fiber manufactured from slag with thermosetting resin binders to comply with ASTM C 612, passing ASTM E 136 for combustion characteristics; R-value of 4.0 at 75E F, melting point exceeding 2000 degrees F. Supports to be 26 gage galvanized steel.
 - 1. Manufacturer's of Semi-Refractory Fiber Insulation:
 - a. Johns Manville Corp.
 - b. 3M.
 - c. United States Gypsum Co.
- C. Section 01600 - Product Requirements: Product Options: Substitutions permitted.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01700 - Execution Requirements: Verification of existing conditions before starting the work.
- B. Verification of Conditions: Verify that field measurements, surfaces, and conditions are as required, and ready to receive the work.
- C. With the Installer present, examine surfaces to receive joint sealers for compliance with requirements for joint configuration, installation tolerances and other conditions affecting joint sealer performance.
- D. Report, in writing, prevailing conditions that will adversely affect satisfactory execution of the work of this Section. Do not proceed with the work until the unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean joints immediately before installing joint sealers to comply with recommendations of the joint sealer manufacturer and the following requirements:

1. Remove all foreign materials from joint substrates which could interfere with adhesion of the joint sealer, including dust; paint, except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by the sealant manufacturer; old joint sealers; oil; grease; waterproofing; water repellents; water; and surface dirt.
- B. Clean concrete, masonry, unglazed surfaces of ceramic tile and similar porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with the joint sealer.
- C. Remove loose particles remaining from the cleaning operations by vacuuming or blowing out the joints with oil-free compressed air.
- D. Remove laitance and form release agents from concrete.
- E. Prime joint substrates where recommended by the joint sealer manufacturer based on preconstruction joint sealer-substrate tests or prior experience. Apply primer to comply with joint sealer manufacturer's recommendations. Confine primers to areas of the joint sealer bond. Do not allow spillage or migration onto adjoining surfaces.
- F. Place hangers or damming devices in penetrations to hold firestopping materials in place, where necessary.

3.3 INSTALLATION

- A. General:
 1. Comply with the manufacturer's printed installation instructions applicable to the product and application required, except where more stringent requirements apply.
 2. Comply with the manufacturer's recommendations for protection during installation.
- B. Install firestopping at penetrations of fire-rated walls by sleeves, piping, ductwork, conduit and other items in accordance with the manufacturer's published instructions. Follow the manufacturer's chart for the appropriate material for use to achieve the required fire rating in the various locations.
- C. Install sealant, including forming, packing, and other accessory materials to fill openings around mechanical and electrical services penetrating walls and floors to provide fire-stops with the fire-resistance ratings indicated for wall and floor assemblies in which the penetrations occur. Comply with the installation requirements established by testing and inspecting agency.
- D. At full-height fire-rated walls / partitions: Protect all fire safing insulation by installing a 22 gage galvanized sheet metal closure at the top and bottom, for protection of the fire safing insulation. Tool exposed surfaces of mortar or sealants. Where plastic pipes penetrate floors, provide a galvanized steel sleeve around the pipes and fire stop sealant within the sleeve.
- E. At openings between exterior walls and floors / roofs, install fire safing insulation per the manufacturer's instructions.

3.4 FIELD QUALITY CONTROL

- A. Section 01450 - Quality Control: Field inspection.
- B. The Owner's representative will inspect firestopping installations. Do not cover installations by other construction until the Owner's representative has completed an inspection.

3.5 CLEANING

- A. Section 01700 - Execution Requirements: Cleaning the installed work.
- B. Clean excessive fill material and sealants adjacent to openings and joints as the work progresses by methods and with cleaning materials approved by the manufacturers of the firestopping products and of products in which openings and joints occur.

3.6 PROTECTION

- A. Protect joint sealers and insulation from contact with contaminating substances and from damage resulting from construction operations or other causes so they are without damage at the time of Substantial Completion.
- B. If damage or deterioration does occur, cut out and remove the damaged or deteriorated joint sealers and make repairs indistinguishable from the original installations.

3.9 FIRESTOPPING SCHEDULE

- A. Provide firestopping complying with the UL assemblies specified below:

Penetration	Assembly	Nelson	Hilti	RectorSeal	STI	3M	Tremco
Metal Pipe	CMU Wall 8" Thick or Less	CAJ1224 or CAJ1203	CAJ1149 or CAJ1155 or	CAJ1114 or CAJ1115	CAJ1079 or CAJ1217	CAJ1001 or CAJ1009	CAJ1179 or CAJ1187
	Gypsum Board Partition	WL1083 or	WL1054 or	WL1026 or	WL1049 or	WL1003 or	WL1020 or
Non-Metallic Pipe	CMU Wall 8" Thick or Less	CAJ2086	CAJ2110 or	CAJ2021 or	CAJ2064 or	CAJ2005	CAJ2082 or
	Gypsum Board Partition	WL2071	CAJ2110 or WL2098	WL2045 or	CAJ2064 or WL2093	WL2002 or	CAJ2082 or WL2063
Cable Tray	CMU Wall 8" Thick or Less	CAJ8049 or	CAJ4035 or	CAJ8043	CAJ4020 or	CAJ4003 or	CAJ4007 or
	Gypsum Board Partition	WL4003	WL4011 or	N/A	WL4005 or	WL4004	WL3043 or
Insulated Metal Pipe	CMU Wall 8" Thick or Less	CAJ5008 or	CAJ5090 or	WJ5016 or	CAJ5021 or	CAJ5001 or	CAJ5052 or
	Gypsum Board Partition	CAJ5059 or WL5036	CAJ5090 or WL5028	CAJ5016 or WL5037	CAJ5021 or WL5014	CAJ5001 or WL5004	CAJ5052 or WL5034
Construction Gaps - Wall to Metal	CMU Wall to	N/A	HWD0098	TRC/PV12	N/A	HWD0013	N/A
	Gypsum Board Partition to Metal	N/A	HWD0042 or	HWD0014	N/A	HWS0003	WHPV60.01
Construction Gaps - Wall to Wall	CMU Wall to CMU Wall	N/A	HWD0101 or WWD1012 or	N/A	N/A	WWS1001	N/A

GPD EASTERN SUB STATION
Talofofo, Guam

Gypsum Board Partition to	N/A	N/A	N/A	N/A	WWS000 4	N/A
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END OF SECTION

SECTION 07900
JOINT SEALERS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Sealants.
 - 2. Backing.
 - 3. Substrate preparation.
- B. Related Documents: The Contract Documents, as defined in Section 01010 - Summary of Work, apply to the work of this Section. Additional requirements and information necessary to complete the work of this Section may be found in other Documents.
- C. Related Sections:
 - 1. Section 03300 - Cast-In-Place Concrete: Sealant used in conjunction with concrete work.
 - 2. Section 04230 - Reinforced Unit Masonry: Sealant used in conjunction with masonry work.
 - 3. Section 05800 - Expansion Control : Sealant for waterproofing expansion joints.
 - 4. Section 06400 - Architectural Woodwork: Sealant to prevent vermin and moisture penetration into concealed spaces.
 - 5. Section 06650 - Solid Polymer Fabrications: Sealant to prevent vermin and moisture penetration into concealed spaces.
 - 6. Section 07110 - Waterproofing: Sealant for waterproofing concrete work.
 - 7. Section 07120 - Fluid-Applied Urethane Roofing: Sealant for waterproofing roofing applications.
 - 8. Section 07125 - Fluid-Applied Elastomeric Roofing (Acrylic): Sealant for waterproofing roofing applications.
 - 9. Section 07190 - Water Repellents (Sealer): Sealant for waterproofing concrete walks and floors.
 - 10. Section 07250 - Fireproofing: Sealants used in fireproofing.
 - 11. Section 07410 - Preformed Metal Roofing: Sealant for waterproofing metal roofing systems.
 - 12. Section 07415 - Exterior Wall Panel System: Sealant for waterproofing metal wall systems.

13. Section 07620 - Sheet Metal Flashing and Trim: Sealant for weatherproofing metal roofing and flashings.
14. Section 07724 - Roof Hatch: Sealant for waterproofing roof hatch installations.
15. Section 07840 - Firestopping: Sealants for use in fire-rated assemblies.
16. Section 08100 - Hollow Metal Doors and Frames: Sealants for weatherproofing door and window frame perimeters and thresholds.
17. Section 08310 - Access Doors and Panels: Sealant to close joint where metal edge trim meets adjacent surfaces.
18. Section 08330 - Overhead Coiling Doors: Sealants for weatherproofing door frame perimeters and thresholds.
19. Section 08400 - Entrances, Storefronts and Windows: Sealants for weatherproofing frame perimeters and thresholds.
20. Section 08800 - Glass and Glazing: Sealants and compound for glass and glazing installations.
21. Section 09250 - Gypsum Board: Sealant for back of control joints and to close joint where edge trim meets adjacent surfaces; acoustical sealants.
22. Section 09300 - Tile: Sealants for tile and threshold installations.
23. Section 09510 - Gypsum Board: Sealant to close joint where edge trim meets vertical surfaces.
24. Section 10200 - Louvers and Vents: Sealants to close joint where metal edge trim meets vertical surfaces.
25. Section 10500 - Metal Lockers: Sealant to close joint where metal edge trim meets vertical surfaces.
26. Section 10810 - Toilet Accessories: Sealants to prevent moisture penetration into concealed areas.
27. Section 12305 - Science Casework and Laboratory Equipment: Sealant to prevent vermin and moisture penetration into concealed spaces.
28. Section 14240 - Hydraulic Elevators: Sealant to prevent moisture penetration into concealed spaces.
29. Section 14245 - Traction Elevators: Sealant to prevent moisture penetration into concealed spaces.
30. Section 14560 - Chutes: Sealant to prevent moisture penetration into concealed spaces.

1.2 DESCRIPTION OF WORK

- A. The extent of joint sealers work is indicated on the Drawings and as specified herein, and includes providing and installing sealants, complete. The principal item of work is the

sealing of openings and joints indicated, specified, and as required to make the entire building weatherproof and watertight.

- B. This Section contains general specifications for sealants throughout the Project. The specific use for joint sealants is indicated in the Sealant Schedule at the end of this Section.

1.3 REFERENCES

- A. The publications listed below form a part of this Specification to the extent referenced. Publications are referred to in the text by basic designation only.
- B. American Society for Testing and Materials (ASTM):
 - 1. ASTM C 717 - Terminology of Building Seals and Sealants.
 - 2. ASTM C 834 - Specification for Latex Sealants.
 - 3. ASTM C 920 - Specification for Elastomeric Joint Sealants.
 - 4. ASTM C 1193 - Guide for Use of Joint Sealants.
 - 5. ASTM C 1299 - Guide for Use in Selection of Liquid-Applied Sealants.
 - 6. ASTM D 1056 - Specification for Flexible Cellular Materials - Sponge or Expanded Rubber.

1.4 SUBMITTALS

- A. Section 01330 - Submittals: Procedures for submittals.
 - 1. Product Data: Manufacturer's specifications, recommendations, handling, installation and curing instructions for each type of sealant and associated miscellaneous material required. Include chemical characteristics, performance criteria, substrate preparation, limitations, color availability and VOC content.
 - 2. Samples: 2" long of each color required for each type of sealant exposed to view.
 - 3. Assurance / Control Submittals:
 - a. Manufacturer's certificate that the products meet or exceed the specified requirements.
 - b. Manufacturer's Material Safety Data Sheets (MSDS).
 - c. Manufacturer's certification that the products supplied comply with applicable federal and local regulations controlling the use of volatile organic compounds (VOC).
 - d. Manufacturer's Instructions indicating procedures and conditions requiring special attention, and cautionary procedures required during application.
 - e. Documentation of experience indicating compliance with the specified qualifications requirements.
- B. Section 01780 - Closeout Submittals: Procedures for closeout submittals.

1. Warranty: Provide a written special Warranty with forms completed in the name of the Owner and registered with the manufacturer.

1.5 QUALITY ASSURANCE

A. Qualifications:

1. Manufacturer: Company specializing in manufacturing the products specified with a minimum of five (5) years documented experience.
2. Installer: Company experienced in performing the work of this Section with a minimum of five (5) years documented experience.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Section 01600 - Product Requirements: Transport, handle, store and protect the products.
- B. Deliver products to the Project Site in the manufacturer's original, new, unopened packages or containers, dry and undamaged with seals and labels intact, identifying the product and manufacturer, product designation, date of manufacture, lot number, shelf life, curing time, and mixing instructions, if applicable.
- C. Handle and store materials to prevent deterioration and damage due to moisture, temperature changes, contaminants and other causes.
- D. Store materials not in actual use out of the weather until ready for use. Maintain packages and containers in a clean condition, free of foreign materials and residue.
- E. Store materials in a ventilated area, and in compliance with the manufacturer's printed instructions.
- F. Keep storage areas neat and orderly.
- G. Protect against fire hazards and spontaneous combustion.
- H. Take all necessary precautions to ensure that workmen and the work areas are adequately protected from health hazards resulting from handling, mixing and installation of the materials.

1.7 JOB CONDITIONS

- A. Environmental Requirements: Install sealants only during the manufacturer's recommended temperature ranges and weather conditions for proper application and cure. Consult the manufacturer if a sealant cannot be applied under the recommended conditions.

1.8 WARRANTY

- A. Section 01780 - Closeout Submittals: Procedures for closeout submittals.
- B. Special Warranty:
 1. Submit a joint and severable written Warranty signed by the sealant manufacturer and the Installer certifying that the products and installation is free of defective materials and workmanship and agreeing to repair or replace sealants and accessories which fail because of loss of cohesion or adhesion, which do not

cure properly or are improperly installed.

2. Warranty Period: Three (3) years from the date of Substantial Completion.

PART 2 PRODUCTS

2.1 MATERIALS

- A. General Performance Requirements: Select materials for compatibility with the joint surfaces to be encountered and other indicated exposures, and except as otherwise indicated, select modulus of elasticity and hardness or grade recommended by the manufacturer for each application indicated.
- B. Where exposed to foot traffic, select materials of sufficient strength and hardness to withstand stiletto heel traffic without damage or deterioration of the sealant system.
- C. Subject to compliance with the Project requirements, manufacturers offering products which may be incorporated into the work include the following:
 1. Urethanes:
 - a. Two-Part Urethane: Self-Leveling, ASTM C 920, Type M, Grade P, Class 25.
 - 1) Chem-Calk 550 by Bostik.
 - 2) Vulkem 245 by Tremco (formerly Mameco International, Inc.)
 - 3) Vulkem 255 FM by Tremco.
 - 4) Urexpan NR-200 by Pecora Corporation.
 - 5) Sikaflex 2c SL by Sika Group.
 - b. Two-Part Urethane: Non-Sag, ASTM C 920, Type M, Grade NS, Class 25.
 - 1) Chem-Calk 500 by Bostik.
 - 2) Sonolastic NP 2 by Sonneborn Building Products
 - 3) Vulkem 227 by Tremco.
 - 4) Dynatrol II by Pecora.
 - 5) Sikaflex-2c NS EX Mix by Sika.
 - c. One-Part Urethane: Self-Leveling, ASTM C 920, Type S, Grade P, Class 25.
 - 1) Vulkem 45 by Tremco.
 - 2) Sonolastic SL1 by Sonneborn.
 - 3) Urexpan NR-201 by Pecora.

- d. One-Part Urethane: Non-Sag, ASTM C 920, Type S, Grade NS, Class 25.
 - 1) Chem-Calk 900 by Bostik.
 - 2) Sonolastic NP 1 by Sonneborn.
 - 3) Vulkem 116 by Tremco.
- 2. Silicones:
 - a. One-Part Silicones: ASTM C 920, Type S, Grade NS, Class 25. Vertical Surfaces Only.
 - 1) 795 Silicone Building Sealant Structural Glazing, Glazing and Weatherproofing Sealant by Dow Corning. (colors only)
 - 2) Construction 1200 Sealant by General Electric Company.
 - 3) 999-A Silicone Building and Glazing Sealant by Dow Corning.
 - 4) 864 Architectural Silicone by Pecora.
 - b. One-Part Silicones: ASTM C 920, Type S, Grade NS, Class 25.
 - 1) 786 Mildew Resistant Silicone Sealant by Dow.
 - 2) Sanitary 1700 Silicone Sealant by General Electric.
 - 3) 898 Sanitary Mildew Resistant Silicone Sealant by Pecora.
- 3. Acrylics, Latex:
 - a. One-Part Acrylic Latex, Non-Sag, ASTM C 834.
 - 1) Chem-Calk 600 by Bostik.
 - 2) LC-130 Liquid Nails Caulk Window and Door Acrylic Latex by Macco Adhesives.
 - 3) AC-20 Acrylic Latex Caulking, Non-Sag by Pecora.
 - 4) Sonolac Acrylic Latex Caulk by Sonneborn.
- 4. Acoustical Sealants:
 - a. AC-20 FTR Fire and Temperature Rated Acoustical and Insulation Sealant by Pecora.
 - b. Sheetrock Acoustical Sealant by United States Gypsum Co.
- 5. Butyls:
 - a. One-Part Butyl, Non-Sag, FS TT-S-1657.
 - 1) Chem-Calk 300 Butyl Rubber Caulk by Bostik.

- 2) BC-158 Butyl Rubber Caulk by Pecora.
- 6. Preformed Compressible & Non-Compressible Fillers:
 - a. Backer Rod - Closed cell polyethylene foam:
 - 1) Chem-Rod / Closed by Bostik.
 - 2) Expand-O-Foam by Williams Products.
 - 3) HBR Backer Rod by Nomaco, Inc.
 - 4) Sonofoam Closed-Cell Backer Rod by Sonneborn.
 - b. Backer Rod - Open cell polyurethane foam:
 - 1) Denver Foam by Backer Rod Manufacturing.
 - 2) Foam Pack II by Nomaco.
 - c. Neoprene compression seals:
 - 1) WA and WE Series by Watson Bowman Acme.
 - d. Butyl Rod: Kirkhill Rubber Co.
- 7. Paving Sealants:
 - a. Two-Part Urethane: Self-Leveling, ASTM C 920, Type M, Grade P, Class 25.
 - 1). Vulkem 202 by Tremco. (Jet Fuel Resistant) (FS SS-S-200E, Type H only).
 - 2). NR-300 Urexpan by Pecora (FS SS-S-200E).
 - b. One-Part Urethane: Self-Leveling, ASTM C 920, Type S, Grade P, Class 25.
 - 1). SONOMETRIC 1 Sealant by Sonneborn (FS SS-S-200E).
 - 2). Vulkem 45 by Tremco.

D. Section 01600 - Product Requirements: Product Options: Substitutions permitted.

2.2 MISCELLANEOUS MATERIALS

- A. Joint Cleaner: Provide the type of joint cleaning compound recommended by the sealant manufacturer for the joint surfaces to be cleaned.
- B. Joint Primer / Sealer: Type of joint primer / sealer recommended by the sealant manufacturer for the joint surfaces to be primed or sealed.
- C. Bond Breaker Tape: Polyethylene tape or other plastic tape as recommended by the sealant manufacturer, to be applied to the sealant contact surfaces where bond to the substrate or joint filler must be avoided for proper performance of the sealant. Provide self-adhesive tape where applicable.

- D. Sealant Backer Rod: Compressible rod stock of polyethylene foam, polyethylene jacketed polyurethane foam, butyl rubber foam, neoprene foam or other flexible, permanent, durable non-absorbable material as recommended by the sealant manufacturer for compatibility with the sealant.
- E. Masking tape and similar accessories as necessary to protect adjacent surfaces from damage.

2.3 COLORS

- A. Generally use sealant colors to match the color of the material in which the joint is located. Select from the manufacturer's standard colors.
- B. Where a joint occurs between two materials of differing colors and the Contractor cannot determine which material to match, contact the Owner's representative for a decision.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01700 - Execution Requirements: Verification of existing conditions before starting the work.
- B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive the work.
 - 1. Verify that joint widths are in conformance with the sealant manufacturer's allowable limits.
 - 2. Verify that contaminants capable of interfering with adhesion have been cleaned from joints.
 - 3. Verify that joints has been properly prepared.
- C. Report, in writing, prevailing conditions that will adversely affect satisfactory execution of the work of this Section. Do not proceed with the work until the unsatisfactory conditions have been corrected.

3.2 JOINT PREPARATION

- A. Prepare and size joints in accordance with the manufacturer's instructions.
- B. Clean joint surfaces immediately before installation of sealant. Remove dust, dirt, laitance, unsecured coatings, mortar, moisture and other substances which could interfere with bond of sealant or caulking compounds using a solvent or abrasion as recommended by the manufacturer. Remove loose materials and foreign matter which could impair adhesion of the sealant.
- C. Etch concrete and masonry joint surfaces as recommended by the sealant manufacturer.
- D. Roughen vitreous and glazed joint surfaces as recommended by the sealant manufacturer.
- E. Prime or seal joint surfaces where indicated, and where recommended by the sealant manufacturer.

- F. Verify that the sealant is suitable for the substrate.
- G. Verify that joint backing and release tapes are compatible with the sealant.
- H. Verify that the sealant is paintable if a paint finish is indicated.

3.3 INSTALLATION

- A. Install in accordance with the manufacturer's printed instructions, except where more stringent requirements are shown or specified, and except where the manufacturer's technical representative directs otherwise. Perform the work in accordance with ASTM C 1193 for latex base sealants.
- B. Prime or seal joint surfaces where recommended by the sealant manufacturer. Do not allow the primer or sealer to spill or migrate onto adjoining surfaces.
- A. Set joint filler units at the proper depth or position to coordinate with other work, including the installation of bond breakers, backer rods and sealants. Do not leave voids or gaps between the ends of joint filler units.
- B. Install sealant backer rods, except where shown to be omitted or recommended to be omitted by the sealant manufacturer for the application indicated.
- C. Install pre-formed compressible and non-compressible fillers in accordance with the manufacturer's published instructions.
- D. Install bond breaker tape where indicated and where required by the manufacturer's recommendations to ensure that elastomeric sealants will perform properly.
- E. Employ only proven installation techniques which will ensure that the sealants are deposited in uniform, continuous ribbons without gaps or air pockets, foreign embedded matter, ridges and sags, with complete *wetting* of joint bond surfaces equally on both sides.
- F. Except as otherwise indicated, fill sealant rabbet to a slight concave surface, slightly below the adjoining surfaces. Where horizontal joints are between a horizontal surface and a vertical surface, fill the joint to form a slight cove so the joint will not trap moisture and foreign matter.
- G. Dry tool joints. Do not use soap, water or solvent to tool the joints.
- H. Seal joints before adjacent surfaces are waterproofed or painted.
- I. Install sealants to the depths shown or, if not shown, as recommended by the sealant manufacturer, but within the following general limitations, measured at the center (thin) section of the bead:
 - 1. For sidewalks, pavements and similar joints sealed with elastomeric sealants and subject to traffic and other abrasions and indentation exposures, fill the joints to a depth equal to 75% of the joint width, but not less than 3/8" deep or more than 1/2" deep.
 - 2. For normal moving joints sealed with elastomeric sealants not subject to traffic, fill joints to a depth equal to 50% of the joint width, but not less than 1/4" deep or more than 2" deep.

3. For joints sealed with non-elastomeric sealants, fill the joints to a depth in the range of 75% to 125% of the joint width.

- L. Epoxy Floor Joint Sealant: Install sealant at floor construction and control joints in accordance with the manufacturer's published instructions.

3.4 SPILLAGE

- A. Protect materials surrounding the work of this Section from damage and disfigurement. Do not allow sealants to overflow or spill onto adjacent surfaces, or to migrate into the voids of adjoining surfaces.
- B. Recess exposed edges of exposed joint fillers slightly behind the adjoining surfaces, unless otherwise shown, so the compressed units will not protrude from the joints.
- C. Bond ends of joint fillers together with an adhesive or weld by other means recommended by the manufacturer to ensure a continuous watertight and airtight installation.

3.5 CURING

- A. Cure sealants in compliance with the manufacturer's published instructions.

3.6 FIELD QUALITY CONTROL

- A. Section 01450 - Quality Control: Field inspection.
- B. Inspect sealant work for proper installation, depth and adhesion.

3.7 CLEANING

- A. Section 01700 - Execution Requirements: Cleaning the installed work.
- B. Remove excess and spillage of sealants promptly as the work progresses using the materials and methods recommended by the sealant and substrate manufacturers.
- C. Clean adjoining surfaces to eliminate evidence of spillage without damage to the adjoining surfaces and finishes.

3.8 SEALANT SCHEDULE

- A. Exterior Joints:
 1. Perimeters of exterior openings where frames and other penetrations meet the exterior face of the building; precast concrete, concrete, concrete masonry, polymer reinforced concrete:
 - a. Sealant No. 2.1, C.1.b
 2. Expansion and control joints in exterior surfaces of cast-in-place concrete walls and precast architectural wall panels:
 - a. Sealant No. 2.1, C.1.b
 - b. Sealant No. 2.1, C.1.d

- c. Material No. 2.1, C.6.a
- 3. Expansion and control joints in exterior surfaces of unit masonry walls, polymer reinforced concrete and metal panels:
 - a. Sealant No. 2.1, C.1.b
- 4. Coping joints, coping-to-facade joints, cornice and wash, and horizontal surface joints not subject to foot or vehicular traffic:
 - a. Sealant No. 2.1, C.1.b
 - b. Sealant No. 2.1, C.1.d
- 5. Exterior joints in horizontal wearing and non-wearing surfaces:
 - a. Sealant No. 2.1, C.1.a
 - b. Sealant No. 2.1, C.1.c
 - c. Material No. 2.1, C.6.a
- 6. Paving joints and curb:
 - a. Sealant No. 2.1, C.1.d
 - b. Sealant No. 2.1, C.2.a
- 7. Setting bed for thresholds and saddles:
 - a. Sealant No. 2.1, C.1.c
- 8. Painted metal lap and flashing joints:
 - a. Sealant No. 2.1, C.2.a
- B. Interior Joints:
 - 1. Seal the interior perimeters of exterior openings.
 - 2. Expansion and control joints on the interior of exterior cast-in-place concrete walls.
 - 3. Expansion and control joints on the interior of exterior precast, architectural wall panels.
 - 4. Expansion and control joints on the interior of exterior surfaces of unit masonry walls.
 - 5. Perimeters of interior aluminum and hollow metal frames.
 - 6. Interior masonry vertical control joints and intersecting unit masonry walls; masonry-to-masonry, masonry-to-concrete.
 - 7. For all of the above interior joints:

- a. Sealant No. 2.1, C.1.b
 - b. Sealant No. 2.1, C.1.d
 - c. Sealant No. 2.1, C.1.a (for pre-finished materials only).
8. Exposed interior control joints in drywall and concealed joints:
- a. Sealant No. 2.1, C.3.a
 - b. Sealant No. 2.1, C.4
 - c. Sealant No. 2.1, C.4.c
 - d. Sealant No. 2.1, C.6.a
9. Joints at the top of non-load-bearing unit masonry walls at the underside of cast-in-place concrete:
- a. Sealant No. 2.1, C.1.b
 - b. Sealant No. 2.1, C.1.d
10. Perimeters of architectural woodwork: overhead cabinets, base cabinets, vanities, countertops, shelving, etc.:
- a. Sealant No 2.1, C.2.b
11. Perimeters of suspended acoustical ceilings where edge trim meets vertical surfaces:
- a. Sealant No. 2.1, C.2.b
12. Perimeters of toilet / bath fixtures: mirrors, sinks, urinals, tubs, vanities, waterclosets, accessories, etc.:
- a. Sealant No. 2.1, C.2.b
13. Interior expansion and control joints in floor surfaces exposed to foot traffic:
- a. Sealant No. 2.1, C.1.a
 - b. Sealant No. 2.1, C.1.c
 - c. Material No. 2.1, C.6.a
14. Interior saw-cut contraction joints in exposed concrete floors exposed to forklift traffic:
- a. Sealant No. 2.1 C.7
15. Interior non-moving joints, including control, contraction, and construction joints in interior floor slabs exposed to heavy duty traffic:
- a. Sealant No. 2.1, C.7
16. Painted metal lap joints:

- a. Sealant No. 2.1, C.2
- C. Glass and Glazing:
 - 1. Structural Glazing.
 - a. Sealant 2.1, C.2.a
 - 2. General Purpose Glazing.
 - a. Sealant 2.1, C.2.b
 - 3. End Damming.
 - a. Sealant 2.1, C.5

END OF SECTION

SECTION 08100
HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Steel doors.
 - 2. Steel door frames.
 - 3. Steel window frames.
 - 4. Door vision panels.
 - 5. Louvers.
 - 6. Accessories.
- B. Related Documents: The Contract Documents, as defined in Section 01010 - Summary of Work, apply to the work of this Section. Additional requirements and information necessary to complete the work of this Section may be found in other Documents.
- C. Related Sections:
 - 1. Section 03300 - Cast-In-Place Concrete: Substrate for anchorage.
 - 2. Section 04230 - Reinforced Unit Masonry: Substrate for anchorage.
 - 3. Section 08210 - Wood Doors: Doors installed in steel frames.
 - 4. Section 08710 - Door Hardware: Hardware coordination.
 - 5. Section 08800 - Glass and Glazing: Glass installed in vision panels in doors and steel window frames.
 - 6. Section 09900 - Painting: Field painting and finishing of frames and doors.

1.2 DESCRIPTION OF WORK

- A. The extent of standard steel doors and frames work is indicated on the Drawings and Schedule and as specified herein, and includes providing and installing exterior entrance and storefront assemblies, designed and fabricated to comply with the requirements for system performance characteristics below, as demonstrated by testing of the manufacturer's corresponding stock systems in compliance with the test methods designated.
- B. Door hardware is specified in Section 08710.

1.3 REFERENCES

- A. The publications listed below form a part of this Specification to the extent referenced.

Publications are referred to in the text by basic designation only.

- B. American Society of Civil Engineers (ASCE):
 - 1. ASCE / SEI 7 - Minimum Design Loads for Buildings and Other Structures.
- C. American Society for Testing and Materials (ASTM):
 - 1. ASTM A 153 / A 153M - Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 - 2. ASTM A 568 / A 568M - Specification for Steel, Sheet, Carbon, Structural, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for.
 - 3. ASTM A 653 / A 653M - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by Hot-Dip Process.
 - 4. ASTM A 1008 / A 1008M - Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.
 - 5. ASTM A 1011 / A 1011M - 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.
 - 6. ASTM D 2201 - Practice for Preparation of Zinc-Coated and Zinc-Alloy-Coated Steel Panels for Testing Paint and Related Coating Products.
 - 7. ASTM E 90 - Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
 - 8. ASTM E 330 - Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
 - 9. ASTM E 413 - Classification for Rating Sound Insulation.
- D. Americans with Disabilities Guidelines (ADAAG):
 - 1. Accessibility Guidelines for Buildings and Facilities.
- E. Door Hardware Institute (DHI):
 - 1. DHI - The Installation of Commercial Steel Doors and Steel Frames, Insulated Steel Doors in Wood Frames and Builder's Hardware.
- F. International Code Council:
 - 1. International Building Code (IBC), 2009.
- G. Steel Door Institute (SDI):
 - 1. SDI-100 - Standard Steel Doors and Frames.
 - 2. SDI-105 - Recommended Erection Instructions for Steel Frames.
- H. National Fire Protection Association (NFPA):

1. Standard No. 80 - Standard for Fire Doors and Other Opening Protectives.

1.4 SUBMITTALS

A. Section 01330 - Submittal Procedures: Procedures for submittals.

1. Product Data: Identify door and frame materials, gauges, configurations, location of cutouts, hardware reinforcement, fire-rating and finish.
2. Shop Drawings: Include elevations of each door type, details of each frame type, conditions at openings, details of construction, location and installation requirements of reinforcements and finish hardware, and details of joints and connections. Show anchorages and accessory items. Indicate door elevations, internal reinforcement, closure method, sidelights, and cutouts for louvers and vision panels.
3. Schedule: Provide for doors and frames using the same reference numbers for details and openings as those used on the Drawings.
4. Samples: Full range of color samples for selection. Two (2) 6" x 6", minimum, of each color and texture selected from factory-finished doors and frames.
5. Assurance / Control Submittals:
 - a. Certificates:
 - 1) Manufacturer's Certificate that the products meet or exceed the specified requirements.
 - 2) Manufacturer's certification that hot-dip galvanizing for doors and frames comply with the requirements.
 - 3) Manufacturer's certification that oversized fire-rated frame and door assemblies have been constructed with materials and methods equivalent to the requirements for labeled construction.
 - b. Calculations indicating that exterior doors, frames and anchorages satisfy the performance requirements.
 - c. Documentation of experience indicating compliance with the specified qualifications requirements.

B. Section 01780 - Closeout Submittals: procedures for closeout submittals.

1. Warranty: Submit a written special Warranty with forms completed in the name of the Owner and registered with the manufacturer.

1.5 QUALITY ASSURANCE

A. Qualifications:

1. Manufacturer: Company specializing in manufacturing the products specified with a minimum of five (5) years documented experience.
2. Installer: Company experienced in performing work of this Section with a minimum of five (5) years documented experience.

3. Provide frames and doors complying with Steel Door Institute, SDI-100
ΔRecommended Specifications: Standard Steel Doors and Frames® and as specified herein.

B. Performance Requirements:

1. Provide the capacity to withstand the following loading requirements for exterior units:
 - a. Design and install to resist combined positive and negative windloading in accordance with IBC 2009, Section 1609 with a Vmph of 170, qs of 74.0 psf, exposure [B] [C] [D], and importance factor [1.0] [1.25] [1.5], as applicable per ASCE 7.
2. Fire-Rated Assemblies: Provide fire-rated doors investigated and tested as fire door assemblies, complete with type of hardware to be used. Identify each fire door with recognized testing laboratory labels indicating the applicable fire-rating. Construct and install assemblies to comply with NFPA, Standard No. 80, and as herein specified.

1.6 DELIVERY, STORAGE AND PROTECTION

- A. Section 01600 - Product Requirements: Transport, handle, store, and protect the products.
- B. Deliver hollow metal work cartoned or crated for protection during transit and storage.
- C. Provide additional sealed plastic wrapping for factor-finished doors.
- D. Deliver products to the Project Site in the manufacturer's original, unopened packages, dry and undamaged with seals and labels intact.
- E. Inspect products for damage. Minor damages may be repaired provided the finish items are equal, in all respects, to new work, and acceptable to the Owner's representative; otherwise remove and replace the damaged items.
- F. Store under cover in dry, weathertight conditions. Place units on 4" high wood sills or store otherwise in a manner to prevent rust and damage. Provide 1/4" space between stacked doors to allow for air circulation. Avoid the use of non-ventilated plastic or canvas shelters. If the cardboard wrapper becomes wet, remove the carton immediately.
- G. Break seals to permit ventilation.

1.7 WARRANTY

- A. Section 01780 - Closeout Submittals: Procedures for closeout.
- B. Special Warranty:
 1. Provide a written Warranty, signed by the door manufacturer, and the door installer agreeing to repair or replace doors that do not meet the requirements, or that fail in materials or workmanship.
 2. Warranty Period: Two (2) years from the date of Substantial Completion.

PART 2 PRODUCTS

HOLLOW METAL DOORS AND FRAMES

2.1 MANUFACTURERS

- A. Subject to compliance with the Project requirements, manufacturers offering items which may be incorporated in the work include the following:
 - 1. Amweld Building Products.
 - 2. Ceco Door Products.
 - 3. Republic Doors and Frames.
 - 4. Steelcraft.
 - 5. Curries.
- B. Section 01600 - Product Requirements: Product Options: Substitutions permitted.

2.2 MATERIALS

- A. Hot-Rolled Steel Sheets and Strip: Commercial quality carbon steel, pickled and oiled, complying with ASTM A 1011 / A 1011M and ASTM A 568 / A 568M.
- B. Cold-Rolled Steel Sheets: Commercial quality carbon steel, complying with ASTM A 1008 / A 1008M and ASTM A 568 / A 568M.
- C. Galvanized Steel Sheets: Zinc-coated carbon steel sheets of commercial quality, complying with ASTM A 653 / A 653M, ASTM D 2201, G60 zinc coating, mill phosphatized.
- D. Supports and Anchors: Fabricate of not less than 18 gage galvanized sheet steel.
- E. Inserts, Bolts and Fasteners: Manufacturer's standard units, hot-dip galvanized complying with ASTM A 153 / A 153M, Class C or D, as applicable.

2.3 FABRICATION

- A. Fabricate units rigid, neat in appearance, and free from defects, warp, twist and buckle. Fit and assemble units in the manufacturer's plant. Fabricate KD or welded. Clearly identify work that cannot be permanently factory-assembled before shipment to assure proper assembly at the Project Site.
- B. Weld the exposed surface of joints continuously; grind, dress, and make joints smooth, flush and invisible. When prime painted, the use of metallic filler to conceal manufacturing defects is not acceptable.
- C. Fabricate exposed faces of doors and panels, including stiles and rails of non-flush units from only cold-rolled steel.
- D. Fabricate frames, concealed stiffeners, reinforcement, edge channels, louvers and molding from either cold-rolled or hot-rolled steel (fabricator's option); galvanized.
- E. Fabricate doors, panels and frames from galvanized sheet steel. Close top and bottom edges of doors as an integral part of the door construction or by the addition of inverted steel channels.
- F. Exposed Fasteners: Unless otherwise indicated, provide countersunk flat Phillips head for exposed screws and bolts; galvanized.

G. Sound-Rated (Acoustical) Assemblies:

1. Where shown or scheduled, provide frame and door assemblies which have been fabricated as sound-reducing type, tested in accordance with ASTM E 90 and classified in accordance with ASTM E 413.
2. Unless otherwise indicated, the minimum sound rating for acoustical assemblies shall be STC 33.

H. Door Hardware Preparation:

1. Prepare doors and frames to receive mortised and concealed finish hardware in accordance with final Finish Hardware Schedule and templates provided by the hardware supplier. Comply with applicable requirements of ANSI A115 series specifications for door and frame preparation for hardware.
2. For concealed overhead door closers, provide space, cutouts, reinforcing and provisions for fastening in the top rail of doors or heads of frames, as applicable.
3. Reinforce doors and frames to receive surface-applied hardware. Drilling and tapping for surface-applied finish hardware may be done at the Project site.
4. Locate finish hardware as shown on final Shop Drawings or, if not shown, in accordance with ~~A~~Recommended Locations for Builder's Hardware, ~~A~~published by the Door and Hardware Institute and ADA Accessibility Guidelines.

I. Prepare frame for silencers. Provide three single rubber silencers for single doors; two single silencers on the frame head at double doors without mullions.

J. Equip frames with one welded-in floor anchor in each jamb. Furnish a minimum of three (3) steel jamb anchors and two (2) head anchors for field insertion at a maximum of 24" o.c. Anchors shall be of the proper type for particular construction involved (i.e., masonry, concrete, metal framing, etc).

K. Factory install louvers and vision panels in prepared openings.

L. Shop Painting:

1. Clean steel surfaces of mill scale, rust, oil, grease, dirt, and other foreign materials before application of paint.
2. Clean, treat and paint exposed surfaces of steel doors, louvers and frames including galvanized surfaces.
3. Apply one shop coat of rust-inhibitive enamel or primer paint, either air-dried or baked-on, of even consistency, and suitable as a base for the specified finish paint.

2.4 STANDARD STEEL FRAMES

A. Provide galvanized steel frames for doors, transoms, sidelights, borrowed lights, windows and other openings of the types and styles shown on the Drawings.

B. Exterior Frames including sidelights, if required:

1. Cold-rolled steel; factory mitered corners and full-welded construction; 2" face, jamb dept as required or as shown on the Drawings; galvanized to ASTM D 2201.
 2. 14 gage for exterior frames and other frames wider than 48".
 3. 18 gage for all other frames.
- C. Interior Frames:
1. Cold-rolled steel; 2" face, jamb depth as required or as shown on the Drawings.
 2. 16 gage.
 3. Fire-rated frames per NFPA, Standard No. 80.
- D. Silencers: Except on weatherstripped frames, drill stops to receive three (3) silencers on the strike jambs of single-swing frames and two (2) silencers on the heads of double-swing frames. Install plastic plugs to keep holes clear during construction.
- E. Plaster Guards: Provide 26 gage, steel plaster guards or mortar boxes welded to the frames at the back of door hardware cutouts where mortar or other materials might obstruct hardware operation.
- F. Anchors: Equip frames with one welded-in floor anchor in each jamb. Furnish a minimum of three (3) steel jamb anchors and two (2) head anchors for field insertion at a maximum or 24" o.c.. Anchors shall be of the proper type for the particular construction involved, i.e., concrete, masonry, metal framing, etc. Conceal fastenings unless indicated otherwise.

2.5 STANDARD STEEL DOORS

- A. Exterior Doors: Extra Heavy-Duty, Grade III per SDI-100, 1-3/4" thick, types and styles as indicated on the Drawings; top edge closed flush; 14 gage cold-rolled steel, galvanized to ASTM D 2201; insulated core.
- B. Interior Doors: Standard-duty, Grade I per SDI-100, 1-3/4" thick, types and styles as indicated on the Drawings; top edge closed flush; 16 gage cold-rolled steel. Fire-rated UL labeled where indicated or required by the Building Code.
- C. Fire-Rated Doors: Per NFPA, Standard No. 80.
- D. Vision Panels: Laminated glass in metal frames as required by the fire-rating. Install removable steel stops on the room side of the doors.
- E. Louvers:
 1. Exterior: Weatherproof, stationary, where shown on the Drawings. Construct of ΔZ shaped, 16 gage, hot-dip galvanized steel blades. Space blades not more than 1-1/2" o.c.. Provide removable 1/4" stainless steel wire mesh screen at the interior face of doors, in formed metal frame with removable clips. Provide insect screens at louvers in exterior doors.
 2. For fire-rated openings, provide tightly fitted, spring-loaded, automatic closing louvers with operable blades equipped with a fusible link; arranged so metal overlaps metal at every joint.
 3. Provide louvers complying with UL or NFPA standards only, and factory-applied in doors.

4. Interior (Non-fire-rated): Roll-formed, 20 gage, galvanized steel, inverted AYP blades; sight-proof; prime painted for field applied finish paint; size as indicated on the Drawings.

2.6 CORE CONSTRUCTION

- A. Provide one of the following types of core construction (Contractor's option):
 1. Kraft Honeycomb: Phenolic treated.
 2. Polyurethane: Foamed-in-place or laminated. 20 psi strength, 1.8 pcf density, 1/2" maximum voids in any direction. Strength of bond between the core and the steel face sheets shall exceed strength of core so delamination will not occur during operating conditions.
 3. Polystyrene: Rigid core of polystyrene foam board, 1500 psf compressive strength, 18 psi shear strength. Strength of the bond between the core and the steel face sheets shall exceed strength of core so that delamination will not occur under operating conditions.
 4. Vertical Steel Stiffeners: 22 gage vertical steel stiffeners, spaced 6" apart and spot welded to the face sheets at 6" on center. Insulate the spaces between stiffeners with loose fill insulation the full height of the door.

2.7 PROTECTIVE COATINGS

- A. Bituminous Coating: Apply fibered asphalt emulsion at grout filled frames.
- B. Primer: Exposed surfaces shall be cleaned, treated with Bonderite chemical and given one baked-on shop coat of grey synthetic primer.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01700 - Execution Requirements: Verification of existing conditions before starting the work.
- B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive the work.
- C. Report in writing, prevailing conditions that will adversely affect satisfactory execution of the work of this Section. Do not proceed with the work until the unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Install standard steel doors, frames and accessories in accordance with the final Shop Drawings, the manufacturer's published instructions, as herein specified, and at the locations shown on the Drawings.
- B. Door Installations:
 1. Fit hollow metal doors accurately in frames, within clearances specified in SDI-100.

2. Install fire-rated doors with the clearances specified in NFPA, Standard No. 80.

C. Frame Installations:

1. Comply with the provisions of SDI-105 ~~A~~Recommended Erection Instructions for Steel Frames~~@~~, unless indicated otherwise.
2. Except for frames located at in-place concrete or masonry and at drywall installations, place frames prior to construction of the enclosing walls. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After the wall construction is completed, remove temporary braces and spreaders leaving the surfaces smooth and undamaged.
3. At in-place concrete construction, set frames and secure to adjacent construction with machine screws and masonry anchorage devices.
4. In masonry construction, locate wall anchors at the hinge and strike levels. Building-in of anchors and grouting of frames is specified in Division 4 and as shown on the Drawings..
5. In steel framed partitions, install wall anchors at the hinge and strike levels. In open steel stud partitions, place studs in wall anchor notches and wire tie. In closed steel stud partitions, attach wall anchors to studs with tapping screws.
6. Install fire-rated frames with clearances specified in NFPA, Standard No. 80.

- D. Field Finish: Field paint door, frames, louvers and vision panel frames as specified in Section 09900 - Painting.

3.3 CONSTRUCTION

A. Interface with Other Work:

1. Coordinate frame installations for size, location, and the particular construction involved.
2. Coordinate with the door opening construction, door frames, door hardware, door louver and vision panel glazing installation.

B. Site Tolerances:

1. Maximum Diagonal Distortion: 1/16" measured with straight edge from corner to corner.

3.4 ADJUSTING

- A. Section 01700 - Execution Requirements: Adjusting the installed work.
- B. Immediately after installation, sand smooth any rusted or damaged areas of the prime coat and touch-up with a compatible air-drying primer.
- C. Check and readjust operating door hardware items. Leave steel doors and frames undamaged and in complete and proper operating condition.
- D. Adjust hardware for smooth and balanced door and window movement.

3.5 FIELD QUALITY CONTROL

- A. Section 01450 - Quality Control: Field inspection.
- B. Inspect metal door, frame and window installations, alignment, attachment to structure, and operation.

3.6 CLEANING

- A. Section 01700 - Execution Requirements: Cleaning installed Work.
- B. Immediately prior to final inspection, remove protective plastic wrappings from prefinished doors.
- C. Wipe down all doors and frames before final acceptance inspection.

END OF SECTION

SECTION 08210

WOOD DOORS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Flush solid core wood doors with wood veneer.
2. Flush solid core wood doors with plastic laminate face.
3. Flush hollow core wood doors with veneer face.
4. Paneled wood doors with solid wood stiles, rails and panels.
5. Furnishing and installation of louvers in wood doors.

B. Related Documents: The Contract Documents, as defined in Section 01010 - Summary of Work, apply to the work of this Section. Additional requirements and information necessary to complete the work of this Section may be found in other Documents.

C. Related Sections:

1. Section 06200 - Finish Carpentry: Wood door frames.
2. Section 08710 - Door Hardware: Hardware coordination for wood doors.
3. Section 08800 - Glass and Glazing: Glass installed in wood doors.
4. Section 09900 - Painting: Field painting of wood doors.

1.2 DESCRIPTION OF WORK

A. The extent of the wood doors work is indicated on the Drawings and Schedules and as specified herein, and includes providing and installing standard hollow core and solid core wood doors, panel doors and louvers.

1.3 REFERENCES

A. The publications listed below form a part of this Specification to the extent referenced. Publications are referred to in the text by basic designation only.

B. American Society of Civil Engineers (ASCE):

1. ASCE / SEI 7 - Minimum Design Loads for Buildings and Other Structures.

C. Americans with Disabilities Act Accessibility Guidelines (ADAAG):

1. Accessibility Guidelines for Buildings and Facilities.

D. National Electrical Manufacturers Association (NEMA):

1. NEMA LD-3 - High Pressure Decorative Laminates.
- E. Architectural Woodwork Institute (AWI):
 1. Architectural Woodwork Quality Standards, Guide Specifications and Quality Certification Program.
 2. AWI 1300 - Architectural Flush Doors.
- F. International Code Council:
 1. International Building Code (IBC), 2009.
- G. National Wood Window and Door Association (NWWDA):
 1. I.S.-1. AIndustry Standard for Wood Flush Doors@.
- H. National Woodwork Manufacturers Association (NWMA).
 1. ACare and Finishing of Wood Doors@.
- I. Woodwork Institute (WI):
 1. AManual of Millwork@ - Designations for wood door grades and core construction.

1.3 SUBMITTALS

- A. Section 01330 - Submittal Procedures: Procedures for submittals.
 1. Product Data: Door manufacturer's product data, specifications and installation instructions for each type of door. Include details of core and edge construction, and louvers, if any, and similar components.
 2. Shop Drawings: Indicate locations and size of each door, elevation of each kind, details of construction, locations and extent of hardware blocking, swings, and other pertinent information. Indicate cutouts for vision panels and louvers, if any.
 2. Samples: For review and approval of color and texture only. Compliance with other requirements is the exclusive responsibility of the Contractor. Submit the following:
 - a. 8" x 10" representative finished veneer sheet for each available flitch to be used for face veneer of transparent finished doors.
 - b. 3" x 10" solid wood strips of species to be used for exposed edges, trim and other solid wood components.
 3. Assurance / Control Submittals:
 - c. Manufacturer's certificate that the products meet or exceed the specified requirements.
 - d. Documentation of experience indicating compliance with the specified qualifications requirements.
- B. Section 01780 - Closeout Submittals: Procedures for closeout submittals.
 1. Special Warranty: Submit written special Warranty forms completed in the name

of the Owner and registered with the manufacturer.

1.4 QUALITY ASSURANCE

A. Qualifications:

1. Manufacturer: Company specializing in manufacturing the products specified with a minimum of five (5) years documented experience.

B. Obtain doors from a single manufacturer to ensure uniformity in quality of appearance and construction, unless approved otherwise.

C. Mark each door with NWWDA, Wood Flush Door Certification Hallmark certifying compliance with applicable requirements of ANSI / NWWDA I.S.-1. For manufacturer's not participating in the NWWDA Hallmark Program, a certification of compliance may be substituted for marking of the individual doors.

D. Perform Work in accordance with AWI 1300 for Custom Grade doors.

F. Performance Requirements:

1. Fabricate and install to withstand the following loading requirements for exterior units:
 - a. Combined positive and negative windloading in accordance with IBC 2009, Section 1609 with a Vmph of 170, qs of 74.0 psf, exposure [B] [C] [D], and importance factor of [1.0] [1.25] [1.5], as applicable per ASCE 7.

1.5 DELIVERY, STORAGE AND HANDLING

A. Section 01600 - Product Requirements: Transport, handle, store and protect doors from damage, soiling and deterioration.

B. Ship doors individually wrapped.

C. Deliver products to the Project Site in the manufacturer's original, unopened packaging, dry and undamaged with seals and labels intact.

D. Comply with the "On-Site Care" recommendations of NWMA pamphlet "Care and Finishing of Wood Doors" and with the manufacturer's instructions.

E. Store under cover in dry, weathertight conditions.

1.6 COORDINATION

A. Design Intent: It is the intent of the design that similar woodwork throughout the Project match. Coordinate work between the separate installers providing similar woodwork to ensure that the design intent is achieved to the satisfaction of the Owner's representative.

B. Pre-Construction Meetings: Prior to the purchase and fabrication of materials and prior to installation of the scheduled work, conduct meetings with the various related woodwork installers to coordinate efforts to achieve the design intent. Participants to include the Contractor, finish carpentry installer, architectural woodwork installer, painting applicator and the Owner's representative.

1.7 JOB CONDITIONS

- A. Condition doors to the average prevailing humidity in the installation areas prior to installation.

1.8 WARRANTY

- A. Section 01780 - Closeout Submittals: Procedures for closeout submittals.
- B. Special Warranty:
 - 1. Provide a written Warranty, signed by the door manufacturer agreeing to repair or replace doors that do not meet the requirements, or that fail due to delamination of veneer, warping beyond the specified installation tolerances, defective materials or telegraphing of the core construction.
 - 2. Warranty Period:
 - a. Exterior Doors: Two (2) years from the date of Substantial Completion.
 - b. Interior Doors: Life of the installation.
 - c. Stile and Rail Doors: Fabricator's special warranty for two (2) years against defects in materials and workmanship including, but not limited to, defects against warpage and wracking.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with the Project requirements, manufacturers offering products which may be incorporated into the work include the following:
 - 1. Cal-wood Door Div., Timberland Industries.
 - 2. Eggers Industries, Architectural Door Div.
 - 3. Mohawk Flush Doors, Inc.
 - 4. Weyerhaeuser Co.
 - 5. SUN-DOR-CO.
- B. Section 01600 - Product Requirements: Product Options: Substitutions permitted.

2.2 MATERIALS

- A. Solid Core Wood Doors (interior doors): AWI 1300.
 - 1. Type: Institutional, flush, solid core wood, AWI, [premium] [custom] grade.
 - 2. Thickness: As indicated on the Drawings.
 - 3. Core: Mat-formed wood particleboard with closed grain hardwood stiles, commercial Standard CS 236-66, Type 1, Density AC@, Class 1. Minimum 30 pounds per cubic foot density. Mineral core with UL label for fire-rated doors.

4. Face Finish: Veneer shall be premium grade sliced hardwood for doors with a transparent finish; custom grade, medium density overlay for doors scheduled for paint finish; conform to commercial standard CS35; minimum, 1/8" thick. Wood species as selected. Plastic laminate where indicated.
 5. Stiles and Rails: One piece hardwood stiles and top and bottom rails with wood species to match the face veneer. Where door closers are specified, the top rail width shall be doubled.
 - a. The bottom rail of a transom panel shall run the full width of the panel.
 6. Plastic Laminate: High pressure laminate. Color and texture as selected.
- B. Hollow Core Wood Doors:
1. Type: Institutional, flush hollow core, AWI, [premium] [custom] grade.
 2. Thickness: As indicated on the Drawings.
 3. Core: Expanded corrugated core with wood lock blocks.
 4. Face Finish: Veneer shall be premium grade, plain sliced hardwood for doors with a transparent finish; custom grade, medium density overlay for doors scheduled for paint finish. Wood species as selected.
 5. Plastic Laminate: High pressure laminate. Color and texture as selected.
- C. Panel Doors:
1. Type: Custom fabricated, solid wood construction. AWI, [premium] [custom] grade.
 2. Stiles, Rails and Panels: Fabricated from clear, kiln dried solid lumber core with sliced veneer faces and edges as scheduled and solid trim pieces as required. Wood species as scheduled or selected. Vertical stiles shall be of the same species and color as the face veneer.
- D. Louvered / Half-Louvered Doors: Minimum 1-3/8" thick; conform to NWWDA, I.S.-6.
- E. Louvers:
1. Wood: Door manufacturer's standard solid wood louvers of the same species as the door face veneer, unless indicated otherwise and of the size, type and profile shown. Factory install in prepared openings.
- F. Transom and Side Panels: Where transom or side panels are shown in the same framing system as wood doors, provide panels which match the quality and appearance of the associated wood doors, unless otherwise indicated. Fabricate matching panels with the same construction, exposed surfaces and finish as specified for the associated doors.
- G. Adhesive: Type 1, waterproof bond.

2.3 FABRICATION

- A. Fabricate non-fire-rated doors in accordance with AWI 1300.
- B. Furnish and install lock blocks at lock edge, and at the top of doors for closer hardware reinforcement.

- C. Bond edge banding to the core.
- D. Factory machine doors for door hardware in accordance with the hardware requirements and dimensions. Do not machine for surface hardware.
- E. Factory install louvers in prepared openings.
- F. Factory fit doors for the frame opening dimensions identified on the approved Shop Drawings.
- G. Doors may be provided pre-fitting, set in frames and ready for installation in rough openings.
- H. Before delivery of doors to the Project Site, shop-prime all wood surfaces per Section 09900 - Painting.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01700 - Execution Requirements: Verification of existing conditions before starting the work.
- B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive the work.
- C. Installer must examine door frames and verify that the frames are the correct type and have been installed as required for the proper hanging of corresponding doors.
- D. Report, in writing, prevailing conditions that will adversely affect satisfactory execution of the work of this Section. Do not proceed with the work until the unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Condition doors to average prevailing humidity in the installation areas prior to hanging.
- B. Install wood doors in accordance with the manufacturer's instructions and as shown.
- C. Install non-fire-rated doors in accordance with AWI Quality Standards requirements.
- D. Job Fit Doors: Align doors to the frames for proper fit and uniform clearance at each edge and machine for hardware. Seal cut surfaces after fitting and machining.
 - 1. Bevel non-fire rated doors 1/8" in 2" at lock and hinge edges.
- E. Machine cut doors for the hardware. Install the door hardware specified in Section 08710.
- F. Clearance: For non-fire rated doors provide a clearance of 1/8" at jambs and heads, 1/8" at meeting stiles for pairs of doors, and 3/16" from the bottom of the door to the top of decorative floor finish or covering. Where thresholds are shown or scheduled, provide 1/4" clearance from the bottom of the door to the top of the threshold.
- G. Tolerance: Conform to AWI 1300 for requirements for maximum diagonal warp.

- H. Install door louvers plumb and level.
- I. Job Site Finished Doors: For requirements for finishing wood doors, louvers and vision panel frames see Section 09900 - Painting.

3.3 ADJUSTING

- A. Section 01700 - Execution Requirements: Adjusting and cleaning the installed work.
- B. Rehang or replace doors which do not swing or operate smoothly.

3.4 FIELD QUALITY CONTROL

- A. Section 01450 - Quality Control: Field inspection.
- B. Inspect door installations for alignment, hardware installations and door operation.

3.5 PROTECTION

- A. Section 01700 - Execution Requirements: Protecting the installed work.
- B. Implement procedures for the protection of installed wood doors from damage and deterioration until final acceptance.
- C. Refinish or replace doors damaged during installation as directed by the Owner's representative.

END OF SECTION

SECTION 08310
ACCESS DOORS AND PANELS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Access door and frame units.
2. Wall- and ceiling-mounted locations.

B. Related Documents: The Contract Documents, as defined in Section 01010 - Summary of Work, apply to the work of this Section. Additional requirements and information necessary to complete the work of this Section may be found in other Documents.

C. Related Sections:

1. Section 03300 - Cast-In-Place Concrete: Substrate for anchorage.
2. Section 04230 - Reinforced Unit Masonry: Substrate for anchorage.
3. Section 09110 - Non-Load Bearing Steel Framing: Wall and ceiling framing for attachment of units.
4. Section 09250 - Gypsum Board: Adjacent wall and ceiling finish material.
5. Section 09900 - Painting: Field painting of door and frame units.

1.2 DESCRIPTION OF WORK

A. The extent of access door work is indicated on the Architectural, Mechanical, Plumbing and Electrical Drawings and as specified herein, and includes providing and installing access doors where access to mechanical, plumbing and electrical items is required, whether or not the access doors are shown on the Drawings.

1.3 REFERENCES

A. The publications listed below form a part of this Specification to the extent referenced. Publications are referred to in the text by basic designation only.

B. American Society for Testing and Materials (ASTM):

1. ASTM A 153 / A 153M - Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
2. ASTM A 568 / A 568M - Specification for Steel, Sheet, Carbon, Structural, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for.
3. ASTM A 653 / A 653M - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by Hot-Dip Process.

SECTION 08400

ENTRANCES, STOREFRONTS, DOORS AND WINDOWS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Aluminum exterior and interior entrances.
2. Aluminum storefronts.
3. Aluminum sidelites.
4. Aluminum flush doors.
5. Aluminum sliding doors.
6. Tempered glass doors.
7. Aluminum windows, fixed and operable.
8. Glass and glazing in-fill and vision panels.
9. Door hardware.
10. Window hardware.
11. Perimeter sealants.

B. Related Documents: The Contract Documents, as defined in Section 01010 - Summary of Work, apply to the work of this Section. Additional requirements and information necessary to complete the work of this Section may be found in other Documents.

C. Related Sections:

1. Section 03300 - Cast-In-Place Concrete: Substrate for anchorage.
2. Section 04230 - Reinforced Unit Masonry: Substrate for anchorage.
3. Section 07900 - Joint Sealers: Sealants for a weatherproof installation.
4. Section 08710 - Door Hardware: Hardware not specified in this Section.
5. Section 08800 - Glass and Glazing: Glazing for entrances, storefronts, sidelites, doors and windows including those specified herein to be factory-glazed.
6. Section 09110 - Non-Load Bearing Steel Framing: Non-structural framing for adjacent wall and ceiling finishes.
7. Section 09250 - Gypsum Board: Adjacent wall and ceiling finish material.
8. Section 09900 - Painting: Field painting of components.

1.2 DESCRIPTION OF WORK

- A. The extent of the work of this Section is indicated on the Drawings and Schedules and as specified herein, and includes providing and installing aluminum exterior and interior doors, entrances, storefronts, sidelites, flush doors, tempered glass doors, sliding doors and operable and fixed windows; tubular aluminum sections, shop-fabricated, factory-finished; glass and glazing in-fill; related flashings; anchorage and attachment devices; hardware; sealants.
- B. Provide complete operating door assemblies including door curtains, guides, hardware, operators, motors, and installation accessories. Coordinate with other hardware requirements in Section 08700.
- C. The systems are standard units to the shapes indicated, combined with extruded sections to create the profiles indicated.
- D. Provide assemblies that have been designed and fabricated to comply with requirements of the system performance characteristics below, as demonstrated by testing the manufacturer's corresponding stock systems in accordance with the test methods designated.
- E. Preparation of openings, structural support, access panels, finish and trim for openings, construction of storage pockets and painting shall be furnished and installed under other Sections herein.

1.3 REFERENCES

- A. The publications listed below form a part of this Specification to the extent referenced. Publications are referred to in the text by basic designation only.
- B. Aluminum Association (AA):
 - 1. AA DAF45 - Designation System for Aluminum Finishes.
- C. American Architectural Manufacturers Association (AAMA):
 - 1. AAMA 101 - Specification for Windows, Doors and Skylights.
 - 2. AAMA 501.1 - Methods of Test for Exterior Walls.
 - 3. AAMA 605.2 - Specification for High Performance Organic Coating on Architectural Extrusions and Panels.
 - 4. AAMA 607.1 - Specifications and Inspection Methods for Clear Anodic Finishes for Architectural Aluminum.
 - 5. AAMA 608.1 - Specification and Inspection Methods for Electrolytically Deposited Color Anodic Finishes for Architectural Aluminum.
 - 6. AAMA 611 - Specification for Anodized Architectural Aluminum.
 - 7. AAMA 701.2 - Specifications for Pile Weatherstripping and Replaceable Fenestration Weatherseals.
 - 8. AAMA 1503.1 - Test Method for Condensation Resistance of Windows.

9. Manual #10 - Care and Handling of Architectural Aluminum From Shop to Site.
 10. SFM-1-87 - Aluminum Storefront and Entrance Manual- AAMA Technical Reference Manual - Volume III.
- D. American National Standards Institute (ANSI):
1. ANSI A 117.1 - Safety Standards for the Handicapped.
 2. A156.4 - Door Controls - Closers.
 3. ANSI A 156.5 - Standard for Auxiliary Locks and Associated Products.
 4. ANSI Z97.1 - Safety Glazing Materials Used in Buildings - Methods of Test.
- E. American Society of Civil Engineers (ASCE):
1. ASCE / SEI 7 - Minimum Design Loads for Buildings and Other Structures.
- F. American Society for Testing and Materials (ASTM):
1. ASTM A 36 / A 36M - Specification for Carbon Structural Steel.
 2. ASTM B 209 - Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
 3. ASTM B 221 - Specification for Aluminum and Aluminum-Alloy Extended Bars, Rods, Wire, Profiles, and Tubes.
 4. ASTM B 308 / B 308M - Specification for Aluminum-Alloy 6061-T6 Standard Structural Profiles.
 5. ASTM E 283 - Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Difference Across the Specimen.
 6. ASTM E 330 - Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
 7. ASTM E 331 - Test Method for Water Penetration of Exterior Windows, Skylight, Doors, and Curtain Walls by Uniform Static Pressure Difference.
 8. ASTM E 547 - Test Method for Water Penetration of Exterior Window, Skylights, Doors, and Curtain Walls by Cyclic Static Air Pressure Difference.
 9. ASTM E 1996 - Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.
 10. ASTM F 588 - Test Methods for Measuring the Forced Entry Resistance of Window Assemblies, Excluding Glazing Impact.
 11. ASTM F 842 - Test Methods for Measuring the Forced Entry Resistance of Sliding Door Assemblies, Excluding Glazing Impact.
- G. Americans with Disabilities Act Accessibility Guidelines (ADAAG).

SECTION 08560
STORM PROTECTION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Removable storm panels.
 - 2. Accordion shutters.
 - 3. Hinged aluminum shutters.
- B. Related Documents: The Contract Documents, as defined in Section 01010 - Summary of Work, apply to the work of this Section. Additional requirements and information necessary to complete the work of this Section may be found in other Documents.
- C. Related Sections:
 - 1. Section 03300 - Cast-In-Place Concrete: Substrate for supporting storm protection.
 - 2. Section 04230 - Reinforced Unit Masonry: Substrate for supporting storm protection.

1.2 DESCRIPTION OF WORK

- A. The extent of storm protection work is indicated on the Drawings and Schedules and as specified herein, and includes providing and installing products applied to exterior doors, windows, storefronts and open areas in buildings.
- B. Take field measurements prior to the preparation of Shop Drawings and fabrication of the protection units.

1.3 REFERENCES

- A. The publications listed below form a part of this Specification to the extent referenced. Publications are referred to in the text by basic designation only.
- B. American Society of Civil Engineers (ASCE):
 - 1. ASCE / SEI 7 - Minimum Design Loads for Buildings and Other Structures.
- C. American Society for Testing and Materials (ASTM):
 - 1. ASTM B 633 - Specification for Electrodeposited Coatings of Zinc on Iron and Steel.
 - 2. ASTM B 766 - Specification for Electrodeposited Coatings of Cadmium.
 - 3. ASTM E 330 - Test Method for Structural Performance of Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.

4. ASTM E 1996 - Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.

D. International Code Council:

1. International Building Code (IBC), 2009.

1.4 SYSTEM PERFORMANCE

- A. Provide storm protection units with materials and assemblies to conform to the Building Code, Wind Load requirements for storm panels / shutters for external application, except where more stringent requirements are indicated.
- B. Performance Requirements:
 1. Provide the capacity to withstand the following loading requirements:
 - a. Design and install to resist combined positive and negative windloading in accordance with IBC 2009, Section 1609 with a Vmph of 170, qs of 74.0 psf, exposure [B] [C] [D], and importance factor of [1.0] [1.25] [1.5], as applicable per ASCE 7.
 2. Heights above ground level are indicated on or can be calculated from the Drawings.

1.5 SUBMITTALS

- A. Section 01330 - Submittal Procedures: Procedures for submittals.
 1. Product Data: Manufacturer's product literature and specifications describing the storm protection products, including color selections and finishes.
 2. Shop Drawings: Show elevations of units, full size profiles of frame and track members; thickness of metal; sizes, types, materials, finishes, and location of fasteners; type, material and location of operating hardware, mullion details; and details of installation, including connection and relationship to other work.
 - a. Include a schedule showing the location of units for each size and type.
 3. Samples: Submit two (2) each pieces of the assemblies, and the required finish on 6" long sections of typical frame members, plus a 12" x 12" sample of the panel itself.
 4. Test Reports: Submit certified laboratory test reports evidencing that storm panels of the type indicated comply with the performance requirements.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with the Project requirements, manufacturers offering products which may be incorporated into the work include the following:
 1. Seaview Shutters Inc., Miami, FL. (represented by AMS, Guam).

2. Willard Shutter Company, Inc., Miami, FL (represented by KB Enterprises, Guam).

B. Section 01600 - Product Requirements: Product Options: Substitutions permitted.

2.2 MATERIALS

A. Provide alloys complying with ANSI / AAMA 1002.10 and as recommended by the aluminum producer for the forming and fabricating process used by the manufacturer and for the type of finish required.

B. Other Materials: Where metals other than aluminum are standard with the manufacturer for concealed reinforcing, concrete inserts, fasteners and hardware, use stainless steel or other non-corrosive materials which are compatible with aluminum. Electroplate steel, if used for reinforcing members, with zinc or cadmium coating complying, respectively, with ASTM B 633 or B 766. For exposed fasteners match the color and finish of the metal material being fastened.

C. Non-Metalic Spacers: Provide the manufacturer's standard vinyl, rubber or high density polyurethane spacers, not less than 1/8" thick, to separate storm shutters from contact with metal prime windows.

2.3 REMOVABLE STORM PANELS

A. Headers and Sills: Slip-in type, and made of extruded aluminum alloy 6063-T5.

B. Structural Panels: Roll-formed from aluminum alloy 3003-H16, of a thickness to withstand the positive and negative forces applied on the spans required, but not less than 0.065". Panels shall be designed to allow nesting for storage with T&G edges for interlocking of erected panels at 12"o.c..

C. Clips and Wing Nuts: Stainless steel, standard with the manufacturer.

D. Reinforcing Tubes and Frames, Door Angel Frames and Stops: Sizes and shapes, and fabricated as detailed, extruded aluminum alloy 6063-T5.

E. Aluminum Mill Finish: For panels, angles, tubes, embedded items, and removable base and head members.

F. Anodized Finish: Match the finish of the adjacent windows for base and head members which are to remain permanently in-place.

2.4 ACCORDION SHUTTERS

A. Headers and Sills: 0.125" thick extruded aluminum alloy 6063-TS.

B. Shutters: Extruded aluminum blades of extruded aluminum alloy 6063-TS with stainless steel carriage, nylon rollers and nylon guides; top and bottom locking rods with stainless steel thumb screws. Provide end closure pieces securely attached to the wall.

C. Finish: All aluminum materials to be finish color as selected by the Architect from the manufacturer's standards.

2.5 HINGED ALUMINUM SHUTTERS

A. Provide hinged aluminum shutters as indicated and detailed on the Drawings. Aluminum panel doors shall be custom fabricated for exterior use.

- B. Provide two (2) recessed flush bolts at the top and two (2) flush bolts at the bottom for each panel, with dust proof floor strikes. Track shall be standard to the manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01700 - Execution Requirements: Verification of existing conditions before starting the work.
- B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive the work.
- C. Report, in writing, prevailing conditions that will adversely affect satisfactory execution of the work of this Section. Do not proceed with the work until the unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with the manufacturer's instructions for the installation of storm shutters.
- B. Set storm units plumb, level and without distortion, securely fastened to, and aligned with the prime windows.
- C. Fasten to allow for expansion and contraction without damage to the window members or pullout of fasteners. Fasten members required to be in a fixed position, as detailed; for those that are required to be removable, verify the connectors and inserts, and fabricate accordingly.
- D. Position storm panels main frame so it does not contact the prime window frame, or install a non-metallic spacer between the prime window and the storm shutter and frame.
- E. Provide weepholes in sill tracks. Size the holes to effectively permit the drainage of rain water collecting between closed storm shutters and the windows they protect.
- F. Isolation Requirements:
 - 1. Wood Contact: Isolate sheet metal from cedar, redwood, oak and acid-treated lumber by means of unbroken 6-mil polyethylene construction sheet or a heavy coating of metal-protective paint.
 - 2. Dissimilar Metals: Insulate the juncture between dissimilar metals with a heavy coating of insulating film.
 - 3. Concrete Contact: Coat the underside of sheet metal over horizontal concrete surfaces with an asphaltum cement.

3.3 FIELD QUALITY CONTROL

- A. Section 01450 - Quality Control: Field inspection.
- B. Inspect for plumb, level and secure attachment to substrates, where applicable.

3.4 ADJUSTING AND CLEANING

- A. Section 01700 - Execution Requirements: Adjusting and Cleaning the installed work.
- B. Adjust inserts, and hardware to provide a tight fit at contact points, for smooth operation, and for a weathertight closure.
- C. Clean surfaces promptly after installation, exercising care to avoid damage to the finish of new and existing surfaces.

END OF SECTION

SECTION 08710
DOOR HARDWARE

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Finish Hardware items required for swing, sliding and folding doors, except special types of unique and non-matching hardware specified in the same Section as the doors and windows.
2. Hinges.
3. Locks, latches and bolts.
4. Push / Pull units.
5. Exit devices. (Panic Hardware).
6. Closers.
7. Stops, holders and bumpers.
8. Thresholds.
9. Weatherstripping.
10. Miscellaneous hardware.

B. Related Documents: The Contract Documents, as defined in Section 01110 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other Documents.

C. Related Sections:

1. Section 06100 - Rough Carpentry: Rough hardware.
2. Section 06100 - Rough Carpentry: Installation of finish hardware.
3. Section 06400 - Architectural Woodwork: Cabinet hardware.
4. Section 08100 - Hollow Metal Doors and Frames: Hardware for metal doors.
5. Section 08210 - Wood Doors: Hardware for wood doors.
6. Section 08420 - Aluminum Doors and Windows: Door and window hardware.
7. Section 12305 - Science Casework and Laboratory Equipment: Cabinet hardware.

1.2 DESCRIPTION OF WORK

- A. The extent of the finish hardware work is indicated on the Drawings and as specified herein, and includes furnishing and installing all finish hardware, trim, attachments and

fastenings specified complete and proper. Under this Section include all hardware that is not specified in other Sections, whether or not such hardware is herein scheduled.

1.3 REFERENCES

- A. The publications listed below form a part of this Specification to the extent referenced. Publications are referred to in the text by basic designation only.
- B. American National Standards Institute (ANSI):
 - 1. ANSI A117.1 - Specifications for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People.
 - 1. ANSI A156.1 - National Standard for Butts and Hinges.
 - 2. ANSI A156.2 - National Standard for Locks and Lock Trim.
 - 3. ANSI A156.3 - National Standard for Exit Devices.
 - 5. ANSI A156.4 - National Standard for Closers.
 - 6. ANSI A156.5 - Standard for Auxiliary Locks and Associated Products.
 - 7. ANSI A156.6 - National Standard for Architectural Door Trim.
 - 8. ANSI A156.13 - National Standard for Mortise Locks & Latches.
 - 9. ANSI A156.16 - Standard for Auxiliary Hardware.
- C. American Society for Testing and Materials (ASTM):
 - 1. ASTM E 283 - Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors.
- D. Americans with Disabilities Act Accessibility Guidelines (ADAAG):
 - 1. Accessibility Guidelines for Buildings and Facilities.
- E. Door Hardware Institute (DHI):
 - 1. Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames.
- F. National Fire Protection Association (NFPA):
 - 1. NFPA 80 - Standard for Fire Doors and Other Opening Protectives.
 - 2. NFPA 101 - Life Safety Code.
 - 3. NFPA 252 - Standard Methods for Fire Tests of Door Assemblies.
- G. Underwriters Laboratories (UL):
 - 1. UL 10B - Standard for Safety Fire Tests for Door Assemblies.
 - 2. UL 305 - Panic Hardware.

1.4 HARDWARE FOR FIRE DOORS AND EXIT DOORS

- A. Provide all hardware necessary to meet the requirements of NFPA No. 80 for fire doors and NFPA No. 101 for exit doors, as well as other requirements specified, even if such hardware is not specifically mentioned in the "Hardware Schedule". Such hardware shall bear a UL label.

1.5 SUBMITTALS

- A. Section 01330 - Submittal Procedures: Procedures for submittals.
 - 1. Product Data: Manufacturer's technical product data for each item of hardware. Include information necessary to show compliance with requirements, instructions for installation, and maintenance of operating parts and finishes.
 - 2. Hardware List: Prepare and submit three (3) copies of a Hardware List for review. One (1) copy will be returned. The List shall identify each hardware item by manufacturer, manufacturer's catalog number, and the exact location in the work. Indicate applicable scheduled door data, including the door numbers shown on the Drawings, the number of doors, hand of operation with an explanation of how the hand is determined, and indicate the active leaf where a pair of doors are required. Indicate hardware finishes.
 - a. Fastening Data: Indicate and clearly highlight "exposed on surface of hardware" fasteners, and through fastenings which would be exposed on the opposite door face when other than Phillips flat-head devices are proposed.
 - b. The Hardware List shall be in a suitable form to facilitate ready review by the Owner's representative. Acceptance of the List will not relieve the Hardware Supplier from the responsibility for furnishing the job complete.
 - 3. Catalog Cuts: Submit three (3) catalog cuts of every item to be furnished. One (1) copy will be returned. Show all finishes, sizes, catalog numbers and pictures, include information necessary to show compliance with the requirements, instructions for installation, and maintenance of operating parts and finishes. Explain all abbreviations fully.
 - 4. Mounting Locations: Submit mounting locations data for each type of hardware required.
 - 5. Hardware Schedule: Submit a Hardware Schedule as indicated below. Coordinate hardware with the doors, frames and related work to ensure proper size, thickness, backset, hand, function and finish.
 - a. Final Hardware Schedule Content: Based on the finish hardware indicated, organize a Hardware Schedule into "Hardware Sets", indicating a complete designation of every item required for each door. Provide the following information:
 - 1). Type, style, function, size and finish of each hardware item.
 - 2). Name and manufacturer of each item.
 - 3). Fastenings and other pertinent information.
 - 4). Location of the hardware set cross-referenced to the Drawings, both on the Floor Plans and Door Schedule.

- 5). Explanation of all abbreviations, symbols, codes, etc. contained in the Hardware Schedule.
 - 6). Mounting locations for hardware.
 - 7). Door and frame sizes and materials.
 - 8). Keying and master keying information.
- b. Submittal Sequence: Submit the Hardware Schedule at the earliest possible date, particularly where acceptance of the Schedule must precede the fabrication of other work (e.g., aluminum frames) critical to maintaining the Project Construction Schedule. Include with the Schedule, product data, samples, Shop Drawings of other work affected by the finish hardware, and other information essential for a coordinated review of the Schedule. Acceptance of the Hardware List does not relieve the Hardware Supplier from the responsibility of furnishing the job complete for its intended purpose.
6. Keying Schedule: Submit with the final Hardware Schedule. Door designations to be the same as those on the Drawings.
7. Samples: Prior to submittal of the Final Hardware Schedule, and prior to ordering of the finish hardware, submit one (1) sample of each type of exposed hardware, as selected, with the required finish, including fasteners, and tagged with a full description for coordination with the Hardware Schedule.
- a. Samples will be returned to the supplier. Units which are acceptable and remain undamaged through submittal, review and field comparison procedures may, after final check of the operation, be used in the work, within limitations of the keying coordination requirements.
- B. Maintenance Related Items: Provide one (1) set of adjusting tools, two (2) sets of Maintenance Manuals, including lubrication requirements, parts list, manufacturers contact for ordering replacement parts and basic installation instructions for locksets, door closers, floor hinges and panic devices to the Owner's representative. Provide four (4) blanks for each key type.

1.6 QUALITY ASSURANCE

- A. Perform work in accordance with the following requirements:
1. ANSI A117.1
 2. NFPA 80.
 3. NFPA 101.
 4. NFPA 252.
 5. UL 10B.
 6. UL 305.
 7. ADAAG.

- B. Regulatory Requirements:
 - 1. Conform to the Building Code for requirements applicable to fire-rated doors and frames.
 - 2. Conform to ADAAG for operation, mounting heights, and location of accessories.
- C. Manufacturer: Company specializing in manufacturing the products specified with a minimum of five (5) years documented experience.
- D. Installer: Company experienced in performing the work of this Section with a minimum of five (5) years documented experience.
- E. Supplier: A recognized architectural finish hardware supplier, who has been furnishing hardware to similar projects for a period of not less than five (5) years, and who employs an experienced architectural hardware consultant (AHC) for the preparation of Hardware Schedules, and consultation about project hardware requirements.
- F. Obtain each type of hardware (latch and lock sets, hinges, closers, etc.) from a single manufacturer.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Section 01600 - Product Requirements: Transport, handle, store and protect the products.
- B. Supplier to deliver the appropriate hardware, at the proper time and to the proper location (shop or Project Site) for installation.
- C. Deliver products to the Project Site in the manufacturer's original, unopened packages, dry and undamaged, bearing the manufacturer's name and identification of the hardware item.
- D. Retain the manufacturer's original packaging. Ensure that the products are complete, including basic installation instructions. Label each product separately to be readily identifiable with the products indicated in the Hardware Schedule.
- E. Supplier to identify sets with the appropriate hardware set number.
- F. Contractor to catalogue the delivered hardware and store in a secure lockable enclosure, i.e. room, storage cabinet, etc.; store off the ground and on shelving. Set up procedures for limited access to the locked storage.
- G. Store products in their original protective packaging to prevent soiling, wetting and physical damage to materials, finishes and operating mechanisms.
- H. Handle to prevent damage to finish surfaces.
- I. Maintain protective covers on all units until installation has been completed. Remove coverings during final clean-up.

PART 2 PRODUCTS

2.1 HARDWARE, GENERAL

- A. Comply with ANSI / BHMA 156 Series standards applicable to the type and grade of hardware required.

- B. Hardware Characteristics: 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.
- C. Complete Assemblies: Scheduled hardware indicates the primary types and quality of hardware required and is not necessarily descriptive of all the components required. Provide standard accessory components, as necessary, to complete the assembly for a fully functional unit when installed. Provide finishes matching the primary unit where accessory components are exposed-to-view.
- D. Anchorage Devices: Furnish with each hardware type required.
 - 1. Types: Wood and machine screws and other appropriate anchorage devices applicable to the type of substrate the item is to be fastened to. Do not provide exposed through-bolts or nuts unless clearly noted on the Hardware Schedule submittal, and approved by the Architect.
 - 2. Head Style: Phillips flat-head devices.
 - 3. Finish: Match the finish of the primary fastened hardware.
- E. Finish of Hardware: The finish of hardware shall be as stated herein below. Special care shall be taken to coordinate the finish of the various manufacturers to insure a uniform acceptable finish throughout. The finish of all hardware shall match the finish of the locksets, unless otherwise specified.
- F. Hardware manufacturers are listed, within each item Article below, for each hardware item to establish a standard of quality, and minimum functional requirements.

2.2 HINGES

- A. Subject to compliance with the Project requirements, manufacturers offering products which may be incorporated into the work include the followings, as specified below:
 - 1. Hager.
 - 2. McKinney.
 - 3. Stanley.
 - 4. Henry Soss.
- B. Material:
 - 1. Door Butts: Hinges shall be full mortise, template type, unless half mortise hinges are required; stainless steel. Hinges shall have non-rising loose pins, ball or oilite bearings, and flat button tips with matching plugs, except where otherwise specified. Provide hinges with stainless steel pins; steel pins with steel hinges; non-removable pins (NRP) for exterior and public interior exposures, non-rising for non-security exposure.
 - 2. Where necessary to keep the door leaf clear of walls, casings, jambs or reveals in the door opening, furnish wide throw hinges of an approved type shall be furnished. For out-swinging doors, hinges shall have a set screw in the barrel to prevent removal of the pin when the door is closed. All doors over 7'-6" tall shall have one extra hinge for each additional two (2) feet of height, or fraction thereof.

3. Ball Bearing Type: Swaged, inner leaf beveled, square corners.
4. ANSI 156.1, Grade 1.

2.3 LOCKS, LATCHES AND BOLTS

- A. Subject to compliance with the Project requirements, manufacturers offering products which may be incorporated into the work include the followings, as specified below:
 1. Yale.
 2. Arrow.
 3. Schlage.
 4. Best.
 5. Sargent.
- B. Materials:
 1. Lock Uniformity: Except where otherwise specified, all locksets, latchsets, padlocks, cylinders and component parts, as specified hereinunder, shall be by one manufacturer. All internal parts of locksets, latchsets, padlocks and cylinders shall be brass or stainless steel to resist corrosion, and shall be marine function for exterior doors; US 32D finish.
 2. Lockset Style: All hardware shall have lever handles with rose.
 3. Locksets: ANSI A156.2, Series 4000 Grade 1, with removable cores.
 4. Mortise Locks and Latches: ANSI / BHMA A156.13, Series 1000, Operational Grade 1, Security Grade 2; equip with 6-pin tumbler; 2-3/4" backset; keyed alike, or as approved. Levers and roses shall have screwless shanks, and no exposed fasteners.
 5. Bored Locks and Latches: ANSI / BHMA A156.2, Series 4000, Grade 1. Locks for exterior doors shall have threaded roses or concealed machine screws.
 6. Latch Sets: Provide release by turning lever, closing door, or turning emergency release key through a hole in the outside knob.
 7. Cores: All lockset shall have removable cores to facilitate easy replacement.
 - a. To maintain the established existing master key system, all cylinder, locksets and padlocks shall be furnished with keyways to match the keyway of record.
 - b. Furnish with construction cores for use during construction and until Substantial Completion, or until a portion of the work has been accepted by the Owner and the Owner's representative has directed the cores to be change out.
 8. Hospital Latches: Push / pull latchsets similar and equal to Glynn-Johnson HL6; 1/2" throw, 2-3/4" backset, to 161 cutout. Cover approximately 2-1/2", covers and handles of stainless steel, BHMA 630 finish, engraved "PUSH" and "PULL" on handles, push handle pointing up, pull handle pointing down.

9. Combination Locks: Heavy-duty, mechanical combination locksets with five pushbuttons, standard sized knobs, 3/4" deadlocking latch, 2-3/4" backset. Lock shall be operated by pressing two or more of the buttons in unison or individually in the proper sequence. The inside knob shall always operate the latch. Provide a keyed cylinder on the interior to permit setting the combination.
10. Strikes: ANSI Strikes, 1-1/4" x 4-7/8". All lock strikes shall have a curved lip of sufficient length to protect the trim and jamb, and shall be furnished with wrought box strikes with extended lip for latch bolts, except open strike plates may be used in wood frames. Provide dustproof strikes for foot bolts.
11. Door Bolts: ANSI / BHMA 156.16. Provide dustproof strikes for bottom bolts, except for doors having metal thresholds. Automatic latching flush bolts: ANSI / BHMA A156.3, Type 25.
12. Door Hardware: Hand of lock shall be as shown on the Drawings. If the door hand is changed during construction, the Contractor shall make the necessary changes in the hardware at no additional cost to the Owner.
13. Lever Handles: All latch and locksets shall have lever handles with a rose. Lever handles for exit devices shall meet the test requirements of ANSI / BHMA A156.13 for mortise locks. Provide knurled or abrasive-coated lever handles for doors accessible to blind persons, and those which lead to dangerous areas.
14. Cipher Locks: Exterior Grade and Weather Resistant; Stand Alone ANSI/BHMA Grade 1; pushbutton keypad with at least 500 unique PIN codes, programming master code, passage mode; low battery indicator and 9-V battery power backup; keypad lockout feature; key override; and freewheeling outside lever in locked position.

C. Keying, General:

1. All locksets, padlocks and cylinders shall be keyed, master keyed and grand master keyed at the factory where records shall be established and maintained, as directed.
 - a. All master keys and grand master keys shall be identified with a registry number, not stamped with "Master" or the letter "M".
 - b. Individual room keys shall not be stamped with a key cut, but with a plain identification number only.
2. Maintain a security system to ensure that keys used during construction will not open doors after occupancy.
3. Provide three (3) keys for each lockset.
4. A Keying Schedule will be provided after the initial Hardware Schedule submittal. Keyed alike and master keying will be finalized at that time.
5. Furnish exterior door lock sets with removable I/C core cylinders and cylinder guards.
6. Restrict the distribution of construction keys. Maintain a record of all persons who receive keys and provide a copy of the record to the Owner's representative upon request.

7. When directed by the Owner's representative, remove the construction cores, install permanent cores, and return the construction cores to the manufacturer.

2.4 PUSH / PULL UNITS

- A. Subject to compliance with the Project requirements, manufacturers offering products which may be incorporated into the work include the followings, as specified below:

1. H. B. Ives.
2. Quality Hardware Manufacturing Co., Inc.
3. Trimco.
4. Rockwood.

- B. Materials: ANSI A156.6 for 0.050 inch thickness.

2.5 EXIT DEVICES (PANIC HARDWARE)

- A. Subject to compliance with the Project requirements, manufacturers offering products which may be incorporated into the work include the followings, as specified below:

1. Corbin Russwin.
2. Yale.
3. Von Duprin.
4. Adams Rite.
5. Monarch.
6. Sargent.

- B. Materials:

1. Exit Devices: ANSI / BHMA A156.3, Grade 1. Provide adjustable strikes for rim type and vertical rod devices. Provide open back strikes for pairs of doors with mortise and vertical rod devices.
2. Exit Locks With Alarm: ANSI / BHMA A156.5, Type E0431 (with full-width horizontal actuating bar) for single doors: Type E0431 (with actuating bar) or E0471 (with actuating bar and top and bottom bolts, both leaves active) for pairs of doors, unless otherwise specified. Provide terminals for connection to a remote indicting panel. Provide outside control key. Coordinate with the electrical subcontractor.
3. All exposed metal shall match the hardware.
4. Size and mount the units as indicated or, if not indicated, to comply with the manufacturer's recommendations for the exposure condition. Reinforce the substrate as recommended.
5. ANSI A156.3 Exit Device and Trim, Grade 1, surface-mounted vertical rod device with dust-proof strike at the head and threshold.

2.6 CLOSERS

- A. Subject to compliance with the Project requirements, manufacturers offering products which may be incorporated into the work include the followings, as specified below:
 - 1. LCN.
 - 2. Norton.
 - 3. Sargent.
 - 4. Corbin Russwin.
 - 5. Rixon-Firemark.
 - 6. Yale.
 - 7. Dorma.
- B. Materials and features:
 - 1. ANSI A156.4, Grade 1.
 - 2. ANSI A117.1.
 - 3. Non-Sized; adjustable 1-5.
 - 4. 180 degree door opening.
 - 5. Heavy-duty parallel arm.
 - 6. Standard cover.
 - 7. Exposed metal to match the hardware.
 - 8. Mounting: Hinge face mounting. Do not mount closers on the exterior side of doors.
 - 9. Size and mount units as indicated or, if not indicated, comply with the manufacturer's recommendations for the exposure condition. Reinforce the substrate as recommended.
 - 10. Provide drop brackets, mortise shoes, and long arms, as required.
 - 11. Closers attached to mineral core or particle filled doors shall be installed with sex bolts.
 - 12. Closers to be installed to allow the door to swing as shown on the Drawings.
 - 13. All closers shall be ADAAG type, adjustable for spring setting, latch and sweep speed, and backcheck.

2.7 STOPS, HOLDERS AND BUMPERS

- A. Subject to compliance with the Project requirements, manufacturers offering products which may be incorporated into the work include the followings, as specified below:

1. H. B. Ives.
2. Quality Hardware Manufacturing Co., Inc.
3. Trimco.
4. Dor-O-Matic.
5. Glenn-Johnson.

B. Materials:

1. Door Stop Mounting: Utilize the appropriate anchor method for the substrate encountered (plastic anchor, drywall anchor, expansion shield).
2. Provide resilient grey rubber bumpers.
3. Adjust the height of floor stops to suit the undercut of the adjacent door, and for out-swinging exterior doors.

2.8 THRESHOLDS

A. Subject to compliance with the Project requirements, manufacturers offering products which may be incorporated into the work include the followings, as specified below:

1. Pemko.
2. National Guard.
3. Reese.
4. Wooster.
5. Zero.

B. Thresholds by type:

1. Type as scheduled or indicated, or where not shown provide a manufacturer's standard aluminum threshold, with standard cast or extruded non-slip profile. For out-swinging exterior doors use vinyl or silicone rubber inserts in the face of the stop. 2005V profile by Pemko, or as approved; non-slip.
2. Thresholds shall be one-piece, continuous the full width of the doorway.
3. Where not indicated, the dept of the flat portion of the threshold to be not less than the door frame depth.
4. End Returns: Mitered and returns where ends would otherwise be exposed; of material / finish to match the primary threshold unit.
5. Height: As indicated, except do not exceed 1/2" in height where handicapped access is required. Comply with ADAAG.
6. Method of fastening: Provide the manufacturer's special concealed fastener system for installation for single units.

7. Sealant: For thresholds, single component, urethane complying with Section 07900 - Joint Sealers.

2.9 WEATHERSTRIPPING

- A. Subject to compliance with the Project requirements, manufacturers offering products which may be incorporated into the work include the followings, as specified below:
 1. Pemko.
 2. Reese.
 3. Zero.
- B. Continuous Adhesive-Applied Jamb & Head Weatherstripping: Continuous at jambs and head. Air leakage of weatherstripped doors shall not exceed 0.5 CFM of air per square foot or door when tested in accordance with ASTM E 283. Pemko PK88BL, or approved equal.

2.10 LIGHT PROOFING AND SOUNDPROOFING

- A. Subject to compliance with the Project requirements, manufacturers offering products which may be incorporated into the work include the followings, as specified below:
 1. National Guard.
 2. Pemko.
 3. Zero.
- B. A set shall include adjustable door stops at the head and jambs of doors, and an automatic door bottom of extruded aluminum, anodized finish, surface-applied, with vinyl fin seals between the plunger and housing. Door stops shall have a solid neoprene tube, silicone rubber, or closed-cell sponge gasket. Door bottoms shall have an adjustable operating rod and silicone rubber or closed-cell sponge neoprene gasket. Door stops shall be mitered at the corners.

2.11 MISCELLANEOUS HARDWARE

- A. Subject to compliance with the Project requirements, manufacturers offering products which may be incorporated into the work include the followings, as specified below:
- B. Products:
 1. Smoke Seals: Fire-tested, continuous at jambs and head; PK 55 by Pemko, or approved equal, color as selected.
 2. Bottom Sweep: 307 by Pemko, or approved equal, color as selected.
 3. Overlap Astragal: 18 gauge minimum, but not less than required for the tested assembly provided for; 357 by Pemko, or approved equal, color as selected.
 4. Split Astragal for doors: 18 gauge minimum, but not less than required for the tested assembly provided for; 309 by Pemko, or approved equal, color as selected.
 5. Door Rain Drips: Extruded aluminum, not less than 0.08" thick, approximately

1-1/2" high x 5/8" projection, as selected. Align the bottom with the bottom edge of the door.

6. Overhead Rain Drip: Extruded aluminum, not less than 0.08" thick, approximately 1-1/2" high x 2-1/2" projection, with length equal to the overall door frame width. Align the bottom with the door frame rabbet; 346 by Pemko, or approved equal, color as selected.

2.12 SUBSTITUTIONS

- A. Section 01600 - Product Requirements: Product Options: Substitutions permitted.

2.13 FABRICATION

- A. Finish and Base Material Designations: Number indicate BHMA Code or nearest traditional U.S. commercial finish.
- B. Where base material and quality of the finish are not otherwise indicated, provide at least commercially recognized marine quality as specified in the applicable Federal Specifications.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01700 - Execution Requirements: Verification of existing conditions before starting the work.
- B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive the work.
 1. Verify that doors and frames are ready to receive the work, and that dimensions are as instructed by the manufacturer.
- C. Report in writing, prevailing conditions that will adversely affect satisfactory execution of the work of this Section. Do not proceed with the work until unsatisfactory the conditions have been corrected.

3.2 INSTALLATION

- A. Where not specified under other Sections to be performed by the manufacturer or supplier, machine, fit and drill wood and metal doors, and frames.
- B. Prepare doors of the various types to receive hardware, using templates and instructions provided with the hardware items for on-site work.
- C. Install each hardware item in compliance with the manufacturer's instructions and recommendations.
- D. Wherever cutting and fitting is required to install hardware onto or into surfaces which are later to be painted or finished in another way, coordinate the hardware removal, storage and reinstallation, or the application of surface protection with the finishing work specified in Section 09900 - Painting. Do not install / reinstall surface-mounted items until the finishes have been completed on the substrates.

- E. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
- F. Drill and countersink units not factory-prepared for anchorage fasteners, flush with the fastened surface. Space fasteners and anchors in accordance with industry standards.
- G. Set thresholds for exterior doors in a full bed of sealant to ensure waterproof integrity.

3.3 ADJUSTING

- A. Section 01700 - Execution Requirements: Adjusting the installed work.
- B. Adjust and check each operating item of hardware and each door to ensure proper operation and function of every unit. Replace units which cannot be adjusted to operate freely and smoothly for their intended application.
- C. Adjust door control devices to compensate for the final operation of cooling and ventilating equipment.
- D. Door operation shall meet ADAAG requirements for opening force.
- E. Adjust operating hardware to provide a tight fit at contact points and weatherstripping, for smooth operation and weathertight closure.
- F. Lubricate moving components and hardware.
- G. Final Adjustment: Wherever hardware installation is made more than one month prior to acceptance or occupancy of a space or area, return to the work during the week prior to acceptance or occupancy, and make a final check and adjustment of all hardware items.

3.4 FIELD QUALITY CONTROL

- A. Section 01450 - Quality Control: Field inspection.
- B. Inspect hardware installations for proper locations, heights, level, plumb, square, attachment to the substrate and opening force.

3.5 CLEANING

- A. Section 01700 - Execution Requirements: Cleaning the installed work.
- B. Clean adjacent surfaces soiled by the hardware installation.
- C. Clean operating items as necessary to restore proper function and finish of the hardware and doors.

3.6 TRAINING

- A. Instruct the Owner's personnel in the proper adjustment and maintenance of hardware items and finishes during final adjustment of the hardware.

3.7 HARDWARE SCHEDULE

A. Door Material Types:

AL	Aluminum	OHC	Overhead Coiling
FLDG	Folding Grille	SCWD	Solid Core Wood
GATE	Chain Link Gate	SLGL	Sliding Glass
HCWD	Hollow Core Wood	WD	Wood
HM	Hollow Metal		

HW-1 Exterior AL Double Exit Door

Hinges	3 pairs	By Manufacturer	
Exit Device	2 ea	By Door Manufacturer	
	1 ea	F110 Lever	
	1 ea	Dummy Trim	
Closer	2 ea	Surface mount interior	Alum
Flush Bolts	1 set	Top and Bottom	US32D
Weatherstripping	continuous	By Door Manufacturer	
Threshold	continuous	As indicated	Alum
Astragal			Alum
Rain Drip			Alum
Provide ADA Door Operator			

HW-2 Exterior AL Door

Hinges	1-1/2 pairs	By Manufacturer	
Lockset	1	F110 Lever	US26D
		Provide Cipher Lock where scheduled.	
Closer	1 ea	Surface mount interior	Alum
Weatherstripping	continuous	By Door Manufacturer	
Threshold	continuous	As indicated	Alum
Astragal			Alum
Rain Drip			Alum

HW-3 Security Gates and Roll-up door

Heavy Duty Hinges, 4 pairs each except roll-up door.
Heavy Duty Padlock, 2 each
Locking Bottom Bolt (for swinging gate)

HW-4 Interior SCWD and HM Doors, Fire Rated where scheduled

Hinges	1-1/2 pairs	A5112, 4-1/2 x 4-1/2	US32D
Lockset	1	F82	US26D
		F87at secure interview rooms	
		Provide Cipher Lock where scheduled.	
Closer	1 ea	Surface Mount	Alum
Door Stop	1 ea	Floor	US32D
Door Gasketing	continuous		Roy 154
Closer	1 ea	Surface mount interior	Alum

HW-5 Interior SCWD / HM Restroom Doors (w/ Vent) Fire Rated where scheduled

Hinges	1-1/2 pairs	By Manufacturer	
Lockset	1	F76	US26D
		F87 at secure areas	
Closer	1 ea	Surface mount	Alum
Kick Plate	1 ea	10" x width	US32D
Door Stop	1 ea	Floor or wall	US32D
Door Gasketing	continuous		Roy 154

HW-6 Interior SCWD Doors (Storage, Closets)

Hinges	1-1/2 pairs	A5112, 4-1/2 x 4-1/2	US32D
Exit Device	1 ea	By Door Manufacturer	
	1 ea	F84 Lever	US26D
Closer	1 ea	Surface Mount	Alum
Door Stop	1 ea	Floor	US32D
Door Gasketing	continuous		Roy 154
Closer	1 ea	Surface mount interior	Alum

END OF SECTION

SECTION 08800
GLASS AND GLAZING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Glazing for entrances and storefronts.
2. Glazing for curtain walls.
3. Glazing for sliding doors.
4. Glazing for window units.
5. Interior partitions relites.
6. Fire-rated glazing.
7. Low-E glazing.
8. Glass blocks.
9. Glazing sealant installation.
10. Bulletproof glass.

B. Related Documents: The Contract Documents, as defined in Section 01010 - Summary of Work, apply to the work of this Section. Additional requirements and information necessary to complete the work of this Section may be found in other Documents.

C. Related Sections:

1. Section 01811 - Sustainable Design and Construction Procedures
2. Section 06200 - Finish Carpentry: Wood frames for interior glazing.
3. Section 07900 - Joint Sealers: Sealants for waterproofing glazing installations.
4. Section 08100 - Hollow Metal Doors and Frames: Glazing in metal doors and sidelites.
5. Section 08210 - Wood Doors: Glazing in wood doors, transoms and sidelites.
6. Section 08330 - Overhead Doors: Glazing in sectional doors.
7. Section 08400 - Entrances, Storefronts and Windows: Glazing installations.
8. Section 08420 - Aluminum Doors and Windows: Glazing in doors and windows.
9. Mirrors are specified in Section 10810 - Toilet Accessories.

1.2 DESCRIPTION OF WORK

- A. The extent of glass and glazing work is indicated on the Drawings and Schedules and as specified herein, and includes providing and installing glazing for exterior and interior doors and windows, safety glass, interior relites, glass blocks, sealants and miscellaneous glazing materials.

1.3 REFERENCES

- A. The publications listed below form a part of this Specification to the extent referenced. Publications are referred to in the text by basic designation only.
- B. American Society of Civil Engineers (ASCE):
 - 1. ASCE / SEI 7 - Minimum Design Loads for Buildings and other Structures.
- C. American National Standards Institute (ANSI):
 - 1. ANSI Z97.1 - Safety Performance Specifications and Methods of Test for Safety Glazing Material Used in Buildings.
- D. American Society for Testing and Materials (ASTM):
 - 1. ASTM C 920 - Specification for Elastomeric Joint Sealants.
 - 2. ASTM C 1036 - Specification for Flat Glass.
 - 3. ASTM C 1048 - Specification for Heat-Treated Flat Glass - Kind HS, Kind FT Coated and Uncoated Glass.
 - 4. ASTM E 1996 - Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.
 - 5. ASTM F 1233 - Test Method for Security Glazing Materials and Systems.
- E. Flat Glass Marketing Association (FGMA):
 - 1. FGMA - Glazing Manual and Glazing Sealing Systems Manual.
- F. National Fire Protection Agency (NFPA):
 - 1. NFPA 257 - Standard on Fire Tests for Window and Glass Block Assemblies.
- G. International Code Council:
 - 1. International Building Code (IBC), 2009:
- H. U. S. Consumer Product Safety Commission, CPSC 16 CFR, Part 1201 - Safety Standard for Architectural Glazing Materials.

1.4 CONSTRUCTION

- A. Interface with Other Work: Coordinate glazing with the installation of exterior aluminum entrances, storefronts, curtain walls, doors and windows as specified in Section 08410 hollow metal doors and windows specified in Section 08100; wood doors and windows specified in Section 08210.

1.5 SUBMITTALS

- A. Section 01330 - Submittal Procedures: Procedures for submittals.
1. Product Data:
 - a. Submit two (2) copies of the manufacturer's catalogs, including specifications and installation instructions for all glass products to be used and for glazing sealant and compound, gasket and miscellaneous materials required.
 - b. Glass: For each type of glass provide structural, physical and environmental characteristics, size limitations, special handling and installation requirements.
 - c. Glazing compound: Provide chemical, functional, and environmental characteristics, limitations and special application requirements.
 - d. Manufacturer's engineering design to meet the performance requirements.
 2. Calculations indicating glazing satisfaction of performance requirements
 3. LEED Requirement: A Actual light transmission level calculation to achieved LEED credit required for this project. @
 - a. Complete the LEED Materials Submittal Form as provided in Section 01340 - Submittals - LEED Submittals, for procedures in this section.
 - b. Complete the LEED VOC Submittal Form as provided in Section 01340 - Submittals - LEED Submittals, for products in this section.
 4. Samples:
 - a. Glass: Two (2) samples 6" x 6" in size for each type of glazing, illustrating tinting, and finish of the glazing material. Label each sample indicating kind, quality and manufacturer as follows:
 - 1) Tinted float glass.
 - 2) Laminated glass.
 - 3) Tempered glass.
 - 4) Low-e glass.
 - 5). Patterned glass.
 - b. Glass Blocks: Two (2) full size units.
 - c. Glazing Sealants: Three (3) copies of the manufacturer's standard color selection.
 5. Assurance / Control Submittals:
 - a. Manufacturer's certificate that the products meet or exceed the specified requirements.

- b. Calculations indicating that the materials satisfy the performance requirements.
 - c. Documentation of experience indicating compliance with the specified qualifications requirements.
 - B. Section 01780 - Closeout Submittals: Procedures for closeout submittals.
 - 1. Warranty: Submit a written Warranty with forms completed in the name of the Owner and registered with the manufacturer.

1.6 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Manufacturer: Company specializing in manufacturing the products specified with a minimum of five (5) years documented experience.
 - 2. Installer: Company experienced in performing the work of this Section with a minimum of five (5) years documented experience.
- B. Performance Requirements:
 - 1. Provide the capacity to withstand the following loading requirements for exterior units:
 - a. Design and install to resist combined positive and negative windloading in accordance with IBC 2009, Section 1609 with a Vmph of 170, qs of 74.0 psf, exposure [B] [C] [D], and importance factor [1.0] [1.25] [1.5], as applicable per ASCE 7. Size for areas of discontinuity and worst case scenario to be experienced by the building.
 - b. Height of windows and door units above the ground level are indicated on the Drawings or can be calculated from the Drawings.
- C. Identification: Provide labels where safety glazing is required. Each unit of tempered glass shall be permanently identified by the manufacturer. The identification shall be etched or ceramic fired on the glass and shall be visible after the glazing has been installed. Label per NFPA 80.
- D. Grading and Labeling: Grade and label each light stating the quality and grade of the glass and the manufacturer's name and brand designation. Leave labels intact until removal is directed by the Owner's representative. Label each individual glazing unit for fire-rated doors and windows in accordance with NFPA 80-1-7.4. Listing marks shall be visible after installation.
- E. Perform the work in accordance with the FGMA, Glazing Manual.
- F. All exterior glazing shall be wet sealed glazing gaskets and permitted only for interior work.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Section 01600 - Product Requirements: Transport, handle, store, and protect the products.
- B. Comply with the manufacturer's instructions for shipping, handling, storing and protecting

glass and glazing products.

- C. Deliver products to the Project Site in the manufacturer's original, unopened packaging or crates.
- D. Exercise exceptional care to prevent edge damage to the glass, rainbowing, discoloration and damage to and deterioration of coatings, if any, on the glass.

1.8 JOB CONDITIONS

- A. Pre-installation: Meet with the Glazier and other trades affected by the glass installation prior to beginning installation. Do not perform work under adverse weather or job conditions. Install liquid sealants only when the temperature is within the lower or middle one third of the temperature range recommended by the manufacturer.

1.9 WARRANTY

- A. Section 01780 - Closeout Submittals: Procedures for closeout submittals.
- B. Special Warranty:
 - 1. Provide a manufacturer's written Warranty against cracking, breakage, staining, rainbowing, discoloration and for replacement.
 - 2. Warranty Period: Two (2) years from the date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with the Project requirements, manufacturers offering products which may be incorporated into the work include the following:
 - 1. Falconer Glass Industries, Inc.
 - 2. Guardian Industries.
 - 3. PPG Industries.
 - 4. Libby-Owens-Ford.
 - 5. Pilkington.
 - 6. Viracon, Inc.
 - 7. Oldcastle Glass.
 - 8. National Glass Blocks.
- B. Section 01600 - Product Requirements: Product Options: Substitutions permitted.

2.2 GLAZING MATERIALS

- A. Standards:
 - 4. Prime Glass: FS DD-G-451, ASTM C 1036.

5. Safety Glass: CPSC 16 CFR 1201.
 6. Heat-Treated Glass: FS DD-G-1403, ASTM C 1048.
- B. Float / Plate Glass: Type 1, quality q3, thickness as required to meet the performance requirements, but not less than 3/16", clear unless otherwise indicated. Curved or straight as indicated.
- C. Laminated Safety and Security Glass: Standard two-ply laminated glass with minimum 0.060" Saflex interlayer. Thickness as required to meet the Performance Requirements or security criteria for the location, height and use or as indicated, but not less than 3/8". Where glazing is double pane, the laminate shall be installed as the exterior lite. Tint color as selected.
1. Impact Loads: Comply with South Florida Building Code, Section 2315 and 3513.
- D. Tempered Glass: Heat treated to strengthen the glass in bending to not less than 4.5 times the annealed strength, edges seamed, thickness as required to meet the performance requirements (3/16" thick, minimum). Exposed edges in the finished work shall be polished. Tint color as selected.
1. Where indicated as AFree of Tong Marks@, provide tempered glass produced by manufacturer's special process which eliminates tong marks.
- E. Tempered Low-E: Hard coating on surface 4. Tint color as selected from manufacturer's standards.
- F. Polished Wired Glass or Patterned Wire Glass: Type II, minimum 1/4-inch thick, Class 1, Form 1, quality q11, clear and polished both faces. Pattern as selected.
1. Fire Rating: Provide glass listed and labeled by UL Afire resistance@ complete with steel channel stops.
- G. Interior Fire Rated: Fire glass/mullion glazing system with pyrostop safety rated glass.
- H. Patterned Glass: Tempered glass with screen-printed, ceramic frit fused pattern.
1. PPG / DecoTherm.
 2. Viracon, Viraspan.
 3. Approved equal.
- I. Bullet-proof Glass: meet or exceed UL Level III (9mm full metal jacket with lead core, 0.357 magnum jacketed lead soft point, 0.44 magnum lead semi wadcutter).
1. Transaction Window:
 - a. Non-ricochet type intended to permit the encapture and retention of an attacking projectile lessening the potential of a random injury or lateral penetration.
 - b. Stainless Steel dip tray with single or multiple transaction positions.
 - c. Natural voice configuration.

2.3 GLASS BLOCKS

- A. Glass Blocks: 8" x 8" x 4" thick or as indicated, partially evacuated hollow units. Style, pattern and color as selected from the manufacturer's standards.

:

2.4 GLAZING SEALANT

- A. Silicone: Single component, elastomeric, chemical curing; capable of water immersion without loss of properties; non-bleeding, non-staining, non-sag; cured Shore A hardness of 15 - 25. Color black.

2.5 MISCELLANEOUS GLAZING MATERIALS

- A. Cleaners, Primers and Sealers: Type recommended by the glazing sealant or gasket manufacturer.
- B. Setting Blocks: Neoprene or EPDM, 70 to 90 Shore A durometer hardness; compatible with the glazing sealant used.
- C. Spacers: Neoprene or EPDM, 40 to 50 Shore A durometer hardness; self adhesive on one side; compatible with the glazing sealant used.
- D. Filler Rods: Closed cell or waterproof jacketed foam rod of polyethylene, butyl, neoprene, polyurethane, or vinyl; compatible with the glazing sealant used.

2.6 GLASS BLOCK GLAZING ACCESSORIES

- A. Panel reinforcement: Two (2) parallel 9 gage wires either at 1-5/8" or 2" on center with electrically welded cross wires at regular intervals, galvanized after welding.
- B. Expansion Strips: Fibrous glass or polyethylene foam, 3/8" thick.
- C. Panel Anchors: 20 gage perforated steel strips, 24" long x 1-3/4" wide, galvanized after perforating.
- D. Sealant: Sealant No. 1 or No. 3 per Section 07900.
- E. Backer Rods: Polyethylene foam, neoprene or equal as approved by the sealant manufacturer.
- F. Mortar Materials: Type S in accordance with ASTM C 270 with integral type water-repellant added to the mortar mix.
- G. Portland Cement: Type 1 in accordance with ASTM C 150.
- H. Lime: Type S in accordance with ASTM C 207.
- I. Sand: Clean, white quartzite type, essentially free of iron compounds; for thin joints in accordance with ASTM C 144.
- J. Integral Type Water-repellant: Stearate as recommended by the glass block manufacturer.

PART 3 - EXECUTION

3.1 STANDARDS AND PERFORMANCE

- A. Watertight and airtight installation of each glass product is required, except as otherwise

shown. Each installation must withstand normal temperature changes, wind loading, and impact loading (for operating sash and doors), without failure including loss or breakage of glass, failure of sealants or gaskets to remain watertight and airtight, deterioration of glazing materials, and other defects in the work.

- B. Protect glass from edge damage during handling and installation, and subsequent operation of glazed components of the work. During installation, discard units with significant edge damage or other imperfections.
- C. Glazing channel dimensions, as indicated and specified, are intended to provide for the necessary bite on the glass, minimum edge clearances, and adequate sealant thickness with reasonable tolerances. Adjust as required by the job conditions at the time of installation. Do not reduce the manufacturer's recommended minimum edge bite on the glass.
- D. Comply with the combined recommendations and technical reports by manufacturers of the glass and glazing products used in each glazing channel, and with recommendations of the Flat Glass Marketing Association, *A Glazing Manual*®, except where more stringent requirements are indicated.
- E. Inspect each piece of glass just prior to installation, and discard any which have observable edge damage or face imperfections.
- F. Provide safety glass for all glazed panels within 48" of a door and where glazed panels are less than 60" above any floor or any walking surface and elsewhere where required by the Building Code, performance data or as indicated.
- G. Clean glazing channels and other framing members to receive glass just prior to glazing. Remove coatings which are not firmly bonded to the substrate. Remove lacquer from metal surfaces where elastomeric sealants are used.
- H. Apply primer or sealant to joint surfaces where recommended by the sealant manufacture.

3.2 EXAMINATION

- A. Section 01700 - Execution Requirements: Verification of existing conditions before starting the work.
- B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive the work.
 - 1. Verify that openings for glazing are correctly sized and within tolerance.
 - 2. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement and that weeps are clear and ready to receive the glazing.
- C. Report, in writing, prevailing conditions that will adversely affect satisfactory execution of the work of this Section. Do not proceed with the work until the unsatisfactory conditions have been corrected.

3.3 PREPARATION

- A. Clean contact surfaces with solvent and wipe dry.
- B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.

- C. Prime surfaces scheduled to receive sealant.

3.4 GLAZING INSTALLATION

- A. Place setting blocks of the proper size in sill rabbet; locate at 1/4th the glass width from each corner; set blocks in a thin course of heel and toe compound, if any.
- B. Install spacers of the proper size and spacing inside and out for glass sizes larger than 50 united inches, except where gaskets or pre-shimmed tape is used. Provide 1/8", minimum bite of spacers on the glass and use a thickness slightly less than the final compressed thickness of the tape.
- C. Set each unit of glass in each series in uniformity with other pieces in pattern, draw, bow, and other visually perceptible characteristics.
- D. Provide for the following edge clearances (bite):

Single glazed

Nominal edge cover (bite)	5/16"
Minimum nominal edge clearance	3/16"
Minimum face clearance	3/16"

- E. Glass must be edge blocked to prevent contact with metal framing.
- F. Provide glazing sealant as required for the particular glazing application. Coordinate with other Sections herein for material compatibility. Glazing gaskets are permitted only for interior locations.
- G. Prevent exudation of the sealant or compound by forming voids or installing filler rods in channels at the heel of jambs and heads, except as otherwise indicate and depending on the light size, thickness and type of glass, and in compliance with the manufacturer's recommendations.
- H. Provide filler rod where sealants are used in the following locations:
1. Head and jamb channels.
 2. Tinted glass over 75 united inches in size.
 3. Clear glass over 125 united inches in size.
- I. Do not leave voids in sill channels except as specifically indicated or recommended by the glazing manufacturer. Force sealant into the channel to eliminate voids and to ensure complete Awetting® or bond of the sealant to the glass and channel surfaces.
- J. Do not allow the sealant to close the weeps of aluminum framing.
- K. Tool exposed surfaces of glazing liquids and compounds to provide a substantial Awash® away from the glass.
- L. Clean and trim excess glazing materials from glass and stops or frames promptly after installation; eliminate stains and discolorations.
- M. Install pressurized tape and gaskets to protrude slightly out of the channel to eliminate dirt

and moisture pockets.

3.5 GLASS BLOCK INSTALLATION

- A. Verify that channels, chases and panel anchors have been provided at heads and jambs for panel support within openings.
- B. Cover the sill area with a heavy coat of asphalt emulsion. Allow the emulsion to dry before placing mortar. Adhere expansion strips to jambs and head. Make certain that expansion strips extend to the sill. Maintain a uniform joint width of 1/4" plus or minus 1/8". All mortar joints must be full and not furrowed. Steel tools should not be used to tap blocks into position.
- C. Install reinforcing at 16" o.c. horizontally and in joints immediately above and below all openings within panels. Run the reinforcing continuously from edge to edge of panels. Lap reinforcing not less than 6" where necessary to use more than one length. Do not bridge expansion joints with reinforcing. Install reinforcing as follows:
 - 1. Place lower half of mortar in bed joint. Do not furrow. Press panel reinforcing into place. Cover panel reinforcing with upper half of mortar bed and trowel smooth. Do not furrow.
 - 2. Strike joints smooth while mortar is still plastic and before final set. Rake out all spaces requiring sealant to a depth equal to the width of the spaces. Remove surplus mortar from the faces of glass blocks and wipe dry. Tool joints smooth and concave before mortar takes final set.
 - 3. After final mortar set, install packing tightly between glass block panel and head construction. Apply sealant evenly in the head and jamb recesses in accordance with the manufacturer's instructions.

3.6 FIELD QUALITY CONTROL

- A. Section 01450 - Quality Control: Field inspection.
- B. Inspect the preparation for and installation of glazing.

3.7 CLEANING

- A. Section 01700 - Execution Requirements: Cleaning the installed work.
- B. Remove non-permanent labels after glazing has been completed and clean glass surfaces.
- C. Wash and polish glass on both surfaces not more than four (4) days prior the date scheduled for inspections intended to establish the date of Substantial Completion for each area of the Project. Wash with a solution of mild detergent in warm water applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean and dry.

3.8 PROTECTION

- A. Section 01700 - Execution Requirements: Protection of the installed work.
- B. Protect exterior glass from breakage immediately upon installation by use of crossed streamers attached to framing and held away from the glass. Do not apply markers directly to the glass surface.

- C. Remove and replace glass which has been broken, chipped, cracked, abraded or damaged in other ways during the construction period, including by natural causes, accidents and vandalism.

END OF SECTION

SECTION 09110
NON-LOAD-BEARING STEEL FRAMING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Interior non-load-bearing steel partition framing.
 - 2. Metal furring.
 - 3. Interior suspended steel ceiling framing.
 - 4. Blocking and backing plates.
- B. Related Documents: The Contract Documents, as defined in Section 01010 - Summary of Work, apply to the work of this Section. Additional requirements and information necessary to complete the work of this Section may be found in other Documents.
- C. Related Sections:
 - 1. Section 05500 - Metal Fabrications: Backing plates.
 - 2. Section 06100 - Rough Carpentry: Wood blocking.
 - 3. Section 07210 - Building Insulation: Wall insulation.
 - 4. Section 07900 - Joint Sealers: Sealants.
 - 5. Section 09250 - Gypsum Board: Wall finish.

1.2 DESCRIPTION OF WORK

- A. The extent of non-load-bearing steel framing work is indicated on the Drawings and as specified herein, and includes providing and installing interior partition framing, suspended ceiling framing, furring and metal blocking and backing plates in walls and ceilings.

1.3 REFERENCES

- A. The publications listed below form a part of this Specification to the extent referenced. Publications are referred to in the text by basic designation only.
- B. American Society for Testing and Materials (ASTM):
 - 1. ASTM A 641 - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
 - 2. ASTM C 645 - Specification for Non-Structural Steel Framing Members.
 - 3. ASTM C 754 - Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.

4. ASTM C 840 - Standard Specification for Application and Finishing of Gypsum Board.
 5. ASTM C 954 - Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033-inch (0.84 mm) to 0.112- inch (2.84 mm) in Thickness.
 6. ASTM D 226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
 7. ASTM D 2201 - Standard Practice for Preparation of Zinc-Coated and Zinc-Alloy-Coated Steel Panels for Testing Paint and Related Coating Products.
 8. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
 9. ASTM E 90 - Standard Test Method for Laboratory Measurements of Airborne Sound Transmission Loss of Building Partitions and Elements.
 10. ASTM E 413 - Classification for Rating Sound Insulation.
 11. ASTM E 119 - Standard Test Method for Fire Tests of Building Construction and Materials.
- C. Gypsum Association
1. GA-600 - Fire Resistance Design Manual.

1.4 SUBMITTALS

- A. Section 01330 - Submittal Procedures: Procedures for submittals.
1. Product Data:
 - a. Framing Members: Standard materials and finish, product criteria, sizes and lengths, load charts and limitations.
 - b. Fasteners and Anchorage Devices: Standard materials and finish, sizes and load charts.
 2. Shop Drawings:
 - a. Indicate prefabricated work, component details, framing layout, framed openings, anchorage to the structure, type and location of fasteners and accessories or items required of other related work.
 - b. Indicate the method of securing studs and framing to tracks, splicing, suspension, blocking / backing plates for support of items specified in other Sections and reinforcement of framing connections.
 - c. Indicate details associated with fireproofing and acoustical seals.
 - d. Indicate location of blocking and backing plates required for installation of other work.
 3. Samples:

- a. If requested, two (2) 6" long sections of each shape required.
- 4. Assurance / Control Submittals:
 - a. Documentation of experience indicating compliance with the specified qualifications requirements.

1.5 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Manufacturer: Company specializing in manufacturing the products specified with a minimum of five (5) years documented experience.
 - 2. Installer: Company experienced in performing the work of this Section with a minimum of five (5) years documented experience.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Section 01600 - Product Requirements: Transport, handle, store and protect the products.
- B. Protect metal framing materials from corrosion, deformation and other damage during delivery, storage and handling.
- C. Deliver products to the Project Site in the manufacturer's original, unopened packages, containers or bundles bearing the brand name and identification of the manufacturer.
- D. Store and protect the metal framing with a weatherproof covering; ventilate to avoid condensation.
- E. Store, handle and install to prevent bending.

1.7 JOB CONDITIONS

- A. Maintain environmental conditions (temperature, humidity and ventilation) within the limits recommended by the manufacturer. Do not install products under environmental conditions outside the manufacturer's absolute limits.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with the Project requirements, manufacturers offering products which may be incorporated into the work include the following:
 - 1. Unimast Incorporated.
 - 2. Dale Industries.
 - 3. National Gypsum Company (Gold Bond Building Products).
 - 4. Clark Steel Framing Systems.
- B. Section 01600 - Product Requirements: Product Options: Substitutions permitted.

2.2 MATERIALS

- A. Unimast Incorporated framing component designations are used within this Section to establish quality and to identify the framing types.
- B. Interior Non-Load-Bearing Partition Framing: ASTM C 645 and D 2201; galvanized sheet steel, channel shaped, punched for utility access, depth as indicated on the Drawings, gages as indicated below, unless indicated otherwise on the Drawings.
 - 1. 212ST20 - 2-1/2" Studs - Unbraced Length 13 Feet or Less: Minimum 20 gage; Minimum 18 gage where greater than 13 feet.
 - 2. 358ST22 - 3-5/8" Studs - Unbraced Length 18 Feet or Less: Minimum 22 gage; Minimum 20 gage where greater than 18 feet.
 - 3. 600ST22 - 6" Studs - Unbraced Length 25 Feet or Less: Minimum 22 gage; Minimum 20 gage where greater than 25 feet.
 - 4. Bridging - Same depth and gage as the studs.
- C. Partition Floor Tracks and Runners: ASTM C 645 and D 2201; galvanized sheet steel, channel shaped, solid web, same depth and gage as the studs.
 - 1. 22 Gage Studs: CR22 x stud size.
 - 2. 20 Gage Studs: CR20 x stud size.
- D. Slip-Type Top Tracks: Provide one of the following:
 - 1. Deflection Track: Steel sheet top runner, manufactured to prevent the cracking of finishes applied to interior partition framing resulting from deflection of the structure above; in thickness not less than the studs and in a width to accommodate the depth of the studs.
 - 2. Double Runner System: ASTM C 645 runner; inside runner with 2" deep flanges, in thickness not less than that indicated for the studs and fastened to the studs; outer runner sized to friction fit inside the inside runner.
 - 3. Single Long-Leg Runner System: ASTM C 645 runner with 2" deep flanges, in thickness not less than that indicated for the studs, installed with studs friction fit into the runner and with bridging located within 12" of the top of the studs.
- E. Partition Framing Fasteners: Corrosion-resistant, self-drilling, self-tapping steel screws.
 - 1. 22 Gage Framing: ASTM C 1002; 3/8", Type S, pan head.
 - 2. 20 Gage and Heavier Framing: ASTM C 954; 5/8", Types S-12, low-profile head.
- F. Partition Floor Track Anchorage Device: Low velocity, powder-actuated drive pins; minimum 0.140" shank diameter x 1-1/2" shank length with 7/8" diameter washer.
 - 1. DX 451 System using X-DNI Pins with R23 washers by Hilti.
 - 2. Ramset / Red Head System using 4700SD Pins by ITW Ramset / Redhead.
- G. Wall Furring: ASTM C 645 and D 2201; galvanized sheet steel.

1. Studs: ST22 - 2-1/2" deep, 22 gage.
 2. Studs: ST20 - 3-5/8" deep, 20 gage.
 3. Hat-Shaped Channels: 7/8" deep x 1-1/2" wide, 25 gage.
 4. AZ@ Furring Channels: 1-1/2" deep, 25 gage.
 5. Clip Angles: 2" x 2" x 1/4" less than stud width, 16 gage.
- H. Wall Furring to Concrete or Masonry Fasteners: Hex head sleeve anchors; minimum 1/4" diameter x minimum 1-1/8" embedment.
1. Slv Anch H X 5/16 X 2-1/2 by Hilti.
 2. Dynabolt HN-1413 by ITW Ramset / Redhead.
- I. Furring Channel to Masonry or Concrete Fasteners: Low velocity, powder-actuated drive pins of size to suit the application.
- J. Suspended Interior Ceiling and Soffit Framing:
1. Wire Hangers: ASTM A 641 / A 641M, Class 1 zinc coating, soft temper, 0.162" diameter.
 2. Flat Hangers: Galvanized steel sheet, 1" x 3/16" x length required.
 3. Stud Hangers: ASTM C 645; cold rolled, galvanized sheet steel, channel shaped, cross braced, minimum 20 gage.
 4. Carrying Channels: ASTM C 645; cold rolled, galvanized sheet steel, channel shaped, minimum 20 gage.
 5. Furring Channels: ASTM C 645; galvanized, hat-shaped, 7/8" deep x 1-1/2" wide, 25 gage.
 6. Tie Wire: ASTM A 641 / A 641M, Class 1 zinc coating, soft temper, 0.0625" diameter.
- K. Flat Straps and Backing Plates: ASTM D 2201; galvanized sheet steel, 22 gage, minimum.
- L. Isolation Strips at Exterior Walls and Suspended Concrete Floors: ASTM D 226; asphalt-saturated organic felt, Type I (No. 15 asphalt felt), non-perforated.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01700 - Execution Requirements: Verification of existing conditions before starting the work.
- B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive the work.
 1. Verify that building framing components are ready to receive the work.

2. Verify that rough-in utilities are in-place and properly located where required.
- C. Report, in writing, prevailing conditions that will adversely affect satisfactory execution of the work of this Section. Do not proceed with the work until the unsatisfactory conditions have been corrected.

3.2 INSTALLATION - PARTITION FRAMING

- A. Install framing and fasteners in accordance with the manufacturer's published instructions and ASTM C 754.
- B. Install tracks / runners at floors, ceilings, and structural walls and columns where steel framing abuts.
 1. Install asphalt felt between tracks / runners and wall / floor where framing is installed directly against exterior walls and floor slabs.
- C. Metal Stud Spacing: 16" on center, maximum.
- D. Align stud web openings horizontally; install horizontal bridging at 5' o.c., maximum.
- E. Extend partition framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate below suspended ceilings.
- F. Install studs so flanges point in the same direction.
- G. Splice studs with an 8" nested lap, minimum; fasten each stud flange with a minimum of two (2) screws.
- H. Construct corners using a minimum of three (3) studs.
- I. Install double studs at wall openings and door jambs, maximum 2" from each side and at the top of openings.
- J. Extend vertical jamb studs through suspended ceilings and attach to the underside of the structure above.
- K. Frame other openings, in the same manner as for doors.
- L. Place studs 2", minimum, from abutting walls.
- M. Install intermediate studs above and below openings to match the wall stud spacing.
- N. Fasten studs adjacent to door frames, partition intersections and corners to the top and bottom runner flanges in double-stud fashion.
 1. Securely fasten studs to jamb and head anchor clips of doors and borrowed light frames.
 2. Place a cut-to-length section of runner horizontally with the web-flange bent at each end; fasten with a minimum of two (2) fasteners per flange.
 3. Position a cut-to-length stud (extending to the top runner) at vertical panel joints over door and window headers.
- O. Allow for deflection of roof or floor slabs.

1. Leave 1/2" gap between the top end of studs and the top track.

- P. Framing Fastening: Fasten framing in accordance with the manufacturer's published instructions and the schedule below, unless indicated otherwise on the Drawings.

	<u>Connection</u>	<u>Fasteners</u>
flange	Floor and Top Track to Concrete	1 pin at 32" on center
	Partition Stud to Floor Track	1 screw each side, each
	Partition Stud to Top Track	1 screw each side, each flange in slotted hole to allow
slab		deflection
	Plates and Straps to Studs	2 screws
	Stud Web to Stud Web	2 screws
end	Runner to Header	1 screw at 16" on center, maximum 6" from each

- Q. Install framing, blocking and backing plates between studs for the attachment of work by other trades.

- R. Install batt insulation in walls and ceilings, where indicated on the Drawings and as specified in Section 07210 - Building Insulation.

3.3 INSTALLATION - FURRING

- A. Furring Channels:

1. Vertically spaced at 16" on center, maximum; attach to concrete and masonry surfaces with hammer set or powder-driven fasteners, staggered 24" o.c. on opposite flanges.
2. Nest channels 8" at splices and anchor with two (2) fasteners in each flange.

- B. Wall Furring:

1. Secure top and bottom runners to the structure in a manner to permit minor slab deflection.
2. Space metal furring at 16" on center, maximum.

3.4 INSTALLATION - CEILING AND SOFFIT FRAMING

- A. Suspend ceiling hangers directly from the building structure.

1. Install hangers plumb and free from contact with other objects within the ceiling plenum.
2. Where other construction within the ceiling plenum interferes with the typical hanger spacing, install supplemental suspension members and hangers in the form of trapezes or equivalent devices. Size supplemental suspension members and hangers to support the imposed ceiling loads.
3. Secure wire hangers by looping and wire-tying, either directly to the structure or to inserts.

4. Do not suspend framing from ducts, pipes or conduits.
5. Keep hangers and braces 2" clear of ducts, pipes and conduits.
- B. Install framing per ASTM C 754.
 1. Install framing components in the sizes and spacing indicated on the Drawings, but not less than that required by the referenced standards.
- C. Wire-tie furring channels to support the framing.
- D. Attach perimeter wall track or angle where the suspension system meets vertical surfaces. Mechanically join the main beam and cross-furring members to each other and fit furring into the wall track.
- E. Install compression struts and sway bracing system with tie wires as indicated on the Drawings, and as required by the Building Code.
 1. Provide hanger wires splayed 45 degrees within 3" of the intersection between main runners and cross runners, and at each light fixture.
 2. Provide compression struts and splayed hanger wire sway bracing as follows:
 - a. Within 6 feet of walls.
 - b. At 12 feet on centers, maximum.
- F. Install steel framing components for suspended ceilings so members for attachment of finish panels are level to within 1/8" in 12 feet measured lengthwise and transversely.
- G. When the ceiling system provides lateral support for permanent or relocatable partitions, the connection, ceiling system and lateral force bracing shall be sized and installed to support the reaction force of the partitions.

3.5 INSTALLATION - BLOCKING AND BRIDGING

- A. Screw attach wood blocking / metal backing plates between studs for the support of surface-mounted items for:
 1. Plumbing fixtures.
 2. Wall cabinets.
 3. Toilet accessories.
 4. Hardware.
 5. Architectural woodwork.
 6. Grab bars.
 7. Writing / Bulletin boards.
 8. Fire extinguishers and fire extinguisher cabinets.
 9. Other items requiring backing for attachment.

- B. Provide bridging between opposite sides of plumbing cavity walls at a maximum of 36" o.c., vertically.

3.6 CONSTRUCTION

A. Interface with Other Work:

1. Coordinate the erection of studs at openings and with door and window frames.
2. Coordinate the installation of anchors, supports and blocking for mechanical, electrical and building accessory items installed within the framing.

B. Site Tolerances:

1. Maximum Variation From True Position: 1/8" in 10 ft.
2. Maximum Variation From Plumb: 1/8" in 10 ft.

3.7 FIELD QUALITY CONTROL

- A. Section 01450 - Quality Control: Field inspection.
- B. Inspect metal framing erection, placement, spacing, seismic joints, expansion joints, fasteners and connections.

END OF SECTION

SECTION 09250
GYPSUM BOARD

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Gypsum board.
 - 2. Cement board.
 - 3. Gypsum sheathing.
 - 4. Accessories.
 - 5. Joint treatment.
 - 6. Finishing.
- B. Related Documents: The Contract Documents, as defined in Section 01010 - Summary of Work, apply to the work of this Section. Additional requirements and information necessary to complete the work of this Section may be found in other Documents.
- C. Related Sections:
 - 1. Section 06100 - Rough Carpentry: Wood framing and blocking for attachment of gypsum board.
 - 2. Section 07210 - Building Insulation: Sound attenuation blankets.
 - 3. Section 07900 - Joint Sealers: Acoustical sealants.
 - 4. Section 09110 - Non-Load Bearing Steel Framing: Metal framing for attachment of gypsum board.
 - 5. Section 09200 - Lath and Plaster: Finish for gypsum sheathing.
 - 6. Section 09300 - Tile: Ceramic wall finish on gypsum board.
 - 7. Section 09900 - Painting: Field paint finish on gypsum board.

1.2 DESCRIPTION OF WORK

- A. The extent of gypsum board work is indicated on the Drawings and Schedules and as specified herein, and includes providing and installing gypsum board for all applications, cement fiber board, gypsum sheathing, galvanized and PVC trim, accessories and the finishing of installations exposed to view.

1.3 REFERENCES

- A. The publications listed below form a part of this Specification to the extent referenced. Publications are referred to in the text by basic designation only.

B. American Society for Testing and Materials (ASTM):

1. ASTM C 475 - Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
2. ASTM C 630 - Specification for Water-Resistant Gypsum Backing Board.
3. ASTM C 840 - Specification for the Application and Finishing of Gypsum Board.
4. ASTM C 954 - Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 inches (0.84 mm) to 0.112 inches (2.84 mm) in Thickness.
5. ASTM C 919 - Practice for Use of Sealants in Acoustical Applications.
6. ASTM C 1002 - Specification for Steel Self-Piercing Topping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
7. ASTM C 1280 - Specification for Application of Gypsum Sheathing.
8. ASTM C 1325 - Specification for Non-Asbestos Fiber-Mat Reinforced Cement Substrate Sheets.
9. ASTM C 1396 - Specification for Gypsum Board.
10. ASTM D 3678 - Specification for Rigid Poly (Vinyl Chloride) (PVC) Interior-Profile Extrusions.
11. ASTM E 119 - Test Methods for Fire Tests of Building Construction and Materials.

C. Gypsum Association (GA):

1. GA-201 - Gypsum Board for Walls and Ceilings.
2. GA-214 - Recommended Specification for Levels of Gypsum Board Finish.
3. GA-216 - Recommended Specifications for the Application and Finishing of Gypsum Board.
4. GA-600 - Fire Resistance Design Manual.

D. International Code Council:

1. International Building Code (IBC), 2009.

1.4 SUBMITTALS

A. Section 01330 - Submittal Procedures: Procedures for submittals.

1. Product Data: Manufacturer's product specifications and installation instructions for each gypsum drywall component, including other data required to show compliance with these specifications.
12. Assurance / Control Submittals:

- a. Manufacturer's certificate that the products meet or exceed the specified requirements.
- b. Documentation of experience indicating compliance with the specified qualifications requirements.
- c. Test Reports from recognized testing laboratories, upon request.

1.5 QUALITY ASSURANCE

A. Qualifications:

- 1. Manufacturer: Company specializing in manufacturing the products specified with a minimum of five (5) years documented experience.
- 2. Installer: Company experienced in performing the work of this Section with a minimum of five (5) years documented experience.

B. Fire-Resistance Ratings: Where gypsum drywall systems with fire-resistance ratings are indicated, provide materials and installations which are identical to those of applicable assemblies tested per ASTM E 119 by a fire testing laboratory acceptable to the authorities having jurisdiction.

- 1. Provide fire-resistance rated assemblies identical to those indicated by reference to GA File No. S in GA AFire Resistance Design Manual® or to design designations in U.L. AFire Resistance Directory® or in listing of other testing and agencies acceptable to the authorities having jurisdiction.

C. Single-Source Responsibility: Obtain gypsum board products from a single manufacturer, or from manufacturer's recommended by the prime manufacturer of the gypsum board.

1.6 DELIVERY, STORAGE AND HANDLING

A. Section 01600 - Product Requirements: Transport, handle, store and protect the products.

B. Deliver products to the Project Site in the manufacturer's original, unopened, undamaged packages, containers, or bundles bearing the brand name with identification labels intact.

B. Store materials inside and under cover; keep dry; protect from weather, direct sunlight, surface contamination, corrosion and damage from construction traffic and other causes.

D. Neatly stack gypsum boards flat to prevent sagging.

E. Handle to prevent damage to edges, ends and surfaces.

F. Protect corner beads and trim from being bent and damaged.

1.7 JOB CONDITIONS

A. Environmental Requirements, General: Comply with requirements of the referenced gypsum board application standards and recommendations of the gypsum board manufacturer for environmental conditions before, during and after installation.

B. Ventilation: Ventilate building spaces as required to remove water in excess of that required for the drying of joint treatment materials immediately after application. Prevent drafts during hot,

dry weather to avoid excessively rapid drying.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with the Project requirements, manufacturers offering products which may be incorporated into the work include the following:
 - 1. United States Gypsum Co.
 - 2. National Gypsum Company (Gold Bond Building Products).
 - 3. Georgia-Pacific.
 - 4. Domtar Gypsum.
- B. Section 01600 - Product Requirements: Product Options: Substitutions permitted.

2.2 GYPSUM BOARD MATERIALS

- A. General:
 - 1. Provide boards where called for on the Drawings in lengths to minimize the number of end-to-end butt joints.
 - 2. United States Gypsum (Sheetrock) designations are used in this Section to identify gypsum board and accessory types, unless otherwise noted.
- B. Standard Gypsum Board: ASTM C 1396; natural finish, paper faces, 1/2" at ceilings and over wall furring, 5/8" thick at walls unless noted otherwise, 48" width, maximum practical length to meet conditions; ends square cut, tapered edges.
 - 1. Provide where gypsum board is called for unless otherwise indicated.
- C. Fire-Resistant Gypsum Wallboard: Type X, ASTM C 1396; paper faces, 2" at ceiling, or 5/8" thick at walls, 48" width, maximum practical length to meet conditions; ends square cut, edges tapered; providing at least 1-hour fire-retardant rating when tested in accordance with ASTM E 119.
 - 1. Provide where a fire-resistance rating is required.
- D. Water-Resistant Gypsum Backing Board: ASTM C 630; 2" at ceiling and over wall furring, and 5/8" thick at walls, 48" width, maximum practical length to meet conditions; ends square cut; edges tapered; ends and edges straight and solid. Board consisting of a non-combustible water-resistant gypsum core, surfaced on face and back with green treated water-repellent paper bonded to the core. Suitable for receiving paint or wallpaper and in compliance with IBC.
 - 1. Provide at ceilings and walls in showers, toilets and other wet areas not scheduled for tile finish.
- E. Impact / Penetration-Resistant Gypsum Board: Type X, ASTM C 1396, 5/8" thick, 48" width, maximum practical length to meet the conditions, ends square cut; edges tapered; gypsum core with additives to enhance fire resistance; 1-hr fire-retardant rating when tested in accordance with ASTM E 119; surfaced with paper on the front, back and long

edges; 0.30" GE Lexan film bonded to the back side to enhance impact / penetration resistance without penetration.

1. Provide at Corridor walls where indicated and other locations subject to high abuse.
- F. Tile Backing Board: 5/8" thick; inorganic fiberglass mat with moisture-resistant gypsum core; paperless; heat-cured acrylic coating; DensShield Tile Backer by Georgia-Pacific, or approved equal.
1. Provide at shower and toilet room walls scheduled to receive ceramic tile finish.
- G. Cement Board: High density, glass fiber reinforced, 1/2" thick x 26" or 48" width; Durock Cement Board as manufactured by United States Gypsum or approved equal.
1. Provide at shower and toilet room walls scheduled to receive ceramic tile finish, and
at ceilings and walls exposed to the weather.
- H. Gypsum Sheathing: ASTM C 630, 5/8" thick x 48" width x maximum practical length to meet conditions; ends square cut; edges tapered; ends and edges straight and solid. Weather and sag resistant for exterior applications, water repellent paper faces suitable for painting or plastering.
1. Provide at ceilings and walls exposed to the weather.
- I. Solid Shaftliner: 1" thick x 23-7/8" or 47-3/4" width, Type X core, ASTM C 1396, moisture-resistant paper faces.
1. Provide at fire-rated shaft and chase walls, as indicated.

2.3 FASTENERS

- A. Metal Framing: ASTM C 1002, Type S, Phillips-head recess, bugle head, corrosion-resistant, self-drilling, self-tapping, fine thread steel screws.
1. One Layer 1/2" board: 1" long.
 2. One Layer 5/8" board: 1-1/8" long.

2.4 TRIM ACCESSORIES

- A. General: Install vinyl plastic accessories at exterior work and work in high humidity and non-air-conditioned spaces. Use galvanized accessories at interior air conditioned, normally humidity areas.
- B. Plastic Accessories: High-Impact PVC plastic; ASTM D 3678, including corner beads, stop beads, casing beads, trim beads, baseboard and ceiling beads; as manufactured by Plastic Components, Inc. or approved equal.
- C. Galvanized Accessories:
1. Edge Trim: Galvanized steel casing.
 - a. AL@ shape for tight abutment at edges; Sheetrock Brand, No. 200-B.
 - b. AJ@ shape at other locations; Sheetrock Brand, No. 200-A.

2. Corner Beads: Galvanized steel corner beads, Sheetrock Brand, Dur-A-Bead Metal Corner Bead.
 3. Control Joint: Roll-formed zinc; Sheetrock Brand, Zinc Control Joint.
- D. Pre-finished Corners: Pre-finished inside corner reinforcement as manufactured by ULTRAFLEX or approved equal.

2.5 JOINT TREATMENT MATERIALS

- A. General: Type recommended by the gypsum board manufacturer for the application, except as otherwise indicated; ASTM C 475.
- B. Reinforcing Tape: Cross-fibered paper with high tensile strength, roughened surface, accurate center crease; Sheetrock Brand, Heavy Drywall Joint Tape.
- C. Joint Compound:
1. Single Grade: Multi-purpose grade for the entire application.
 2. Two Grades:
 - a. Interior and Exterior Work: Use chemically-setting, powder compound type for bedding and filling; Sheetrock Brand, Durabond Joint Compound or Easy Sand Lightweight Setting Type Joint Compound.
 - b. Topping: Use ready-mixed, lightweight, vinyl formulation or vinyl powder; Sheetrock Brand, Lite Taping Joint Compound.
- D. Water-Resistant Joint Compound: Special water-resistant type for treatment of joints, fastener heads and cut edges of water-resistant backing boards.

2.6 MISCELLANEOUS MATERIALS

- A. General: Provide auxiliary materials of the type and grade recommended by the gypsum board manufacturer.
- B. Adhesives: Commercial adhesives; ASTM C 557.
1. Laminating: Special adhesive or joint compound specifically recommended by the gypsum board manufacturer for laminating gypsum boards.
 2. Water-Resistant: Type I, organic adhesive for ceramic tile; ANSI A136.1.
- C. Blocking and backing Plates: Provided by the trade responsible for Section 09110; located by the appropriate trade or as indicated below.
1. Casework and Other Trades: 14 gage galvanized steel, minimum; 3" wide x length required.
 2. Plumbing: Size as required for the relevant wall-hung fixture.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01700 - Execution Requirements: Verification of existing conditions before starting the work.
- B. Verification of Conditions: Verify that field measurements, surfaces, substrates, blocking and backing plates and conditions are as required, and ready to receive the work.
- C. Report, in writing, prevailing conditions that will adversely affect the satisfactory execution of the work of this Section. Do not proceed with the work until the unsatisfactory conditions have been corrected.

3.2 PRE-INSTALLATION MEETING

- A. Prior to commencing work, meet on-site with the Owner's representative and all concerned trades to review the work required by this Section.

3.3 GENERAL REQUIREMENTS

- A. Install in accordance with reference standards, manufacturer's instructions, product technical bulletins, product catalog and product carton instructions and as required to comply with seismic requirements.
- B. Install supplementary framing, blocking and bracing at terminations in gypsum board assemblies to support fixtures, equipment, heavy trim, grab bars, toilet accessories, cabinetry, furnishings and similar construction.
- C. Install metal framing and gypsum board to enclose all pipes, ducts, conduit, etc. which would otherwise be exposed in finished areas, regardless of whether or not furring is shown or indicated on the Drawings.
- D. Enclosures to receive recessed light fixtures in fire-rated ceilings shall conform to U.L. requirements for materials and assemblies. Provide U.L. Design No. P251 enclosures over all types of recessed lights.
- E. Defects which appear in the work due to faulty workmanship and / or materials, shall be repaired and refinished with materials and in a manner to meet the requirements of this Section.

3.4 GYPSUM BOARD INSTALLATION REQUIREMENTS

- A. Application and Finishing Standards: Install in accordance with manufacturer's published instructions, GA-201, GA-216 and ASTM C 840.
- B. Install sound attenuation blankets as indicated, prior to the application of gypsum boards unless the blankets can be readily installed after the boards have been installed.
- C. Locate exposed end-to-end butt joints as far as possible from the center of walls and ceilings, and stagger not less than 1'-0" in alternate courses.
- D. Install ceiling boards in the direction and in a manner that will minimize the number of end-to-end butt joints and avoid end joints in the central area of each ceilings. Stagger end joints at least 1'-0".
- E. Install wall / partition boards vertically to avoid end-to-end butt joints to the extent possible. Use boards of maximum practical lengths; where applicable stagger end joints. Cut and saw all openings; do not core and punch. Apply edge bead to all exposed edges and outside corners.

- F. Install exposed gypsum board with face side out. Do not install imperfect, damaged or damp boards. Butt boards together for a light contact at edges and ends with not more than 1/16" open space between boards. Do not force boards into place.
- G. Locate either edge or end joints over supports, except in horizontal applications or where intermediate supports or gypsum board back-blocking is provided behind end joints. Position boards so both tapered edge joints abut, tapered edges against tapered edges and mill-cut ends against mill-cut or field-cut ends. Do not place tapered edges against cut edges or ends.
- H. Stagger vertical joint over different studs on opposite sides of partitions.
- I. Attach gypsum boards to supplementary framing and blocking provided for additional support at openings and cutouts.
- J. Isolate perimeter of non-load bearing gypsum board partitions at structural abutments. Provide 1/4" to 1/2" space and trim edges with AJ® type, semifinished, edge trim. Seal joints with acoustical sealant.
- K. Form control joints and expansion joints with space between edges of boards prepared to receive trim accessories.
- L. Space fasteners in boards in accordance with referenced standards and manufacturer's recommendations, except as otherwise indicated.

3.5 GYPSUM BOARD INSTALLATION METHODS

- A. Single Layer Applications:
 - 1. Install single layer gypsum board in the most economical direction, with edges and ends attached to firm bearing surfaces; panel ends aligning and parallel with framing members.
 - 2. Apply gypsum board on walls and partitions vertically unless indicated otherwise, and provide sheet lengths that will minimize the number of end-to-end butt joints.
 - 3. Apply gypsum board on furring with no end joints. Locate edge joints over furring members.
 - 4. Apply gypsum board on ceilings prior to application on walls and partitions, to the greatest extent possible.
 - 5. Treat cut edges, holes, fastener heads and joints, including those at angle intersections in water-resistant gypsum board, cement board and gypsum sheathing at exterior ceilings and soffits with the specified joint compound. Treat prior to installation.
 - 6. Do not align panel joints with edges of openings.
- B. Wall Tile Base: Where gypsum board is the base for thin-set ceramic tile and similar rigid applied wall finishes, install paperless tile backing boards.
- C. Showers, tubs and similar Awet® areas: Install paperless tile backing boards. Apply with uncut long edges at the bottom of the work, and space 1/4" above fixture lips. Seal ends, cut edges and penetrations of each piece with water-resistant adhesive or, where recommended by the backing board manufacturer, with water-resistant joint compound.

- D. Double Layer Applications: Install gypsum backing board as the base layer and exposed gypsum board for the face layer.
 - 1. Apply base layer on ceilings prior to application of the base layer on walls / partitions; apply face layers in the same sequence. Offset joints between layers at least 10". Apply base layers at right angles to supports unless indicated otherwise.
 - 2. Apply base layer and face layer on walls / partitions [vertically] [horizontally] with joints of the base layer over supports and face layer joints offset at least 10" with base layer joints.
 - 3. Apply base layer on furring members [vertically] [horizontally] and the face layer either [vertically] [horizontally] with vertical joints offset at least one furring member. Locate edge joints of the base layer over furring members.
- E. Single Layer Fastening Methods: Secure boards to supports as follows:
 - 1. Install fasteners from the center of the panel field toward the ends and edges. Install fasteners 3/8" from ends and edges of panels, and as follows:
 - a. Ceiling: 12" on center, perimeter and field.
 - b. Walls: 12" o.c. in the field of walls and 8" o.c. at vertical joints.
- F. Double Layer Fastening Methods: Apply base layer of gypsum board and face layer to the base layer as follows:
 - 1. Fasten both the base layer and face layer to supports separately with screws.
- G. One-Hour Fire-Rated Chase Walls: Install framing studs, shaftliner and face layers in strict accordance with the manufacturer's instructions and the Building Code
- H. Sound-Rated Walls: Where work is indicated, including double layer work and work on resilient furring, seal the work at perimeters, control and expansion joints, openings and penetrations with a continuous bead of acoustical sealant including a bead at both faces of partitions.
 - 1. Comply with the manufacturer's recommendations for location of beads, and close off sound-flanking paths around and through the work, including sealing of partitions above acoustical ceilings. Provide sound insulation at ceilings where walls do not extend to the slab above.
- I. Acoustical Sealant Application: Comply with the details indicated or if not indicated, comply with applicable published recommendations of the *ΔGypsum Construction Handbook®* by the United States Gypsum Company.
- J. Inspection of Acoustical Partitions: Gypsum board partitions with a STC rating of 52 or higher shall not be closed and finished until inspected and approved by the Owner's representative.
- K. Shower Room Ceilings: Install paperless gypsum board in accordance with the manufacturer's instructions. Reinforce all joints with glass mesh tape and coat the entire surface with a recommended compound to provide a smooth, even finish over the entire surface.

3.6 GYPSUM BOARD TRIM INSTALLATION

- A. General: Where feasible, use the same fasteners to anchor trim accessory flanges as used to fasten the gypsum boards to supports. Otherwise, fasten flanges by nailing or stapling in accordance with the manufacturer's instructions and recommendations.
- B. Install plastic corner beads at external corners. Use the longest practical lengths. Place edge trim where panels abut dissimilar materials.
- C. Install plastic edge trim wherever the edge of gypsum board would otherwise be exposed or semi-exposed. Provide the type with face flanges to receive joint compound except where semi-finishing type is indicated. Install AL@ trim where work is tightly abutted to other work and install special kerf-type where other work is kerfed to receive the long leg of AL@ trim. Install AJ@ trim where the edge is exposed, revealed, gasketed, or sealant-filled (including expansion joints).
- D. Install semi-finishing trim where indicated, and where exterior gypsum board edges are not covered by applied moldings or indicated to receive trim with face flanges covered with joint compound.
- E. Install plastic edge trim or pre-finished internal corners where indicated on wall panels at junctures with ceilings.
- F. Install control joints where indicated.

3.7 GYPSUM SHEATHING INSTALLATION

- A. Install gypsum sheathing in accordance with the manufacturer's instructions, GA-201, GA-216 and GA-600.
 - 1. Install single layer gypsum sheathing horizontally, with edges butted tight, tongue up with attachment to firm bearing.
- B. Provide construction control joints at a maximum of 30 feet o.c., at inside corners and at all intersections.
 - 1. Install sheathing with 1/4" space between the edge of the sheathing and adjacent walls, beams, columns, and fascia construction.
- C. Install screws at 12" o.c., maximum, to secure sheathing to the supporting substrate.
- D. Protect all exposed gypsum cores at perimeter edges and penetrations by covering the core with trim.
- E. Place edge trim where sheathing abuts dissimilar materials. Use longest practical lengths.

3.8 JOINT TREATMENT

- A. Reinforce interior and exterior corners at ceiling and wall surfaces.
- B. Apply 2" wide coated glass fiber tape at cement backer board corner joints.
- C. Install control joints the full height of partitions consistent with the lines of building spaces, with 1/4" gap between panels. Apply sealant at the back of the joint and a control joint accessory at the face.
- D. Apply 3" wide initial coating of joint compound, press tape firmly into the compound; wipe off excess compound. Apply a second coat of joint compound with tools of sufficient

width to extend beyond the joint center approximately 4". Draw the joint compound down to a smooth even plane.

- E. Sand after the second and third applications of joint compound. Do not raise the nap of the paper when sanding.
- F. Feather coats onto adjoining surfaces with a maximum camber of 1/32" in 12".
- G. After drying or setting, sand or sponge joints, edges, and corners, eliminating high spots and excessive compound to produce a smooth finish surface.
- H. Prepare surfaces to receive subsequent finishes to a height of 6" above the finished ceiling.

3.9 GYPSUM BOARD FINISHING

A. General:

- 1. Refer to Sections on painting, coatings and interior design documents for decorative finishes to be applied to gypsum board work. Apply treatment at gypsum board joints (both directions), flanges of trim accessories, penetrations, fastener heads, surface defects and elsewhere as required to prepare the work for decoration.
- 2. Prefill open joints and rounded or beveled edges, if any; use the type of compound recommended by the manufacturer.
- 3. Apply joint tape at joints between gypsum boards except where a trim accessory is indicated. Apply joint compound in three (3) coats (not including prefill of openings in the base); sand between the last two coats and after the last coat.

B. Skim Coat: Wherever gypsum board is to receive eggshell, semigloss or gloss paint finish, apply a thin skim coat of joint compound over the entire gypsum board surface, after the three-coat joint and fastener treatment has been completed and is dry.

C. Base for Acoustical Tile: Where gypsum board is indicated as the base for adhesively-applied acoustical tile, install tape and two (2) coats compound treatment, without sanding.

D. Paperless Tile Backing Board or Cement Board Base for Ceramic Tile:

- 1. Comply with recommendations of the backing board manufacturer for the treatment of joints behind ceramic tile.
- 2. In areas to be tiled, treat fastener heads with water-resistant joint compound. Fill tapered edges in gypsum panels with water-resistant joint compound, embed joint tape firmly and wipe off excess compound; follow immediately with a second coat of water-resistant joint compound over the taping coat; do not crown the joint. Fold and embed tape in all interior corners to form true angles.
- 3. In areas not to be tiled, treat fastener heads and embed tape as indicated above using water-resistant joint compound but finish with two (2) coats of the joint compound used for regular gypsum board work.

3.10 GYPSUM BOARD FINISH LEVELS

- A. Apply finish in accordance with the manufacturer's published instructions and GA-214

Finish Levels.

1. Level 1: All joints and interior angles shall have tape embedded in joint compound. Surfaces shall be free of excess joint compound. Tool marks and ridges are acceptable.
 - a. Application: In plenum areas above ceilings, in attics, in mechanical rooms, in areas where the assembly is generally concealed and in other areas not normally exposed to view. Accessories not required unless shown or required by the rating. Where a fire-resistance rating is required for the gypsum board assembly, the details of construction shall be in accordance with reports of the fire tests of assemblies that have met the fire-rating requirement.
2. Level 2: Embed tape and apply a separate first coat of joint compound to the tape, fasteners and trim flanges.
 - a. Application: Where panels are the substrate for tile.
3. Level 3: Embed tape and apply separate first and fill coats of joint compound to the tape, fasteners and trim flanges.
 - a. Application: At surfaces scheduled to receive medium- or heavy-textured finishes or heavy wall coverings before painting.
4. Level 4: Embed tape and apply separate first, fill and finish coats of joint compound to the tape, fasteners and trim flanges.
 - a. Application: At panel surfaces in mechanical and electrical spaces not exposed to public view.
5. Level 5: Embed tape in joint compound at all joints and interior angles and apply three (3) separate coats of joint compound over all joints, angles, fastener heads and accessories. A thin skim coat of joint compound or a material manufactured especially for this purpose shall be applied to the entire surface. The surface shall be smooth and free of tool marks and ridges. Prepared surfaces shall be coated with a primer / sealer prior to the application of finish paint. Refer to Specification Section 09900 - Painting.
 - a. Application: For use where gloss, semi-gloss, enamel and non-textured flat paints are specified, or where severe lighting conditions occur. Generally in all public areas exposed to view, except where noted otherwise, to provide a uniform surface and minimize the possibility of joints telegraphing and fasteners showing.

3.11 CONSTRUCTION

A. Interface with Other Work:

1. Coordinate the installation of firestopping materials specified in Section 07840 at penetrations through fire-resistive rated gypsum board walls, partitions and ceilings.
2. Coordinate the installation of joint sealers specified in Section 07900 at penetrations of non-fire-resistive rated walls, partitions and ceilings.

3.12 PROTECTION

- A. Protect other work and finishes from damage by the gypsum board work.
- B. Provide protection and maintain conditions which will ensure that the gypsum board work will be without damage and deterioration at the time of Substantial Completion.

3.13 FIELD QUALITY CONTROL

- A. Section 01450 - Quality Control: Field inspection.
- B. Inspect the installed work for alignment, attachment to the structure, backing plates and openings for installations by other trades.

3.14 CLEANING

- A. Section 01700 - Execution Requirements: Cleaning the installed work.
- B. Clean and remove all debris from the Project Site.
- C. Leave the entire Project clean.

END OF SECTION

SECTION 09300

TILE

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Floor tile and base tile.
2. Quarry floor and base tile.
3. Ceramic wall tile, shapes and trim units.
4. Porcelain floor tile.
5. Stair tile.
6. Marble threshold.
7. Mortar and grout.
8. Sealer.
9. Metal edge strips.
10. Waterproofing membrane.
11. Tile feature strips and patterns set in paving.

B. Related Documents: The Contract Documents, as defined in Section 01010 - Summary of Work, apply to the work of this Section. Additional requirements and information necessary to complete the work of this Section may be found in other Documents.

C. Related Sections:

1. Section 03300 - Cast-In-Place Concrete: Substrate for application.
2. Section 04230 - Reinforced Unit Masonry: Substrate for application.
3. Section 09250 - Gypsum Board: Substrate for application.
4. Section 07900 - Joint Sealers: Sealant at tile penetrations and dissimilar materials.

1.2 DESCRIPTION OF WORK

- A. The extent of the tile work is indicated on the Drawings and Schedules and as specified herein, and includes providing and installing floor, base and wall units made from clay and other ceramic materials, marble thresholds, waterproofing membrane under tile, metal edge strips, mortar and grout, sealing of expansion and other joints, and feature strips, patterns and accent tiles.

- B. Definition: The term *tile* includes ceramic surfacing units and trim made from clay or other ceramic materials.
- C. Joint sealants are specified in Section 07900 - Joint Sealers.

1.3 REFERENCES

- A. The publications listed below form a part of this Specification to the extent referenced. Publications are referred to in the text by basic designation only.
- B. American National Standards Institute (ANSI):
 - 1. ANSI A108.4 - Installation of Ceramic Tile with Organic Adhesives or Water Cleanable Tile-Setting Epoxy Adhesive.
 - 2. ANSI A108.5 - Installation of Ceramic Tile with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar.
 - 3. ANSI A108.10 - Installation of Grout in Tilework.
 - 4. ANSI A118.1 - Specifications for Dry-Set Portland Cement Mortar.
 - 5. ANSI A118.4 - Specifications for Latex-Portland Cement Mortar.
 - 6. ANSI A118.6 - Specifications for Standard Cement Grouts for Tile Installation.
 - 7. ANSI A136.1 - Organic Adhesives for Latex Portland Cement Mortar.
 - 8. ANSI A137.1 - Specification for Ceramic Tile.
- C. American Society for Testing and Materials (ASTM):
 - 1. ASTM C 373 - Test Method for Water Absorption, Bulk Density, Apparent Porosity, and Apparent Specific Gravity of Fired Whiteware Products.
 - 2. ASTM C 482 - Test Method for Bond Strength of Ceramic Tile to Portland Cement Plaster.
 - 3. ASTM C 485 - Test Method for Measuring Warpage of Ceramic Tile.
 - 4. ASTM C 499 - Test Method for Facial Dimensions and Thickness of Flat, Rectangular Ceramic Wall and Floor Tile.
 - 5. ASTM C 501 - Test Method for Relative Resistance to Wear of Unglazed Ceramic Tile by the Taber Abraser.
 - 6. ASTM C 502 - Test Method for Wedging of Flat, Rectangular Ceramic Wall and Floor Tile.
 - 7. ASTM C 648 - Test Method for Breaking Strength of Ceramic Tile.
 - 8. ASTM C 650 - Test Method for Resistance of Ceramic Tile to Chemical Substances.
 - 9. ASTM C 1028 - Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter

Method.

D. Americans with Disabilities Act Accessibility Guidelines (ADAAG):

1. Accessibility Guidelines for Buildings and Facilities.

E. Tile Council of America, Inc. (TCA):

1. Handbook for Ceramic Tile Installation.

1.4 SUBMITTALS

A. Section 01330 - Submittal Procedures: Procedures for submittals.

1. Product Data: Manufacturer's technical information and installation instructions for the materials required.
2. Shop Drawings: Layout drawings and details for proper installation of the work.
3. Samples:
 - a. Initial Selection:
 - 1) Manufacturer's color charts of actual tiles or sections of tile showing the full range of colors, textures and patterns available for each type of tile indicated.
 - 2) Grout and accessories requiring color selection.
 - b. Final Selection:
 - 1) Full size samples of each type of tile and each color and texture selected.
 - 2) Full size samples of each type of trim, accessory, and for each color.
 - 3) Marble thresholds, 6" long.
 - 4) Stair tread and nosing, full size.
 - 5) Metal edge strip, 6" long.
4. Mock up:
 - a. Waterproof membrane.
 - b. 30 SF of tile for pattern and joint width conformation.
 - c. Expansion and control joints and metal edge strip installations.
5. Assurance / Control Submittals:
 - a. Manufacturer's certificate that the products meet or exceed the specified requirements.

- b. Documentation of experience indicating compliance with the specified qualifications requirements.

B. Section 01780 - Closeout Submittals: Procedures for closeout submittals.

- 1. Extra Products: Provide extra products as specified herein below.

1.5 COORDINATION

A. Pre-Installation Meeting: Convene a Pre-Installation Meeting at the Project Site prior to beginning the work of this Section.

- 1. Require attendance of the Contractor, Owner's representative, Architect, and all impacted trades.
- 2. Review coordination and environmental controls required for proper installation and ambient conditions in the areas to receive tile work.
- 3. Review preparation and installation procedures, and the coordination and scheduling required with the related work.

1.6 QUALITY ASSURANCE

A. Qualifications:

- 1. Manufacturer: Company specializing in manufacturing the products specified with a minimum of five (5) years documented experience.
- 2. Installer: Company experienced in performing the work of this Section with a minimum of five (5) years documented experience.

B. Provide materials from a single source for each type and color of tile, grout, setting material and accessory.

1.7 DELIVERY, STORAGE AND HANDLING

A. Section 01600 - Product Requirements: Transport, handle, store, and protect the products.

B. Deliver tile and setting material to the Project Site in the manufacturer's original, unopened cartons, bearing the name of the manufacturer, the certification mark of the Tile Council of America, and ready for use.

C. Store materials under cover in a manner to prevent damage and contamination.

D. Prevent damage and contamination of materials by water, foreign matter and other causes.

1.8 JOB CONDITIONS

A. Environmental Requirements:

- 1. Maintain adequate lighting for the installation of tile work. Lighting level shall be equal to permanent lighting level designed for areas receiving the tile work.
- 2. Maintain sufficient ventilation in areas where the work of this Section is being performed to allow the ceramic tile to properly set.

3. Maintain environmental conditions and protect the work during and after installation to comply with the referenced standards and the manufacturer's printed recommendations.

1.9 MAINTENANCE

- A. Section 01780 - Closeout Submittals: Procedures for closeout submittals.
- B. Extra Products: Upon completion of the installation, deliver to the Owner's representative, replacement materials from the same production run as the installed materials; 2% of the total amount of each size, style and color.

PART 2 PRODUCTS

2.1 GENERAL

- A. ANSI Standard For Ceramic Tile: Comply with ANSI A137.1 for the types and grades of tile indicated.
- B. ANSI Standard For Tile Installation Materials: Comply with the ANSI Standard referenced with the installation products and materials indicated.
- C. Colors, Texture and Patterns: For tile and other products requiring the selection of colors, surface textures and other appearance characteristics, provide products to match the characteristics indicated or, if not otherwise indicated, as selected from the manufacturer's standards.
- D. Mounting:
 1. Where factory-mounted tile is required, provide back or edge mounted tile assemblies as standard with the manufacturer, unless another mounting method is indicated.
 2. Where tile is indicated for installation in pools, fountains or at exterior or in wet areas, do not use back or edge mounted tile assemblies unless the tile manufacturer specifies that such type of mounting is suitable for that kind of use and has been successfully used on other projects.
- E. Trim Units: Provide tile trim units to match the characteristics of the adjoining flat tile and to comply with the following requirements:
 1. Size: As indicated, coordinate with the sizes and coursing of the adjoining flat tiles, where applicable.
 2. Shapes: As follows, selected from the manufacturer's standard shapes:
 - a. Base for Portland Cement Mortar Installations: Coved.
 - b. Base for Thinset Mortar Installations: Coved.
 - c. Wainscot Cap for Thinset Mortar Installations: Surface bullnose.
 - d. External Corners for Thinset Installations: Surface bullnose.
 - e. Internal Corners: Internal cove with cap angle designed to member with

the stretcher shapes.

f. Stair tread with nosing.

- F. Coefficient of Friction (COF): ADAAG recommends a 0.6 or higher coefficient or higher in dry conditions to meet ADAAG requirements. Typically the COF is indicated in a wet and a dry number under those conditions for the average of the test results. In a situation where there is a potential for water, the tile should meet the COF of 0.6 or higher under wet conditions. ADAAG recommendation for COF on a ramped surface is 0.8. Static coefficient of friction tests are performed according to ASTM C 1028.

2.2 MANUFACTURERS

- A. Subject to compliance with the Project requirements, manufacturer's offering products which may be incorporated into the work include the following:

1. Tile:

- a. American Olean.
- b. Dal-Tile Corp.
- c. Crossville Inc.

2. Mortar and Grout:

- a. Hydroment by Bostik.
- b. LATICRETE.
- c. MAPEI, Corp.

3. Latex-Portland Cement Mortar and Grout:

- a. ProSpec (formerly Bonsal).
- b. Hydroment by Bostik.
- c. LATICRETE.
- d. Summitville Tiles, Inc.

- B. Section 01600 - Product Requirements: Product Options: Substitutions permitted.

2.3 TILE, GENERAL

- A. Tile: ANSI A137.1.

- 1. Stain Resistance, CTI Stain Test: Unstainable.
- 2. Surface Water Absorption, ASTM C 373: 0.5% Max.
- 3. Abrasive Wear, ASTM C 501: 100.
- 4. Breaking Strength, ASTM C 648: 250 lbs.

5. Bond Strength, ASTM C 482: 50 psi.
6. Facial Dimension (range), ASTM C 499: 1.5% Max.
7. Range of Thickness, ASTM C 499: 0.04" Max.
8. Warpage (Diagonal), ASTM C 485: ∇ 0.75% Max.
9. Wedging, ASTM C 502: 1% Max.
10. Chemical Resistance, ASTM C 650: Unaffected.
11. Coefficient of Friction, ASTM C 1028:
 - a. Dry > 0.7.
 - b. Wet > 0.6.
12. Scratch Hardness, Moh's Scale: \geq 8.

2.4 QUARRY TILE

- A. Dal-Tile, quarry tile, 4" x 8", or size and shape as selected.
- B. Color as selected.

2.5 CERAMIC TILE

- A. American Olean, 2" x 2", ceramic mosaic floor tile.
- B. American Olean, 4" x 4", ceramic glazed wall tile.
- C. Color as selected. Accent tile shall be a contrasting color to the field tile color.

2.6 PORCELAIN TILE.

- A. 20" x 20" or size and shape as selected, glazed floor tile by Dal-Tile.
- B. 6" x 6" or as indicated unglazed floor tile at the exterior by Dal-Tile.
- C. Color as selected.
 1. Accent tiles shall be a contrasting color to the field tile color.

2.7 MARBLE THRESHOLD

- A. Alabama Marble Tile Co., Inc.
- B. Dal-Tile.
- C. Thornton Tile and Marble, Inc.
- D. Size, shape and color as shown, or as selected.
- E. Section 01600 - Product Requirements: Product Options: Substitutions permitted.

2.8 WATERPROOF MEMBRANE

- A. Liquid Applied Membrane: Thin, load-bearing, flexible waterproofing system, self-curing liquid rubber polymer, cold-applied with integral reinforcing fabric to form a seamless membrane.
- B. LATICRETE #9235 Waterproofing Membrane by LATICRETE or approved equal.

2.9 MISCELLANEOUS MATERIALS

- A. Metal Edge Strip: Brass or stainless steel, as selected; 1/8" wide at the top edge with integral provision for anchorage to mortar bed or substrate, unless otherwise indicated. Style to be as indicated, or appropriate to the use; as manufactured by Schluter Systems, or approved equal. Style to be as appropriate for the use intended
- B. Wall Access Panel: Schluter-REMA by Schluter Systems or approved equal.
- C. Adhesives: Water-resistant organic; ANSI A136.1.
- D. Water: Clean and potable.
- E. Reinforcing Mesh: 2" x 2", 16 gauge, galvanized, welded wire.
- F. Tile / Grout Sealer: Non-flammable, water-soluble, penetrating methyl silicone clear solution, stain-resistant, matte sealer.
- G. Tile, Grout and Masonry Cleaner: As approved by the tile, grout and sealer manufacturers.

2.10 MORTAR AND GROUT MIX

- A. Mix and proportion mortar and grout materials in strict accordance with the manufacturer's instructions.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01700 - Execution Requirements: Verification of existing conditions before starting the work.
- B. Verification of Conditions: Verify that field measurements, surfaces, substrates slope to drains and conditions are as required, and ready to receive the work.
 - 1. Examine areas to be covered for surface contamination which requires correction before work begins.
- C. Report in writing, prevailing conditions that will adversely affect satisfactory execution of the work of this Section. Do not proceed with the work until the unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Do not use sealers or curing compounds on concrete slabs to be covered with tile. Slabs shall be covered and wet cured for a minimum of seven (7) days. Surfaces to receive tile

installed by the thin set method shall have a wood float finish, be true to within 1/8" in 10 feet, and pitched to drains where required.

- B. Areas requiring fill, patching or leveling shall be prepared by the General Contractor. Do not use gypsum or asphalt leveling compounds.
- C. Seal substrate surface cracks with filler.
- D. Clean substrate surfaces to remove dust, dirt, mortar, etc.
- E. Surfaces to be covered shall be left clean, free of dust, plaster, sealer or curing compounds and form oil. Any such contamination shall be removed by the responsible trade.
- F. Prepare substrate surfaces for adhesive installation in accordance with adhesive manufacturer's instructions.
- G. Protect surrounding work from damage or disfiguration.
- H. Vacuum clean existing substrate and damp clean.
- I. Wet down or wash and remove excess water from dry or dusty concrete or masonry surfaces just prior to the application of pavers.

3.3 INSTALLATION

- A. Installation Methods: Install ceramic tile in accordance with the TCA, A Handbook for Ceramic Tile Installation, ANSI A108.4, and ANSI A108.5.
- B. Waterproof Membrane: Install waterproof membrane for all elevated slab floors exposed to water or wind blown rain. For example, install at elevated slabs where Showers, Baths, Kitchens, washing and other wet activities occur; and at terraces and roofs over interior spaces.
 - 1. Contractor shall obtain architect or owner's representative approval of membrane prior to proceeding with the work.
- C. Installation by Thick Bed Method:
 - 1. Spread mortar to approximately one-half the desired bed thickness, then place reinforcing mesh. Lap mesh 3", minimum, and place additional mortar over the mesh to bring the bed to the desired thickness. Rod and compact mortar with a steel trowel. The setting bed shall be, minimum, 1-1/2" thick.
 - a. Note: The setting bed may be reduced to a nominal 1" thickness and the reinforcing omitted when bonding directly to concrete slabs or a load-bearing membrane.
 - 2. Before placing tile on a green or wet screed bed, apply a slurry of bond coat to the mortar bed using a flat trowel.
 - 3. Tile shall be placed in the wet slurry coat before the surface dries, or apply a slurry bond coat applied to the back of each tile just prior to placing the tile on the bed.
 - 4. Before the mortar takes initial set, place and beat each tile into place with a wooden block or rubber mallet to embed it and to even the surface.

5. Maintain uniform joint widths.
 6. The surface shall be pitched to drains, where indicated, or as required.
 7. On hardened screed or mortar bed, tiles may be installed by the thin set method if proper tolerances are provided.
- D. Installation by Thin Set Method:
1. Apply mortar with a notched trowel using a scraping motion to work the material into good contact with the substrate to be covered. A trowel having notches approximately 1/4" x 3/8" is recommended for pavers. Apply only as much mortar as can be covered within 30 minutes, or while the surface is still tacky.
 2. Trowel a small quantity of mortar onto the back of each piece of tile. Set the tile in place and tap with a small beating block to ensure 100% full bedding and a true surface.
 3. Align tile to provide uniform joints and then allow to set until firm.
 4. Clean excess mortar from the surface of tiles with a wet cloth or sponge while the mortar is still fresh.
- E. Mortar:
1. Machine Mixing: Mortar mixer shall be the rotating blade type. Place mixing liquid in the mixer, start the machine and add sand, then cement. Mix only long enough to wet out the batch. Stop the mixer and dump the mortar promptly. Do not overmix.
 2. Hand Mixing: Pre-mix the dry ingredients (sand and cement). Place mixing liquid in a clean container or mixing box, add the dry materials and mix. Adjust the amount of liquid or dry materials to obtain the proper consistency.
- F. Joints: 1/8" width for tiles less than 12"; 3/16" for tiles to 25"; 1/4" for quarry tile.
- G. Expansion and Control Joints:
1. Existing joints in concrete subfloors must be carried through the tile and shall conform to the architectural details.
 2. Expansion joints shall be installed where tile abuts restraining surfaces, such as perimeter walls, curbs, columns, corners, etc.
 3. Interior installations shall have expansion joints spaced a maximum of 30 feet o.c. in both directions. Exterior areas shall have expansion joints spaced a maximum of 15' in both directions. Expansion joints shall be raked out or cut through the setting bed to the supporting slab or structure below.
- H. Edge Strips: Install at transitions to other flooring materials, for control joints, or as indicated.
- I. Grouting and Pointing Joints:
1. Joints shall be grouted or pointed with Latex-Portland Cement Grout or Epoxy Grout.

2. Joints shall be packed full and free of voids and pits. Tool or rake as specified.
 3. Excess mortar shall be cleaned from the surface of tiles with water and a damp sponge as the work progresses, while the mortar is fresh and before it hardens.
- J. Provide a slope in tile setting material as required to slope surfaces at floor transitions and floor drains.
 - K. Lay tile to the pattern indicated. Do not interrupt the tile pattern through wall openings.
 - L. Cut and fit tile to penetrations through the tile leaving a sealant joint space. Form corners and bases neatly. Align floor, base, and wall joints.
 - M. Place tile joints uniform in width, subject to variance in the tolerance allowed in the tile size. Make joints watertight, without voids, cracks, excess mortar or excess grout.
 - N. Sound the tile after setting. Replace hollow sounding units.
 - O. Expansion, Contraction, Control Joints and Separation: Install tile and a pair of metal edge strips in accordance with the applicable TCA Handbook methods. Keep joints free of adhesive, mortar, and grout; seal. Refer to Section 07900 - Joint Sealers.
 - P. Allow tile to set for a minimum of 48 hours prior to grouting.
 - Q. Grout tile joints in accordance with ANSI A108.10.
 - R. Caulk plumbing penetrations thru floor tiles and plumbing and electrical penetrations thru wall tiles.
 - S. Apply sealant to the junction of tile and dissimilar materials and at the junction of dissimilar planes as specified in Section 07900 - Joint Sealers. Apply in strict accordance with the manufacturer's instructions.
 - T. Install metal edge strips at transitions to other flooring materials, and where tile edges are exposed. Lock solidly into the setting bed.

3.4 INSTALLATION SCHEDULE

- A. Paver Tiles: Install by thick (mortar) bed method. Place waterproof membrane under exterior pavers with occupiable space below. Apply sealer per manufacturer's instructions.
- B. Quarry Tiles: Install by thin set on hardened thick bed method at Freezer floors; thick bed method at Kitchens; thin set at Bars. Place waterproof membrane at Dishwashing, garbage areas and exterior spaces over structural slabs and other wet areas.
- C. Ceramic Tiles: Install by thin set or thick (mortar) bed method. Place waterproofing membrane at Baths, Shower Rooms, areas on structural slabs subject to wind blown water and other wet areas.

3.5 TOLERANCE

- A. Maintain an even and flat plane with variation not to exceed 1/8" in 8 feet. Adjacent tile shall be flush with no protruding or recessed tile edges. The tiles shall be cut neatly and fit to built-in work, penetrations, corners, changes in elevations and other variations.

3.6 FIELD QUALITY CONTROL

- A. Section 01450 - Quality Control: Field inspection.
- B. Inspect installations for joint widths, alignment, edge treatments, sound bonding to the substrates.

3.7 CLEANING

- A. Section 01700 - Execution Requirements: Cleaning the installed work.
- B. Upon the completion of placement and grouting, clean all ceramic tile surfaces free of foreign matter.
- C. Remove excess mortar and grout from floor, base, and wall surfaces without damaging the surfaces.
- D. Clean unglazed tiles with acid solutions only when permitted by the tile and grout manufacturer's printed instructions, but not sooner than fourteen (14) days after installation. Protect metal surfaces, cast iron and vitreous plumbing fixtures from the effects of acid cleaning. Flush surfaces with clean water before and after cleaning.
- E. Clean tile only with cleaning materials recommended by tile and grout manufacturers.
- F. Remove hardened grout film or haze using Laticrete TC-500, Grout and Masonry Cleaner.
 - 1. Saturate grout joints with water, then dampen the surface with the cleaner.
 - 2. Allow to soak 15 - 30 minutes and then use a power scrubbing machine with a coarse texture nylon pad to remove the grout film.
- G. Clean unglazed pavers by sprinkling fine sand (30 - 60 mesh) over the surface before scrubbing.
 - 1. Caution: Do not use sand on soft glazed tiles.
- H. Do not use acid type cleaners on colored grout joints.
- I. Leave finished installations clean and free of cracked, chipped, broken, un-bonded and otherwise defective work.

3.8 PROTECTION

- A. When recommended by the tile manufacturer, apply a protective coat of neutral protective cleaner to the completed floor and wall tiles.
- B. Protect installed tile work with kraft paper or other heavy covering to prevent staining, damage and wear.
- C. Prohibit foot and wheel traffic from tiled floors for at least seven (7) days after grouting has been completed.
- D. Immediately before final inspection, remove the protective coverings and rinse the neutral cleaner from the tile surfaces.

- E. Before final inspection, remove protective coverings and rinse neutral cleaner from the tile surfaces.

END OF SECTION

SECTION 09510
ACOUSTICAL CEILINGS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Suspended metal grid ceiling system.
2. Perimeter trim.
3. Acoustical ceiling panels, suspended.
4. Acoustical ceiling panels, adhered to substrate.

B. Related Documents: The Contract Documents, as defined in Section 01010 - Summary of Work, apply to the work of this Section. Additional requirements and information necessary to complete the work of this Section may be found in other Documents.

C. Related Sections:

1. Section 07900 - Joint Sealers: Caulking of joints between perimeter trim and vertical surfaces.
2. Section 15850 - Air Outlets and Inlets: Air diffusion devices in the ceiling system.
3. Section 16510 - Interior Luminaires: Light fixtures attached to the ceiling system.

1.2 DESCRIPTION OF WORK

- A. The extent of acoustical ceilings work is indicated on the Drawings and as specified herein, and includes providing and installing suspended metal ceiling grid, perimeter trim, acoustical panels, hanger devices, sealants and accessories for complete adhered and suspended ceiling systems.

1.3 REFERENCES

- A. The publications listed below form a part of this Specification to the extent referenced. Publications are referred to in the text by basic designation only.

B. American Society for Testing and Materials (ASTM):

1. ASTM A 641 - Specification for Zinc-Coated (Galvanized Carbon Steel Wire.
2. ASTM C 635 - Specification for Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
3. ASTM C 636 - Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels.
4. ASTM D 1779 - Specification for Adhesive for Acoustical Materials.

5. ASTM E 84 - Test Method for Surface Burning Characteristics of Building Materials.
6. ASTM E 400 - Test Method for Analysis of Ores, Minerals, and Rocks by the Fire Assay Preconcentration Optical Emission Spectroscopy.
7. ASTM E 413 - Classification for Rating Sound Insulation.
8. ASTM E 580 - Practice for Application of Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels in Areas Requiring Seismic Restraint.
9. ASTM E 795 - Practices for Mounting Test Specimens During Sound Absorption Tests.
10. ASTM E 1264 - Classification for Acoustical Ceiling Products.

C. International Building Code (IBC):

1. Applicable edition in the Project jurisdiction.

1.4 SUBMITTALS

A. Section 01330 - Submittal Procedures: Procedures for submittals.

1. Product Data: Manufacturer's product specifications and installation instructions for each suspension system and type of seismic brace, and each acoustical ceiling material required; certified laboratory test reports and other data as necessary to show compliance with these Specifications.
2. Shop Drawings: Four (4) sets of accurate layout drawings based on actual field measurements. Indicate all mechanical and electrical items, access panels and other items to be installed in the finished ceiling including seismic bracing locations.
3. Samples:
 - a. Two 6" x 6" square samples of each acoustical unit required, showing the full range of exposed pattern, texture and color to be expected in the finished work.
 - b. Two 12" long samples of each exposed runner.
 - c. Two 12" long samples of each edge molding.
4. Assurance / Control Submittals.
 - a. Manufacturer's certificate that the products meet or exceed the specified requirements.
 - b. Documentation of experience indicating compliance with the specified qualifications requirements.
5. Maintenance Information: Manufacturer's recommendations for cleaning and refinishing acoustical units, including precautions against materials and methods which may be detrimental to finishes and acoustical performance.

B. Section 01780 - Closeout Submittals: Procedures for closeout submittals.

1. Warranty: Submit a written special Warranty with forms completed in the name of the Owner and registered with the manufacturer.

1.5 COORDINATION

- A. Coordinate layout and installation of the suspension system components and acoustical ceilings with other work supported by or penetrating through the ceilings, including light fixtures, HVAC equipment, fire-suppression system components, and partition systems, if any.
- B. Furnish layouts for inserts, clips and other supports required to be installed by other trades for support of acoustical ceilings.
 1. Furnish concrete inserts, steel deck hanger clips and similar devices to other trades for installation well in advance of the time needed for the coordination of other work.
- C. Interface with Other Work:
 1. Schedule the installation of acoustical units after all interior wet work has been completed.
 2. Install after all major above ceiling work has been completed.
 3. Coordinate the location of hangers with other work.
 4. Do not install acoustical units until after the building has been enclosed, dust generating activities have ceased, overhead work is complete, tested and approved and the air conditioning system is operational.

1.6 QUALITY ASSURANCE

- A. Qualifications:
 1. Manufacturer: Company specializing in manufacturing the products specified with a minimum of five (5) years documented experience.
 2. Installer: Company experienced in performing the work of this Section with a minimum of five (5) years documented experience; acceptable to the manufacturer as shown by a current written statement from the suspension system manufacturer.
- C. Fire Performance Characteristics: Provide acoustical ceiling components identical to those tested for the following fire performance characteristics, according to the ASTM test method indicated, by UL or other testing and inspecting agency acceptable to authorities having jurisdiction. Identify the acoustical ceiling components with appropriate marking by the testing and inspecting agency.
 1. Surface Burning characteristics: Tested per ASTM E 84.
 - a. Flame Spread: 25 or less.
 - b. Smoke Developed: 50 or less.
- D. Fire Resistance Ratings: As indicated by reference to the design designation in UL AFire Resistance Directory® or AFM Approval Guide® for floor, roof or beam assemblies in which

type, form, pattern, grade, noise reduction coefficient (NRC), ceiling attenuation class (CAC), light reflectance (LR), edge detail, and joint detail, if any.

1. Mounting Method for Measuring NRC: No. 7 (mechanically mounted on special metal support), ASTM E 400 mounting per ASTM E 795.
- B. Sound Attenuation Performance:
1. Provide acoustical ceiling units with ratings for ceiling attenuation class (CAC) values of the range indicated as determined in accordance with ASTM E 413.
 2. Provide acoustical ceiling units with ratings for ceiling sound attenuation class (STC) of the range indicated as determined according to AMA 1-II ^ACeiling Sound Transmission Test by Two-Room Method[®] with ceilings continuous at partitions and supported by a metal suspension system of a type appropriate for ceiling units of the configuration indicated (concealed for tile, exposed for panels).
- C. Colors, Textures, and Patterns: Provide products to match the appearance characteristics indicated or, if not otherwise indicated, as selected from the manufacturer's standard colors, surface textures, and patterns available for acoustical ceiling units and exposed metal suspension system members of the quality designated.

2.6 ACOUSTICAL CEILING UNITS

- A. General: The following product type numbers in parenthesis are those used on the Drawings.
- B. (ACT-1): Mineral fiber, fire-resistant, Class A: flame spread 25 or less per ASTM E 1264, R-1.6, weight 1.0 lbs / sf, factory-applied vinyl latex paint finish, medium texture, non-directional, NRC .50 -.60, CAC 30 - 40, LR 0.80, angled tegular edge, 24" x 24" x 5/8". Color as selected.
1. Cortega, #816 by Armstrong.
 2. Sandrift by USG.
 3. Natural Fissured by Celotex.
 4. Section 01600 - Product Requirements: Product Options: Substitutions permitted.
- C. (ACT-2): Mineral fiber, fire-resistant, Class A: flame spread 25 or less per ASTM E 1264, R-1.6, weight 0.9 lbs / sf, factory-applied vinyl latex paint finish, medium texture, non-directional, NRC .45-.55, CAC 30 - 40, LR 0.80, beveled edge, for concealed spline installations, 12" x 12" x 5/8". Color as selected.
1. Cortega, #745 by Armstrong.
 2. Section 01600 - Product Requirements: Product Options: Substitutions permitted.
- D. (ACT-3): Ceramic and mineral fabric composite, fire resistant, Class A: flame spread 25 or less per ASTM E 1264, R-1.4, weight 1.40 lbs / sf, scrubbable factory-applied vinyl plastic paint, sag resistant, fine fissured, perforated, NRC .50 -.60, CAC 35 - 39, LR 0.80, square edge, lay-in, 24" x 24" x 5/8". Color white.
1. Ceramaguard #607 by Armstrong.
 2. Section 01600 - Product Requirements: Product Options: Substitutions permitted.

2.7 MISCELLANEOUS MATERIALS

- A. Tile Adhesive: Type recommended by the tile manufacturer, bearing UL label of Class 0 - 25 flame spread; comply with ASTM D 1779.
- B. Tile Fasteners: Cadmium plated, type recommended by the tile manufacturer, length for not less than 1/2" penetration of substrate.
- C. Acoustical Sealant: Resilient, non-staining, non-shrinking, non-hardening, non-skinning, non-drying, non-sag sealant intended for interior sealing of concealed construction joints.
 - 1. Tremco Acoustical sealant by Tremco Global Sealants.
 - 2. USG Acoustical Sealant by United States Gypsum Co.
 - 3. Chem-Calk 600 by Bostik.
 - 4. Section 01600 - Product Requirements: Product Options: Substitutions permitted.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01700 - Execution Requirements: Verification of existing conditions before starting the work.
- B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive the work.
 - 1. Verify that the layout of hangers will not interfere with other work.
- C. Report, in writing, prevailing conditions that will adversely affect satisfactory execution of the work of this Section. Do not proceed with the work until the unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Layout:
 - 1. Locate the system on room axes according to the Reflected Ceiling Plan, as indicated on the Drawings, or establish layout to balance the border tile widths at opposite edges of each ceiling. Avoid the use of less than 1/2 width units at borders.
 - 2. Where the acoustical ceiling continues thru a wall opening, continue the established pattern without interruption. One row of panels may be cut to less than full size, if necessary, to establish the pattern in the adjoining room.
- B. Substrate Testing: Before installing adhesively applied tile on wet-placed substrates such as cast-in-place concrete or plaster, test and verify that the moisture level is below the tile manufacturer's recommended limits.
- C. Prior to installation, store acoustical units for 24 hours, minimum, at the same temperature and relative humidity as the space where the materials are to be installed.

3.3 INSTALLATION - GENERAL

- A. Install materials in accordance with the manufacturer's printed instructions, ASTM C 635 and ASTM C 636, in compliance with governing regulations, fire-resistance rating requirements as indicated, and industry standards applicable to the work.

3.4 INSTALLATION - CEILING SUSPENSION SYSTEM

A. General:

1. Install the suspension system with hangers supported only from the building structural members. Locate hangers not less than 6" from each end and spaced at 4'-0" o.c. along each carrying channel or direct-hung runner, unless otherwise indicated.
2. Install metal hanger tabs and clips attached to the structure above where required for the attachment of suspension wires.
3. Secure wire hangers by looping and wire-tying, either directly to the structure or to inserts, eye-screws, or other devices which are secure, appropriate for the substrate, and which will not deteriorate or fail with age or temperature change.
4. Install hangers plumb and free from contact with insulation, ductwork and other objects within the ceiling plenum which are not part of the supporting structure or ceiling suspension system. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance. Splay hangers only where required to miss obstructions and offset resulting horizontal force by bracing. Where carrying members are spliced, avoid visible displacement of the face plane of adjacent members.
5. Install edge molding of the type indicated, at the perimeter of acoustical ceiling areas, at the intersection of the ceiling and vertical surfaces and at locations where necessary to conceal the edges of acoustical units. Use the longest practical lengths. Provide edge molding at junctions with other interruptions. Secure at 16" o.c., maximum.
6. Screw-attach moldings to the substrate at intervals not over 16" o.c. and not more than 3" from ends; level with the ceiling suspension system. Miter corners accurately and connect securely.
7. Rivet cross tee's to the edge molding at 48" o.c., typical.
8. In areas larger than 144 sq. ft., rivet the cross tees on two adjacent walls per ASTM E 580.
9. Do not support components on the main runners or cross runners if the weight causes the total dead load to exceed the allowable limits. Do not eccentrically load the system or produce rotation of runners.
10. Install the system level, in a uniform plane, and free of twists, warp, dents, scratches, stains and other defects. Variation from Flat and Level Surface: 1/8" in 12 feet.
11. Caulk between the edge molding and adjacent vertical surfaces.

B. Vertical Support System:

1. Suspension wires shall be 12 gage, minimum, galvanized, attached to main runners at 4'-0" o.c., maximum, spacing in both directions.
 2. Each wire shall be anchored to the structure above with a device capable of supporting 75 pounds, minimum.
 3. Wires supporting fixtures shall be capable of supporting four (4) times the fixture weight.
 4. Suspension wires shall not hang more than 1:6 out of plumb, unless counter sloping wires are provided.
 5. Wires shall not be attached to or bend around interfering work such as piping, conduits or ductwork. Trapeze or equivalent devices shall be used where obstructions interfere with direct suspension. Trapeze shall be suspended back-to-back, 1-1/2" cold formed channels, minimum, for spans up to 6 feet.
- C. Horizontal Support System:
1. Lateral support systems for ceilings shall be shown in detail on the Shop Drawings.
 2. Adequacy of the system shall be demonstrated by calculations, and / or test results, including adequacy of main runner intersection connections. Tests shall show a capacity of twice the calculated load to provide a safety factor.
 3. Provisions shall be made for possible differential movement between ceilings and side walls. The terminal ends of each main and each cross runner shall be wire supported. Wall trim angles shall not provide the primary support for runners.
 4. Lateral support of ceilings shall not be provided by the angle trim, and runners shall not be riveted to the wall trim.
- D. Lateral Force Bracing: Provide cross-bracing for ceilings greater than 144 sq. ft. in area.
1. Where substantiating calculations are not provided, horizontal restraints shall be provided by four No. 12 gage wires secured to a main runner within 2" of a cross runner intersection and splayed 90 degrees from each other at an angle not exceeding 45 degrees from the plane of the ceiling. A strut fastened to the main runner shall extend up to and be fastened to a structural member supporting the roof or floor above. The strut shall be adequate to resist the vertical force induced by the bracing wires. These horizontal restraint points shall be placed 12 feet o.c. in both directions with the first point within 6 feet of each wall. Attachment of the restraint wires to the structure shall be adequate for the load imposed.

3.5 INSTALLATION - ACOUSTICAL PANELS

- A. Arrange acoustical units and orient directionally patterned units, if any, in the manner shown on the Drawings. If not indicated, install units with the pattern running in one direction only, as approved by the Owner's representative.
- B. Fit the acoustical units in place free of damaged edges, dents, scratches, stains and other defects; install level and in a uniform plane.
- C. Hold Down Clips: For fire-rated and security areas, install clips spaced at 2'-0" o.c. on all cross tees. Do not install clips at panels for access and at one panel in each corner of a room.

- D. Mark access panels with a black adhesive dot.

3.6 INSTALLATION - ACOUSTICAL PANELS ADHERED TO SUBSTRATE

- A. Install acoustical panels in accordance with the panel manufacturer's recommendations.
- B. Apply adhesive in accordance with the adhesive manufacturer's printed directions, unless directed otherwise.
- C. Spread only enough adhesive to permit the installation of acoustical panels before initial set.
- D. Scribe panels to walls, columns, junction boxes, and other appurtenances as necessary to produce tight joints.

3.7 FIELD QUALITY CONTROL

- A. Section 01450 - Quality Control: Field inspection.
- B. Inspect the ceiling grid suspension system installation, connections to the structure, edge moldings and acoustical panel placement.

3.8 ADJUSTING

- A. Section 01700 - Execution Requirements: Adjusting the installed work.
- B. Adjust the grid for alignment and level.
- C. Adjust the acoustical panels for proper fit within the grid.

3.9 CLEANING

- A. Section 01700 - Execution Requirements: Cleaning the installed work.
- B. Clean exposed surfaces of the ceiling grid, perimeter trim, and acoustical panels.
- C. Comply with the manufacturer's instructions for cleaning and touch-up of minor finish damage.
- D. Remove and replace work which cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION

SECTION 09650
RESILIENT FLOORING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Vinyl composition tile.
 - 2. Sheet vinyl flooring.
 - 3. Resilient edge strip.
 - 4. Rubber base.
 - 5. Accessories.
- B. Related Documents: The Contract Documents, as defined in Section 01010 - Summary of Work, apply to the work of this Section. Additional requirements and information necessary to complete the work of this Section may be found in other Documents.
- C. Related Sections:
 - 1. Section 03300 - Cast-In-Place Concrete: Substrate for resilient flooring.
 - 2. Section 09250 - Gypsum Board: Substrate for rubber base.
 - 3. Section 09680 - Carpet: Floor finish for rubber base.

1.2 DESCRIPTION OF WORK

- A. The extent of resilient flooring work is indicated on the Drawings and Schedule and as specified herein, and includes providing and installing adhesively applied vinyl composition tile, sheet vinyl flooring, resilient edge strips, rubber base and resilient accessories.

1.3 REFERENCES

- A. The publications listed below form a part of this Specification to the extent referenced. Publications are referred to in the text by basic designation only.
- B. American Society for Testing and Materials (ASTM):
 - 1. ASTM E 648 - Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source.
 - 2. ASTM E 662 - Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
 - 3. ASTM F 1066 - Specification for Vinyl Composition Floor Tile.
 - 4. ASTM F 1303 - Specification for Sheet Vinyl Floor Covering with Backing.
 - 5. ASTM F 1861 - Specification for Resilient Wall Base.

1.4 SUBMITTALS

- A. Section 01330 - Submittal Procedures: Procedures for submittals.
1. Product Data: Technical data and installation instructions for each type of resilient flooring and accessory.
 - a. Two boxes - 2" x 2" samples of each type, color and pattern in the specified group of the manufacturer selected for each type of resilient flooring required.
 - b. 12" x 12" samples of sheet flooring.
 - c. Samples of available colors for resilient edge strip.
 - d. One chain of available colors for rubber base selection.
 3. Final Samples: Submit for final selection.
 - a. 2 - full-size samples of vinyl tile.
 - b. 2 - 12" x 12" samples of sheet flooring.
 - c. 2 - 6" long sections of resilient edge strip.
 - d. 2 - 6" long sections of rubber base.
 4. Assurance / Control Submittals:
 - a. Manufacturer's certificate that the products meet or exceed the specified requirements.
 - b. Documentation of experience indicating compliance with the specified qualifications requirements.
 5. Maintenance Instructions: Submit two (2) copies of the manufacturer's recommended maintenance practices for each type of resilient flooring and accessory required.

1.5 QUALITY ASSURANCE

- A. Qualifications:
1. Manufacturer: Company specializing in manufacturing the products specified with a minimum of five (5) years documented experience.
 2. Installer: Company experienced in performing the work of this Section with a minimum of five (5) years documented experience.
- B. Regulatory Requirements:
1. Critical Radiant Flux in Accordance with ASTM E 648: More than 0.45 watts per square centimeter.
 2. Specific Optical Smoke Density in Accordance with ASTM E 662: Less than 450.
- C. Where possible, provide each type of resilient flooring and accessories as the products of a single manufacturer, including recommended primers, adhesives, and sealants.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Section 01600 - Product Requirements: Transport, handle, store and protect the products.
- B. Deliver products to the Project Site in the manufacturer's original, unopened cartons and containers, each bearing the name of the product and manufacturer, project identification, and shipping and handling instructions.
- C. Store the materials in a dry space, protected from the weather, with ambient temperatures maintained between 50 degrees and 90 degrees F.
- D. Store on a flat surface.

1.7 JOB CONDITIONS

- A. Environmental Requirements:
 - 1. Do not install flooring over concrete slabs until the slabs have been cured and are sufficiently dry to achieve bond with the adhesive, as determined by the manufacturer's recommended bond and moisture tests.
 - 2. Store materials in the area of installation for at least 48 hours prior to beginning installation.
 - 3. Maintain the ambient temperature required by the adhesive manufacturer, not less than 72 degrees F, for three days prior to, during, and for 48 hours after installation.
 - 4. Install flooring and accessories only after other finishing operations, including painting, have been completed.
 - 5. Provide adequate temporary ventilation during installation.

1.8 MAINTENANCE

- A. Section 01780 - Closeout Submittals: Procedures for closeout submittals.
- B. Extra Materials: At completion of the installation deliver to the Project Site extra materials from the same manufactured lot as the materials installed in the following quantities:
 - 1. Not less than 2% of each type, size and color of flooring.
 - 2. Not less than 2% of each type and color of base.
 - 3. Submittal of extra accent tiles is not necessary.
- C. Maintenance Data: Submit two (2) copies of manufacturer's recommended maintenance practices for each type of flooring and accessory required, recommended maintenance materials and suggested schedule for cleaning.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with the Project requirements, manufacturers offering the specified items which may be incorporated into the work include the following:
 - 1. Tile:

- a. Armstrong Floor Products (Armstrong World Industries, Inc.).
 - b. Azrock.
 - c. Tarkett.
 2. Sheet Vinyl:
 - a. Armstrong Floor Products (Armstrong World Industries, Inc.).
 - b. Azrock.
 - c. Tarkett.
 3. Resilient Edge Strip:
 - a. Armstrong Floor Products.
 - c. Roppe.
 - d. Burke Mercer.
 4. Rubber Base:
 - a. Armstrong Floor Products.
 - b. Roppe.
 - c. Burke Mercer.
- B. Colors, patters and sizes shall be selected from the manufacturer's standards.
- C. Section 01600 - Product Requirements: Product Options: Substitutions permitted.

2.2 MATERIALS

- A. Vinyl Composition Tile: 12" x 12" x 1/8" gauge composition tile; resistant to alkali, grease and oils and able to withstand static loads of 125 psi; ASTM F 1066; marbleized design as follows:
1. (VCT-1):
 - a. Standard Excelon, Imperial Texture by Armstrong.
 - b. Cortina Colors & Classics by Azrock.
 - c. Standard, Expressions by Tarkett.
 2. (VCT - 2):
 - a. Standard Excelon, Imperial Texture by Armstrong.
 - b. Cortina Colors & Classics by Azrock.
 - c. Standard, Expressions by Tarkett.
 3. Color: As selected. Accent tile (VCT-2) shall be a color contrasting with the field tile color.

- B. Sheet Vinyl Flooring (SV-1): Randomly placed, high-contrast colors to create a terrazzo-like pattern; ASTM F 1303 Class A backing, Grade 1, Type II, flexible fiberglass; 6 feet wide; nominal 0.080A overall gage, 0.050" nominal wear layer; modified static load limit 500 psi; as follows:
 - 1. Connection Corlon by Armstrong.
 - 2. Section 01600 - Product Requirements: Product Options: Substitutions permitted.
- C. Resilient Edge Strip: Homogeneous vinyl, tapered or bullnose edge, 1/8" thick x not less than 1" wide x length required or roll length. Color as selected.
- D. Rubber Base (RB-1): Type TP, [4"] [6"] high, 1/8" thick, topset; standard coved toe at resilient flooring, toeless at carpet; matching end stops and preformed corner units; roll length; ASTM F 1861. Color as selected.

2.3 ACCESSORIES

- A. Subfloor Filler: Latex underlayment mixed with undiluted latex liquid, furnished by or as recommended by the resilient flooring manufacturer as follows:
 - 1. Levelayer I by Dayton Superior Corporation.
 - 2. No. 345 by W.W. Henry Company.
 - 3. Section 01600 - Product Requirements: Product Options: Substitutions permitted.
- B. Concrete Slab Primer: Non-staining type as recommended by the resilient flooring manufacturer.
- C. Adhesive: As recommended by the resilient flooring manufacturer for the specific material and substrate conditions; clear color.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01700 - Execution Requirements: Verification of existing conditions before starting the work.
- B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive the work.
- C. Report, in writing, prevailing conditions that will adversely affect satisfactory execution of the work of this Section. Do not proceed with the work until the unsatisfactory conditions have been corrected.
- D. Start of the flooring installation shall indicate acceptance of the subfloor conditions and full responsibility for the completed work.

3.2 PREPARATION

- A. Prepare the substrate for product installation in accordance with the manufacturer's published instructions.

- B. Remove existing floor finishes and prepare substrate as recommended by the resilient flooring manufacturer.
- C. Remove curing compounds not compatible with the adhesive. Avoid organic solvents.
- D. Remove ridges, bumps and other irregularities in the substrate.
- E. Fill cracks, joints, holes and depressions with a subfloor filler and leveler recommended by the flooring manufacturer to achieve a smooth, flat, hard surface, with no more than 1/8" variation from plane within 10 feet in any direction.
- F. Prohibit traffic until the filler has cured.
- G. Broom clean and vacuum surfaces to be covered by resilient flooring; inspect the subfloor.
- H. Perform bond and moisture tests on concrete slabs to determine that concrete surfaces are sufficiently cured, dried and are ready to receive the flooring. Utilize a bond test recommended by the flooring manufacturer. Ensure that moisture content of the concrete substrate does not exceed 3% as measured by the Calcium Carbide Hygrometer Procedure or 5% by normal Protimeter.
- I. If bond test is negative, surface the existing floor with latex underlayment as recommended by the manufacturer.
- J. Apply concrete slab primer, if recommended by the flooring manufacturer, prior to the application of adhesive. Apply in compliance with the manufacturer's instructions.

3.3 INSTALLATION - GENERAL

- A. Install resilient flooring using the methods indicated, and in strict compliance with the manufacturer's recommendations.
- B. Maintain subfloor reference marks, penetrations, and openings that are in place or plainly marked for future cutting by repeating on the finished flooring. Use chalk or other non-permanent marking device.
- C. Cut flooring to and fit around all permanent fixtures, built-in furniture, cabinets, pipes, and outlets. Cut edges, and fit and scribe to walls and partitions after the field flooring has been installed.
- D. Extend flooring into toe spaces, door rabbets, closets and similar openings.
- E. Tightly cement flooring to the subbase without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, or other surface imperfections.
- F. Install flooring on covers for telephone and electrical ducts, and other such items that occur within finished floor areas; maintain overall continuity of colors and patterns with pieces of flooring installed in the covers. Tightly cement edges to the perimeter of the floor around the covers and to the covers.
- G. Hand roll flooring at the perimeters of each covered area to ensure proper adhesion.

3.4 INSTALLATION - VINYL COMPOSITION TILE FLOORING

- A. Install the resilient tile flooring in accordance with the manufacturer's published instructions.

- B. Prime concrete slabs in contact with the ground with cut-back type primer as recommended by the flooring manufacturer. Work the primer with a non-absorptive base completely into the surface. Primer shall be thoroughly dry before applying adhesive.
- C. Apply adhesive in accordance with the adhesive manufacturer's printed directions, unless specified or directed otherwise. Apply only cut-back adhesive to primed concrete surfaces.
- D. Spread only enough adhesive to permit the installation of floor materials before initial set.
- E. Open only the number of floor tile cartons for the quantity of material required to cover each area. Mix tile pieces to ensure that noticeable shade variations do not occur within any one area.
- F. Install tile flooring in a checker board pattern, or as indicated. Start in the center of the room or area and work from the center towards the edges. Vary edge width as necessary to maintain full-size tiles in the field, but no edge tile shall be less than 1/2 the field tile size, except where irregular shaped rooms or conditions make it impossible. Keep tile lines and joints square, symmetrical, tight, and even; keep each floor in a true, level plane, except where indicated as sloped.
- G. Locate accent tiles where shown, or if not shown locate per Architect's instructions.
- H. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances accurately for tight joints.
- I. Where flooring continues through a wall opening, continue the established pattern without interruption. One row of tiles may be cut to less than full size, if necessary, to establish the pattern in the adjoining room.
- J. Where an adjacent floor finish is dissimilar, terminate the resilient flooring at the centerline of openings or centerline of doors in the closed position.
- K. Press installed flooring with a 150 pound resilient flooring roller to attain full adhesion.

3.5 INSTALLATION - SHEET VINYL FLOORING

- A. Layout sheet flooring for as few seams as possible with economical use of materials.
- B. Match edges for color, pattern and shading at seams in compliance with the manufacturer's recommendations.
- C. Prepare seams in the sheet flooring in accordance with the manufacturer's instructions for the most inconspicuous appearance. Seal continuously with fluid applied sealant or adhesive as standard with the manufacturer.
- D. Adhere sheet flooring to the substrate using a method approved by the flooring manufacturer for the type of sheet flooring and substrate conditions.
- E. Use conventional perimeter bonding adhesive procedures where recommended by the flooring manufacturer. Use special perimeter bonding adhesive for unfilled vinyl sheet with vinyl backing.

3.6 INSTALLATION - RESILIENT EDGE STRIP

- A. Install edge strips at unprotected and exposed edges where resilient flooring terminates and where flooring terminates at points higher than the contiguous finished flooring, except at doorways where thresholds are located.

- B. Place resilient edge strips tightly butted to the resilient flooring. Secure with adhesive to the flooring and substrate.

3.7 INSTALLATION - RUBBER BASE

- A. Install rubber base in accordance with the manufacturer's published instructions.
- B. Apply rubber base to walls, columns, pilasters, casework and other permanent fixtures in rooms or areas where base is required. Install the base in lengths as long as practicable.
Maintain a minimum measurement of 18" between joints. Install true to line, level and with tight vertical joints. Scribe and fit accurately to and around permanent fixtures, equipment and bases.
- C. Use preformed units at external corners and exposed ends. Miter or cope inside corners.
- D. Install on solid backing; firmly adhere to walls, floor surfaces and permanent fixtures, except carpet throughout the length of each piece, with continuous contact at horizontal and vertical surfaces.
- E. On masonry surfaces, or other similar irregular surfaces, fill voids along the top edge of wall base with the manufacturer's recommended adhesive filler material.
- F. Roll the installation per the manufacturer's instructions.

3.8 FIELD QUALITY CONTROL

- A. Section 01450 - Quality Control: Field inspection.
- B. Inspect the resilient flooring and base installation, pattern, layout and attachment to the substrate.

3.9 CLEANING

- A. Section 01700 - Execution Requirements: Cleaning the installed work.
- B. Remove excess adhesive and other surface blemishes from the floor finish, base and wall surfaces without damage; use neutral type cleaners recommended by the flooring manufacturer.
- C. Just prior to final inspection, thoroughly clean the flooring, edge trims and base.
- D. Apply polish and buff. Use the type of polish, number of coats, and buffing procedures in compliance with the flooring manufacturer's instructions.

3.10 PROTECTION

- A. Protect installed flooring with heavy Kraft paper or other covering until final acceptance inspection.

END OF SECTION

SECTION 09900

PAINTING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Interior and exterior paint systems.
 - 2. Schedule of Items to be painted.
 - 3. Painting Treatments Schedule.
- B. Related Documents: The Contract Documents, as defined in Section 01010 - Summary of Work, apply to the work of this Section. Additional requirements and information necessary to complete the work of this Section may be found in other Documents.

1.2 DESCRIPTION OF WORK

- A. The extent of the work of this Section is indicated on the Drawings and Schedules and as specified herein, complete, and includes cleaning and preparation of all interior and exterior surfaces to be painted or finished, and finishing of all interior and exterior surfaces, unless hereinafter excluded.

1.3 REFERENCES

- A. The publications listed below form a part of this Specification to the extent referenced. Publications are referred to in the text by basic designation only.
- B. American Society for Testing and Materials (ASTM):
 - 1. ASTM E 84 - Test Method for Surface Burning Characteristics of Building Materials.

1.4 GENERAL

- A. The term APaint@ as used herein, means all coating systems materials, including primers, emulsions, enamels, stains, sealers and fillers, and other applied materials whether used as primer, intermediate coat or finish coat.
- B. The following categories of work are included under other Sections of these Specifications:
 - 1. Shop Priming: Unless otherwise specified, shop priming of ferrous metal items is included under various Sections of structural steel, metal fabrications, hollow metal doors and frames, and similar items.
 - 2. Unless otherwise specified, shop priming of fabricated components such as architectural woodwork, wood casework and shop-fabricated or factory-built mechanical and electrical equipment or accessories is included under other Sections.

1.5 SUBMITTALS

- A. Section 01300 - Submittal Procedure: Procedures for submittals.
1. Product Data: Submit for each type of paint specified.
 - a. Manufacturer's technical information including paint analysis, and application instructions for each material proposed for use.
 - b. Painting Schedule listing the surfaces to be painted with cross reference to the specific painting and finishing system, and application. Identify each paint material by manufacturer's catalog number and general classification.
 2. Samples:
 - a. Prior to beginning the painting work, the Architect will furnish color chips for surfaces to be painted. Use representative colors when preparing samples for review. Submit samples of color and texture only for the Architect's review. Provide a listing of materials and application for each coat of each finish sample.
 - b. Provide two (2) samples of each color and material on 8" x 12" hardboard, with texture to simulate actual conditions. Re-submit samples as requested by the Architect until acceptable color, sheen, and texture is achieved.
 - c. Provide two (2) 8" x 12" samples of natural and stained wood finish on actual wood surfaces. Label and identify each as to location and application.
 - d. Provide two (2) 8" x 12" samples of masonry for each type of finish and color on concrete masonry, showing the filler, prime coat and finish coats.
 3. Mock-Up: On actual wall surfaces and other interior and exterior building components, duplicate the paint finish of the prepared samples. Provide full-coat finish samples on at least 80 sq. ft. of surface, as directed, until the required color, sheen and texture is obtained; simulate the final lighting conditions for review of the work in-place.
 4. Assurance / Control Submittals:
 - a. Manufacturer's certificate that the products meet or exceed the specified requirements.
 - b. Documentation of experience indicating compliance with the specified qualifications requirements.
 - c. Manufacturer's Material Safety Data Sheets (MSDS) for each paint type specified.

1.6 COORDINATION

- A. Pre-Application Meeting: Convene a Pre-Application Meeting at the Project Site prior to beginning the painting work.
1. Require attendance of the Contractor, Owner's representative, Architect,

representatives of the paint subcontractor and other finish products, and the mechanical and electrical trades.

2. Review coordination and environmental controls required for the proper application and ambient conditions in the areas to receive paint.
3. Review preparation and installation procedures, and the coordination and scheduling required with the painting work.

1.7 QUALITY ASSURANCE

A. Qualifications:

1. Manufacturer: Company specializing in manufacturing the products specified with a minimum of five (5) years documented experience.
2. Applicator: Company experienced in performing the work of this Section with a minimum of five (5) years documented experience.

B. Regulatory Requirements:

1. Surface Burning Characteristics in Accordance with ASTM E 84 for Class I or A finish:
 - a. Flame Spread (Non-Combustible Surfaces): Less than 25.
 - b. Smoke Density (Non-Combustible Surfaces): Less than 450.
2. Provide paint and coating materials that conform to Federal, and local Government restrictions for volatile organic compounds (VOC) content.

C. Codes and Standards: The work and materials shall conform to regulations of the Fire Department, safety color coding in conformance with OSHA and all other regulatory ordinances having jurisdiction. Conform to the most stringent requirements of the authorities having jurisdiction.

D. Single Source Responsibility: Provide primers and other undercoat paint products by the same manufacturer as the finish coats. Use only thinners approved by the paint manufacturer, and use only within the recommended limits.

E. Coordination of Work: Review other Section of these Specifications in which prime paints are to be provided to ensure compatibility of the total coating system for various substrates. Upon the request of other trades, furnish information or characteristic of the finish materials provided for use, to ensure that compatible prime coats are use.

1.8 DELIVERY, STORAGE AND HANDLING

A. Section 01600 - Product Requirements: Transport, handle, store, and protect the products.

B. Deliver products to the Project Site in the manufacturer's original, new and unopened packages and containers bearing the following information:

1. Manufacturer's name.
2. Name or title of the material.

3. Manufacturer's lot number and date of manufacture.
 4. Contents by volume for major pigment and vehicle constituents.
 5. Color name and number.
 6. Thinning or reducing instructions.
 7. Application instructions including surface preparation and coverage.
 8. Drying time.
 9. Cleanup requirements.
- C. Store products, not in actual use, in tightly covered containers, off the ground and under cover. Maintain containers used in the storage of paint, in a clean condition, free of foreign materials and residue.
- D. Store paint materials at a maximum ambient temperature of 90E F, in a ventilated area, and in compliance with the manufacturer's published instructions.
- E. Keep storage areas neat and orderly. Remove oily rags and waste daily.
- F. Protect against fire hazards and spontaneous combustion.
- G. Take all precautions to ensure that workmen and the work areas are adequately protected from health hazards that might result from handling, mixing and application of paints.

1.9 JOB CONDITIONS

- A. Environmental Requirements:
1. Do not apply paint during rain, fog or mist when the relative humidity exceeds 85%, or to damp or wet surfaces, unless otherwise permitted by the paint manufacturer's printed instructions.
 2. Apply paint finishes only when the moisture content of the surfaces to be coated is within the manufacturer's acceptable range for the type of finish to be applied.
 3. Painting may be continued during inclement weather if the areas and surfaces to be painted are enclosed and within the humidity limits specified, and allowed by the paint manufacturer's printed instructions.
 4. Do not apply paint in areas where dust is being generated.
 5. In areas being painted provide a lighting level of, at least 80 foot-candles, measured at mid-height of the surface being painted.

1.10 MAINTENANCE

- A. Section 01780 - Closeout Submittals: Procedures for closeout submittals.
- B. Extra Materials:
1. Upon completion of the work, provide replacement materials from the same

production run as the materials applied. Provide 2% of each, but not less than one (1) quart, nor more than ten (10) gallons of each type, color and sheen.

2. Label each container with the color, type and texture, in addition to the manufacturer's label.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with the Project requirements, manufacturers offering products which may be incorporated into the work include the following:

1. Frazee Paint & Wallcovering.
2. Benjamin Moore & Co.
3. Sherwin-Williams Co.
4. Olympic Stains.
5. Watco Co.
6. ZAR by United Gilsonite Laboratories.
7. JASCO.
8. Thoro Systems Products.
9. PPG Amercoat (formerly Ameron Protective Coatings).
10. Textured Coatings of America, Inc. (TEX-COTE).
11. Rain Products Company.

- B. Section 01600 - Product Requirements: Product Options: Substitutions permitted.

2.2 MATERIALS

- A. Material Quality:

1. Manufacturer's best quality grade of the various types of coatings, and suitable for the intended purpose, as regularly manufactured by acceptable paint materials manufacturers. Materials not displaying the manufacturer's identification as a standard, best-grade product will not be acceptable.
 - a. Proprietary names used to designate colors or materials are not intended to imply that the products of the named manufacturers are required to the exclusion of equivalent products by other manufacturers.

- B. Color Pigments:

1. Pure, non-fading, applicable types to suit the substrates and service indicated. Manufacturer shall confirm that exterior applied pigments will not fade when exposed to UV light.

2. All exterior colors and interior deep tone colors shall be ground-in at the factory. Shop mixing is not permitted.
 3. Colors to be as selected by the Architect, and subject to modification on the Project Site at the Architect's discretion.
 4. Lead content in pigment, if any, is limited to not more than 0.06%, based on the total non-volatile (dry film) of paint by weight. This limitation extends to interior surfaces and those exterior surfaces, such as stairs, decks, porches, railings, windows, and doors which are readily accessible to children.
- C. Paint:
1. Ready-mixed, pigments fully-ground, maintaining a soft paste consistency, capable of readily and uniformly dispersing to a complete homogeneous mixture.
 2. Provide good flowing and brushing properties, and capable of drying or curing free of streaks and sags.
- D. Primers and Undercoaters: Produced by the same manufacturer as the intermediate and finish coats.
- E. Paint Accessory Materials: Linseed oil, shellac, turpentine and other materials not specifically indicated herein, but required to achieve the finishes specified to be of high quality, and by an approved manufacturer.

2.3 PAINT SYSTEMS

- A. (EAE) Exterior Acrylic Emulsion: A 100% acrylic latex, water-thinned coating with extra mildewcide, flat finish, #203 Duratec and #266 Epotilt acrylic-epoxy sealer by Frazee, or Loxon acrylic primer with A-100, 100% exterior acrylic latex by Sherwin-Williams.
- B. (EAHE) Exterior Acrylic High Build Emulsion: A high-build, heavy-bodied, water-based, acrylic emulsion with 67% solids conforming to Federal Spec # TTC 00555B, paragraph 4.4.7. Thorocoat by Thoro Systems Products, smooth finish. Finish with two (2) coats of Thoroglaze or other sealer recommended by the manufacturer. Primer to be as recommended by the manufacturer for the Project conditions.
- C. (TC) Textured Coating: Tex-Cote XL-70 primer and top coat system by Textured Coatings of America. Texture as selected by the Architect.
- D. (AFE) Interior Acrylic Flat Emulsion Copolymer: 100% acrylic latex, water thinned, washable, velvet flat finish, #002 Majestic by Frazee.
- E. (AEE) Interior Acrylic Eggshell Enamel: 100% acrylic, water thinned, semi-gloss enamel, #022 Lo-Glo by Frazee.
- F. (LOAE) No VOC Interior Acrylic Paint: Envirokote Interior Low Odor, flat, eggshell or semi-gloss as noted, with Envirokote primer by Frazee.
- G. (AREM) Alkyd Resin Enamel for Interior and Exterior Metal: 628 Aro-plate II SG, semi-gloss with 661 metal primer by Frazee.
- H. (AREW) Alkyd Resin Enamel for Exterior Wood: 372 wood undercoat with two coats of 352 Classic House and Trim Gloss Enamel, semi-gloss by Frazee.

- I. (EPC) Epoxy Paint for Cementitious Materials: Polyamide epoxy coating system, two-component coating self-priming, semi-gloss, Amerlock 400 by PPG Americoat.
- J. (EPM) Epoxy Paint for Metal: 561 acrylic metal primer with Aro-Gard 542 finish coats, two-component coating, semi-gloss by Frazee. Prepare metal with JASCO Prep and Primer.
- K. (RIP) Rust Inhibitive Primer: Alkyd mineral spirit thinned, satin finish primer; #661 metal prime, rust preventive alkyd primer by Frazee.
- L. (BF) Block Filler: Acrylic block filler; #262 acrylic block filler by Frazee.
- M. (PS) Primer Sealer: PVA vinyl acrylic resin, water-thinned, flat finish primer, #061 Aqua Seal interior PVA Sealer by Frazee.
- N. (PSU) Polyurethane: Clear finish exterior polyurethane varnish, Satin; ZAR #203.
- O. (WS) Wood Stain: Olympic semi-transparent wood stain or ZAR transparent interior stain as selected by the Architect.
- P. (CWF) Clear Wood Finish: Oil alkyd resin, satin or hand rub finish, Deft Clear Wood Finish.
- Q. (DO) Wood Sealer: Watco Danish Oil finish, exterior formula where exposed to wind blown water.
- R. (CS) Concrete Stain: Lithochrome stain in water solution by Scofield Co.
- S. (TEC) Cementitious Sealer: Elasto-grip FC, waterborne modified polyamine epoxy by Tnemec.
- T. (TEC) Concrete Coating: Enviro-crete 156, modified waterborne acrylate by Tnemec.
- U. (GRC) Graffiti Resistant Coating: Water repellant, clear, deep-penetrating, non-film forming, non yellowing, heavy duty chemical water repellant solution. VandGuard non-sacrificial graffiti coating system.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01700 - Execution Requirements: Verification of existing conditions before starting the work.
- B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive the work.
- C. Report, in writing, prevailing conditions that will adversely affect satisfactory and timely execution of the work of this Section. State, in writing, any anticipated problems with using the specified coating systems on substrates primed by others. Do not proceed with the work until the unsatisfactory conditions have been corrected in a manner acceptable to the Applicator.
- D. Starting the painting work will be construed as the Applicator's acceptance of the surfaces

and condition within any particular area.

3.2 SURFACE PREPARATION

- A. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions otherwise detrimental to the formation of a durable paint film.
- B. Perform preparation and cleaning procedures in accordance with the paint manufacturer's published instructions, and as herein specified, for each substrate condition.
 - 1. Provide barrier coats over incompatible primers, or remove and reprime as necessary.
 - 2. Remove hardware, hardware accessories, machined surfaces, plates, lighting fixtures, and similar items in place and not to be field painted, or provide surface-applied protection prior to surface preparation and painting operations. Remove, if necessary, for complete painting of items and adjacent surfaces. Following completion of the painting of each space or area, reinstall all removed items.
 - 3. Clean surfaces to be painted before applying paint or surface treatment. Remove any oil or grease prior to mechanical cleaning.
 - 4. Program cleaning and painting so contaminants from the cleaning process do not fall onto wet, newly painted surfaces.
- C. Ferrous Metals: Clean ferrous surfaces not galvanized or shop-coated, of oil, grease, dirt, loose mill scale, and other foreign substances by solvent or mechanical cleaning.
 - 1. Touch-up shop-applied prime coats where damaged or bare, when required by other Sections of these Specifications. Clean and touch-up with the same type of shop primer.
- D. Galvanized Surfaces: Remove oil and other surface contaminants with a non-petroleum based solvent. Apply a coat of etching primer if required by the paint manufacturer.
- E. Cementitious Materials: Prepare cementitious surfaces of concrete, concrete blocks, cement plaster and cement-asbestos board to be painted by removing efflorescence, chalk, dust, dirt, grease and oils, and by roughening as required to remove glaze. Wash concrete surfaces scheduled to be painted with a commercial solution of muriatic acid, or other etching cleaner. Flush with clean water to neutralize the acid, and allow to dry before painting.
 - 1. Determine the alkalinity and moisture content of surfaces to be painted by performing the appropriate tests. If surfaces are found to be sufficiently alkaline to cause blistering and burning of the finish paint, correct the condition before starting the application of paint.
 - 2. Do not paint over surfaces where the moisture content exceeds that permitted in the manufacturer's printed instructions.
 - 3. Clean floor surfaces, scheduled to be painted, with a commercial solution of muriatic acid, or other etching cleaner. Flush the floor with clean water to neutralize the acid, and allow to dry before painting.
- F. Wood: Clean wood surfaces to be painted of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as necessary. Sandpaper smooth, finished

surfaces exposed to view, and remove dust. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer before application of the prime coat. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sandpaper smooth when dry.

1. Prime, stain, or seal wood required to be field painted, immediately upon delivery to the Project Site. Prime ends, edges, faces, undersides, and backsides of such wood, including cabinets, counters, cases and paneling.
2. When a transparent finish is required, use spar varnish for backpriming.
3. Backprime paneling on interior partitions where masonry, plaster, or other wet wall construction occurs on the backside.
4. Seal tops, bottoms, and cut-outs of unprimed wood doors with a heavy coat of varnish or equivalent sealer immediately upon delivery to the Job Site.

G. Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.

3.3 MATERIALS PREPARATION

- A. Mix and prepare painting materials in accordance with the manufacturer's printed instructions.
- B. Maintain containers used in mixing and application of paint in a clean condition, free of foreign materials and residue.
- C. Stir materials before application to produce a mixture of uniform density, and stir as required during application. Do not stir surface film into the material. Remove the film and, if necessary, strain the material before using.

3.4 APPLICATION

- A. General:
 1. Apply paint products in accordance with the manufacturer's written directions using applicators and techniques best suited for the substrate, type of material being applied, and texture required.
 2. Paint finishes are scheduled. Provide prime coats compatible with the finish paints to be used.
 3. Apply additional coats, when the undercoats, stains, or other conditions show through the final coat, until the paint film is of uniform finish, color, and appearance. Give special attention to ensure that surfaces, including edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
 4. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Paint surfaces behind permanently fixed equipment and furniture with prime coat only before final installation of the item.
 5. Paint the back sides of access panels, and removable or hinged covers to match the exposed surfaces.
 6. Finish exterior doors on tops, bottoms and side edges the same as the exterior

faces.

7. Paint tops, edges, and bottoms of wood and hollow metal doors: .
 8. Sand lightly between each succeeding enamel and varnish coat.
 9. Omit the first coat (primer) on metal surfaces which have been shop-primed and touch-up painted, unless otherwise indicated.
 10. Apply each coat slightly darker than the preceding coat, unless otherwise approved by the Owner's representative. Sand surfaces lightly between coats, as necessary to achieve the specified finish.
 11. Do not apply finishes on surfaces that are not dry.
 12. The number of coats and the film thickness required is the same regardless of the application method. Do not apply succeeding coats until the previous coat has cured, as recommended by the paint manufacturer.
 13. Paint the interior surfaces of ducts, where visible through registers or grilles, with a flat, non-specular black paint.
 14. Apply block filler to concrete masonry units at the rate necessary to provide complete coverage with pores filled.
- B. Scheduling Painting: Apply first coat material to surfaces that have been cleaned, pre-treated or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
1. Allow sufficient time between successive coatings to permit proper drying. Do not re-coat until the paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and the application of another coat of paint does not cause lifting or loss of adhesion of the undercoat.
- C. Minimum Coating Thickness: Apply materials at not less than the manufacturer's recommended spread rate to provide a total dry film thickness or, if not indicated, as recommended by the coating manufacturer.
- D. Prime Coats: Apply a prime coat of material required to be painted or finished and has not been prime coated by others.
1. Re-coat primed and sealed surfaces where there is evidence of suction spots or unsealed areas in the first coat, to ensure a finish coat with no burn-through or other defects due to insufficient sealing.
- E. Stipple Enamel Finish: Roll and re-distribute paint to an even and fine texture. Leave no evidence of rolling such as laps, irregularity in texture, skid marks, or other surface imperfections.
- F. Pigmented (Opaque) Finishes: Completely cover surfaces to provide an opaque, smooth surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness and other surface imperfections are not acceptable.
- G. Transparent (Clear) Finishes: Use multiple coats to produce a glass-smooth surface film of an even luster. Provide a finish free of laps, cloudiness, color irregularity, runs, brush

marks, orange peel, nail holes, and other imperfections.

1. Provide a satin finish for final coats, unless otherwise indicated.
- H. Surfaces To Be Painted: Except where natural finish of material is specifically noted as a surface to not be painted, paint exposed surfaces whether or not colors are designated. Where items or surfaces are not specifically mentioned, paint the same as similar adjacent materials, or areas. If color or finish is not designated, the Architect will select from the manufacturer's standard colors or finishes.
- I. Equipment in Finished Rooms: Unless otherwise authorized, paint wall grilles and diffusers, door louvers, panel board fronts and other equipment having a factory-finish, occurring in rooms other than storage, mechanical and custodial.
- J. Do not paint over any code-required labels, such as Underwriter's Laboratories and Factory Mutual, or any other equipment identification, performance rating name, door label or nomenclature plates.
- K. Paint exposed interior and exterior plumbing, heating and electrical equipment, apparatus, conduits, pipes and fittings, supports and hangers and all other unfinished surfaces of the mechanical and electrical work.
1. Work includes field painting of exposed bare and covered pipes and ducts (including color coding), and of hangers, exposed steel and iron work, and primer or factory-painted metal surfaces of equipment installed under the mechanical and electrical work, except as otherwise indicated.
- L. Mechanical and Electrical Work: Painting of mechanical and electrical work includes those items exposed in mechanical equipment rooms, in occupied spaces, and equipment on roofs.
1. Exposed Mechanical: Items to be painted include, but are not limited to, the following:
 - a. Factory pre-painted diffusers at public spaces.
 - b. Ductwork insulation.
 - c. Piping, pipe hangers and supports.
 - d. Sprinkler covers and piping.
 - e. Heat exchangers.
 - f. Motors, mechanical equipment and supports.
 - g. Tanks.
 - h. Accessory items.
 2. Exposed Electrical: Items to be painted include, but are not limited to the following:
 - a. Panel boards in public spaces.
 - b. Speaker grilles.

- c. Conduit and fittings.
 - d. Switchgear.
 - e. Rooftop equipment.
- M. Roof Flashings: Paint all exposed roof flashings that are not stainless steel or factory-finished.
- N. Completed Work: Match the approved samples for color, sheen, texture and coverage. Remove, re-finish or re-paint work not in conformance with the specified requirements.
- O. The following categories of work are not included as part of field-applied painting work.
 - 1. Concealed Surfaces: Unless otherwise indicated, painting is not required on surfaces such as walls or ceilings in concealed areas and generally inaccessible areas, foundation spaces, furred areas, utility tunnels, pipe spaces, duct shafts and elevator shafts.
 - 2. Finished Metal Surfaces: Unless otherwise indicated, metal surfaces of prefinished aluminum, anodized aluminum, stainless steel, chromium plate, copper, bronze and similar finished materials do not require finish painting.
 - 3. Operating Parts: Unless otherwise indicated, moving parts of operating units, mechanical and electrical parts, such as valve and damper operators, linkage, sinkage, sensing devices, motor and fan shafts will not require finish painting.

3.5 MECHANICAL AND ELECTRICAL EQUIPMENT

- A. Replace identification markings on mechanical and electrical equipment, if painted over or spattered.
- B. Paint conduit and electrical equipment occurring in finished areas where exposed to public view, color and texture to match the adjacent surfaces.
- C. Paint front, back and all edges of plywood backboards for electrical equipment before installing, and mounting the equipment.

3.6 FIELD QUALITY CONTROL

- A. Section 01450 - Quality Control: Field inspection.
- B. The Owner reserves the right to invoke the following material testing procedures at any time, and any number of times during the field painting work:
 - 1. Engage the services of an independent testing laboratory to sample the paint being used. Samples of materials delivered to the Project Site will be taken, identified and sealed, and certified in the presence of the Contractor.
 - 2. A testing laboratory will perform appropriate tests for any or all of the following characteristics: abrasion resistance, apparent reflectivity, flexibility, washability, absorption, accelerated weathering, dry opacity, accelerated yellowness, re-coating, skinning, color retention, alkali resistance and quantitative materials analysis.
 - 3. If the test results show that the material being used does not comply with the

specified requirements, the Contractor may be directed to stop the painting work, remove the non-complying paint, pay for the testing, re-paint surfaces where the rejected paint has been applied, and remove the rejected paint from the previously painted surfaces if, upon re-painting with the specified paint, the two coatings are not compatible.

- B. Inspect painting and coating applications for the scheduled materials, color, sheen, texture, thickness, and coverage.

3.7 CLEANING

- A. Section 01700 - Execution Requirements: Cleaning the installed work.
- B. As work proceeds, and upon completion, promptly remove paint where spilled, splashed, and spattered.
- C. During progress of the work keep the premises free from any unnecessary accumulation of tools, equipment, surplus materials, and debris.
- D. Remove from the site discarded paint materials, rubbish, cans and rags at the end of each work day.
- E. Collect waste, cleaning cloths, and materials which may constitute a fire hazard, place in closed metal containers, and remove from the site daily.
- F. Upon completion of the work leave the premises neat and clean. Clean metal door and window frames, glass, and other paint-spattered surfaces. Remove spattered paint by proper methods of washing and scraping, taking care to not scratch or otherwise damage finished surfaces.

3.8 PROTECTION

- A. Protect the work of other trades, whether to be painted or not, against damage by the painting and finishing work.
- B. Place AWet Paint® signs as required as a warning of newly painted surfaces.
- C. Remove temporary protective wrappings provided by other trades for the protection of their work, after completion of the painting operations.
- D. Upon completion of the work of other trades, touch-up and restore all damaged and defaced painted surfaces.
- E. Correct any damage by cleaning, repairing or replacing and re-painting, as acceptable to the Owner's representative.
- F. Repair any damage resulting from inadequate and unsuitable protection.

3.9 SCHEDULE OF ITEMS TO BE PAINTED

- A. Refer to the Drawings and Painting and Finishing Schedule at the end of this Section for designated finishes. Paint finish shall be provided for, but not limited to, the following items:
 - 1. Interior: All interior surfaces as scheduled on the Drawings including, but not limited to:

- a. Wood and hollow metal doors and frames.
 - b. Metal opening frames and trim.
 - c. Gypsum board.
 - d. Exposed concrete and plaster.
 - e. Steel rails and guards.
 - f. Exposed mechanical ductwork , hangers and supports, if the exposed structure is shown on the Drawings to be painted.
 - g. Exposed piping, hangers and supports, if scheduled on the Drawings to be painted.
 - h. Exposed conduit, hangers and supports, if scheduled on the Drawings to be painted.
 - i. Exposed structure including decking, joists, girders, beams, bridging, and miscellaneous metal fabrications, if scheduled on the Drawings to be painted.
 - j. Exposed structural columns.
 - k. Metal stair stringers and handrails.
 - l. Exposed wood trim.
2. Exterior: All exterior surfaces including, but not limited to:
- a. Wood and hollow metal doors and frames.
 - b. Metal opening frames and trim.
 - c. Metal flashings, if exposed from ground level, and downspouts, other than stainless steel.
 - d. Pipe bollards.
 - e. Steel rails and guards.
 - f. Roof hatches.
 - g. Concrete and plaster walls, soffits, fascia, ceilings, beams and columns.
 - h. Structural steel decking, joists, beams and columns.
- B. Do not paint the following Items:
- 1. Aluminum, brass, bronze, stainless steel and chrome-plated steel.
 - 2. Pre-finished items, such as cabinetry, toilet compartments, acoustical ceiling materials, and mechanical and electrical equipment.
 - 3. UL, FM, and other Code required labels.

4. Equipment identification, performance ratings, and name plates.
5. Finish hardware.
- ~~6. Toilet accessories.~~

3.10 PAINTING TREATMENTS SCHEDULE

General: The paint abbreviations below refer to those noted above in PART 2, MATERIALS.

NO.	LOCATION	MATERIALS
1	Exterior and Interior Metal including factory prefinished items scheduled for field finish	<u>Shop Coat:</u> As specified in other Sections <u>Prime Coat:</u> (RIP) <u>Finish:</u> Two coats (AREM)
2	Exterior Plaster, Concrete and Masonry where noted for paint including: Fascia, Soffits, Walls of Buildings, Exposed Concrete Beams, Exposed Concrete Retaining Walls	<u>Prime Coat:</u> Manufacturer's Representative <u>Finish:</u> Two coats (EAE)
3	Exterior Plaster and Concrete where noted for Textured Coating (other than Special Coating per Section 09800) including: Fascia, Soffits, Walls of Building, exposed Concrete Beams, exposed Concrete Retaining Walls	<u>Prime Coat:</u> As recommended by manufacturer <u>Finish:</u> (EAHE) system or <u>Prime Coat:</u> XL-70 primer <u>Finish:</u> (TC)
4	Exterior Wood	<u>Wood Stain:</u> Two coats (WS) or <u>Prime</u> and Two coats (AREW)
5	Interior Smooth Concrete and Gypsum Board, where scheduled	<u>Prime Coat:</u> (PS) <u>Finish:</u> Two coats (AEE) or (AFE)
6	Interior Masonry, where scheduled	<u>Prime Coat:</u> (BF) <u>Finish:</u> Two coats (AEE) or (AFE)
7	Interior Wood for opaque finish including Wood Doors	<u>Prime Coat:</u> Manufacturer recommended primer <u>Finish:</u> Two coats (AEE) or (AFE)

8	Interior Hardwood, natural finish, including Doors, Door and Window Frames and Relights, Panels and all Trim, Wood-Faced Casework	<u>Finish:</u> Two coats (DO) or two coats (WS) with sanding sealers <u>Sealer:</u> Two coats (PSU) or <u>Finish:</u> Three coats (CWF)
9	Interior Concrete, Masonry and Gypsum Board, where noted for epoxy.	<u>Prime Coat:</u> As recommended by manufacturer <u>Finish:</u> Two coats (EPC)
10	Maintenance coating for interior smooth Concrete, Masonry, Gypsum Board and Wood	<u>Prime Coat:</u> As recommended by manufacturer <u>Finish:</u> (LOAE) Coats as required for coverage
11	Interior Metal including factory pre-finished items scheduled for painting	<u>Prime Coat:</u> (RIP) except where pre-finished <u>Finish:</u> Two coats (AREM)
12	Interior Metal where noted for epoxy	<u>Prep Coat:</u> JASCO Prep and Primer <u>Prime Coat:</u> Aro-Gard 561 primer <u>Finish:</u> Two coats (EPM)
13	Graffiti Resistant Coating over specified paint system.	<u>Finish:</u> Three coats (GRC)
14	Stained concrete or plaster: (CS) per manufacturer's recommendation.	
15	Sealed concrete or plaster:	<u>Finish:</u> Three coats (TEC) or per manufacturer's recommendation

END OF SECTION

- B. Take field measurements prior to the preparation of Shop Drawings and fabrication, where possible, to ensure proper fitting of the work. Allow for adjustments within the specified tolerances whenever taking field measurements before fabrication might delay the work.
- C. Conform to ADAAG for access and operation of compartment doors and hardware by the handicapped.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Section 01600 - Product Requirements: Transport, handle, store, and protect the products.
- B. Protect partitions, screens, hardware, accessories and other items during transit, delivery, storage and handling to prevent damage, soiling and deterioration.
- C. Do not deliver products until wet work, grinding and similar operations which could damage, soil or deteriorate the materials has been completed in the installation areas.
- D. If the partitions and screens must be stored in other than the installation areas, store only in areas meeting the same requirements as specified for the installation areas.

1.8 WARRANTY

- A. Section 01780 - Closeout Submittals: Procedures for closeout submittals.
- B. Limited Warranty:
 - 1. Submit manufacturer's Limited Warranty against breakage and corrosion, and agreeing to replace products which are defective in materials or workmanship.
 - 2. Warranty Period: Fifteen (15) years from the date of Substantial Completion.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with the Project requirements, manufacturers offering products which may be incorporated into the work include the following:
 - 1. Bobrick Washroom Equipment, Inc.
 - 2. Accurate Partitions Corp.
 - 3. Sanymetal (Crane Plumbing Co.).
 - 4. Santana Products, Inc.
- B. Section 01600 - Product Requirements: Product Options: Substitutions permitted.

2.2 MATERIALS

- A. Panels, Doors, Pilasters and Screens:

1. Solid plastic, fabricated from High Density Polyethylene (HDPE) containing a minimum of 50% recycled material manufactured under high pressure forming a single component section.
2. Water-resistant, graffiti-resistant, non-absorbent.
3. 1" thick, unless otherwise indicated.
4. Self-lubricating surface that resists marking by pens, pencils and other writing instruments.
5. All panels, doors, pilasters and screens to be shipped from the manufacturer with a special protective plastic covering.
6. Characteristics:
 - a. Dual component compression molded High Density Polyethylene (HDPE) of solid virgin resin materials in colors that extend throughout the material.
 - b. Panels, doors, pilasters and screens shall have recycled material (HDPE) as the core material.
 - c. Use material that has been selected for surface flatness and smoothness. Exposed surfaces that exhibit seam marks, roller marks, discoloration, telegraphing of core, or other imperfections on the finished units are not acceptable.
- B. Pilaster Shoes: Type 302 / 304 stainless steel, 3" high minimum, and 18 gage, No. 4 satin finish, ASTM A 167.
- C. Stirrup Brackets: Manufacturer's heavy-duty design for attaching panels to walls and pilasters, stainless steel, anodized aluminum or chromium-plated non-ferrous cast alloy, to match the hardware finish.
- D. Style: Floor-Mounted / Overhead-Braced, 1080 DuraLine Series by Bobrick.
- E. Provide colors and patterns as selected from the manufacturer's full line of standard colors and patterns.

2.3 PARTITIONS AND SCREENS

- A. Shall be solid plastic with Type 304 stainless steel hardware throughout. All hardware shall be concealed on the inside of compartments.
- B. Style: Floor-Mounted, DuraLine Series 1083 by Bobrick.

2.4 DRESSING COMPARTMENTS

- A. Floor-Mounted / Overhead-Braced, solid phenolic partitions. Panels, doors, and pilasters to be 1" thick; Type 304, 18-8 stainless steel hardware, satin finish. DuraLine Series 1080 by Bobrick.
- B. Wall-Mounted, 1" thick solid phenolic benches with stainless steel supports, satin finish. Series 1080 by Bobrick.

2.5 HARDWARE AND ACCESSORIES

- A. Manufacturer's heavy-duty operating hardware and accessories;; stainless steel; Institutional Series.
 - 1. Hinges shall be integral hinge system. Pilasters to be machined to accept door and hinge mechanisms. The hinge mechanism to consists of a 2 piece 1/2" diameter nylon pin with ACam Action® and a 3/16" stainless steel pin inserted into the lower portion of the pilaster and door. A one piece 1/2" diameter, 4" long nylon pin to be inserted into the top portion of the pilaster and door. Door closures to be factory set to accommodate all conditions and to allow for positive opening and closing action, free of impediment.
 - 2. Door Pull and Wall Stop: Type 304 cast stainless steel.
 - 3. Door latch housing fabricated from heavy aluminum extrusion (6364-T5 alloy) with clear anodized finish, surface-mounted and thru-bolted to the door with one-way sex bolts. Slide bolt and button shall be heavy aluminum.
 - 4. Door strike and keeper fabricated from heavy aluminum extrusion (6364-T5 alloy) with clear anodized finish, wrap around flange, surface-mounted and thru-bolted to the pilaster with one-way sex bolts. Strike shall be 6" in length.
 - 5. Coat Hooks: Combination coat hook and bumper fabricated from Type 304 stainless steel.
 - 6. Finish: Stainless steel, No. 4 satin.
- B. Overhead Bracing: Continuous extruded heavy-duty; mill finish; 18 gauge stainless steel brackets.
- C. Anchorage and Fasteners: Manufacturer's standard exposed fasteners of stainless steel, chromium-plate steel, or brass finished to match the hardware; theft-resistant heads and nuts. Use stainless steel concealed anchors.
 - 1. Steel Plate Reinforcement: Carbon steel, prepared for fasteners; 1/8" thick.
- D. Add one (1) additional coat hook on the inside of handicapped accessible stalls and stalls with out-swinging doors.

2.6 FABRICATION

- A. General:
 - 1. Comply with the details shown for profile, layout and construction of compartments, screens and other items. Where not otherwise shown, comply with the manufacturer's written instructions.
 - 2. Furnish standard panels, doors, pilasters and screens fabricated from the partition system specified, unless otherwise indicated. Furnish units with cutouts, drilled holes, and internal reinforcement to receive partition-mounted hardware and accessories, as shown.
 - 3. Pre-Cut Openings: Fabricate with pre-cut openings, wherever possible, to receive hardware and accessories. Locate openings accurately and use templates or roughing-in diagrams for the proper size and shape. Smooth the edges of cutouts and seal edges of cutouts with a water-resistant material. Provide radiused machined edges and bottom burn strip.

4. Fabricate from single piece material, except where the required length exceeds the maximum length fabricated by the manufacturer. Locate joints at even intervals through the material, aligned with other adjacent joints, and as approved on the final Shop Drawings. Form joints using the manufacturer's recommended adhesive for a smooth even appearance of matching color and inconspicuous appearance. Provide joints of equal or greater strength than the material being joined.
- B. Floor-Mounted / Overhead-Braced Partitions: Partitions, Doors and Pilasters: Flush type, manufacturer's standard. Stainless steel bracing assembly, manufacturer's standard, anchored to each pilaster and to the wall. Furnish 3/8" galvanized steel leveling devices to permit structural connection to the floor. Furnish a shoe at each pilaster to conceal the anchorages.
- C. Doors: Unless otherwise indicated, furnish 24" wide in-swinging doors for standard toilet stalls and 32" wide (clear opening width) out-swinging doors for stalls equipped for use by the handicapped.
- D. Floor-Mounted Urinal Screens: Panels and pilasters of the same construction and finish as the partitions. Furnish 3/8" galvanized steel leveling devices, welded to 11 gauge steel core. Furnish a shoe at each pilaster to conceal the anchorages.

2.7 FINISHES

- A. Panels, Doors, Pilasters and Screens: Single color as selected from the manufacturer's standard colors. Submit for selection as required above.
- B. Overhead Bracing: Mill finish.
- C. Stainless Steel: No. 4 bright directional polish.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01700 - Execution Requirements: Verification of existing conditions before starting the work.
- B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive the work, including spacing of plumbing fixtures, and location of built-in framing and backing plates.
- C. Report, in writing, prevailing conditions that will adversely affect satisfactory execution of the work of this Section. Do not proceed with the work until the unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with the manufacturer's recommended procedures and installation sequence.
- B. Install partitions plumb, level, straight, square, secure and rigid in accordance with the manufacturer's published instructions, and as shown on the Drawings.
- C. Floor-Mounted / Overhead-Braced Partitions:

1. Set pilasters with anchorages having not less than 2" penetration into structural floors, unless otherwise recommended by the partition manufacturer.
 2. Secure pilasters to the floor with the anchorage devices provided.
 3. Level, plumb and tighten the installation with the anchorage devices furnished.
 4. Secure overhead braces to pilasters with not less than two (2) fasteners per face.
 5. Hang doors and adjust so tops of doors are parallel with the overhead brace when the doors are in the closed position.
- D. Floor-Mounted Urinal Screens:
1. Set pilasters with anchorages having not less than 2" penetration into structural floors, unless otherwise recommended by the partition manufacturer.
 2. Set units in accordance with the manufacturer's instructions for secure support, and to resist lateral impact.
 3. Anchor panels to walls with two (2) panel brackets and to vertical upright pilasters anchored to the floor.
 4. Attach units with heavy-duty concealed anchoring devices, as recommended by the manufacturer, and to suit the wall construction.
 5. Secure panels to built-in devices using concealed fasteners.
 6. Level, plumb and tighten the installation with the anchorage devices furnished.
- E. Secure panels to walls with not less than two (2) stirrup brackets attached near the top and bottom of the panels. Locate wall brackets so holes for wall anchorages occur in masonry or tile joints, where occurs. Secure panels to pilasters with not less than two (2) stirrup brackets located to align with the stirrup brackets at the wall. Secure panels in position with the manufacturer's recommended anchoring devices.
- F. Attach panels and pilasters to brackets with through sleeve, tamper-proof bolts and nuts.
- G. Locate head rail joints at the center line of pilasters.
- H. Provide adjustment for floor variations with screw jacks through steel saddles integral with the pilaster.
- I. Conceal floor fastenings with stainless steel shoes.
- J. Provide clearance of not more than 1/2" between pilasters and panels, and not more than 1" between panels and walls.
- K. Align the hardware to provide uniform clearance at vertical edges of doors, not exceeding 3/16".
- L. Install door bumper coat hooks on partitions or walls.
- M. Provide hardware at handicapped accessible compartments in compliance with ANSI A117.1.

- N. Install one (1) additional wall-mounted bumper at handicapped accessible stall doors and out-swinging doors.

3.3 CONSTRUCTION

- A. Interface With Other Work:
 - 1. Coordinate the placement of support framing and backing plates in walls.
- B. Site Tolerances:
 - 1. Maximum Variation from True Position: 1/4".
 - 2. Maximum Variation From Plumb: 1/8".

3.4 ADJUSTING

- A. Section 01700 - Execution Requirements: Adjusting the installed work.
- B. Adjust and lubricate hardware for proper operation after installation.
- C. Adjust hardware for uniform clearance at the vertical edge of doors.
- D. Adjust adjacent components for consistency of line and plane.
- E. In-Swinging Doors: Adjust hinges to locate doors approximately 30 degrees from the closed position when unlatched.
- F. Out-Swinging Doors (and entrance swing doors): Adjust hinges to gently return doors to the fully closed position.
- G. Restore damaged and soiled areas per the manufacturer's recommendations.
- H. Repair damaged and defective components, where possible, to eliminate defects functionally and visually. Where not possible to repair to the satisfaction of the Owner's representative, replace the damaged units.

3.5 FIELD QUALITY CONTROL

- A. Section 01450 - Quality Control: Field inspection.
- B. Inspect installations for plumb, level, alignment, square, secure and rigid.

3.6 CLEANING

- A. Section 01700 - Execution Requirements: Cleaning the installed work.
- B. Remove protective masking.
- C. Clean exposed and semi-exposed surfaces using materials and by methods recommended by the partitions manufacturer.
- D. Clean hardware, fittings and accessories.

3.7 PROTECTION

- A. Provide protection, as necessary, to prevent damage during the remainder of the construction to ensure that the work will be without damage and deterioration at the time of final acceptance.

END OF SECTION

SECTION 10200
LOUVERS AND VENTS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Fixed aluminum wall louvers.
 - 2. Bird screens.
- B. Related Documents: The Contract Documents, as defined in Section 01010 - Summary of Work, apply to the work of this Section. Additional requirements and information necessary to complete the work of this Section may be found in other Documents.
- C. Related Sections:
 - 1. Section 03300 - Cast-In-Place Concrete: Substrate for attachment of units.
 - 2. Section 04230 - Reinforced Unit Masonry: Substrate for attachment of units.
 - 3. Section 07900 - Joint Sealers: Perimeter sealant at louver and vent frames.

1.2 DESCRIPTION OF WORK

- A. The extent of the louvers and vents work is indicated on the Drawings and as specified herein, and includes providing and installing louvers and vents with bird screens, anchor devices, flashings and sealants necessary for complete and weather-tight installations.
- B. The work of this Section does not include providing and installing louvers for doors specified in Sections 08100 and 08210.

1.3 REFERENCES

- A. The publications listed below form a part of this Specification to the extent referenced. Publications are referred to in the text by basic designation only.
- B. American Society of Civil Engineers (ASCE):
 - 1. ASCE / SEI 7 - Minimum Design Loads for Buildings and Other Structures.
- C. American Society for Testing and Materials (ASTM):
 - 1. ASTM B 221 - Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes.
 - 2. ASTM E 330 - Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
 - 3. ASTM E 1996 - Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.

D. International Code Council:

1. International Building Code (IBC), 2009.

1.4 SUBMITTALS

A. Section 01330 - Submittal Procedures: Procedures for submittals.

1. Product Data: Provide data describing the design characteristics, maximum recommended air velocity, design free area, materials and finishes.
2. Shop Drawings: Indicate louver layout plan and elevations, openings and clearance dimensions, tolerances; head, jamb and sill details; blade configuration, screens, blackout areas, and frames.
4. Samples: When requested, submit 6" X 6" square of each required finish. Prepare samples on metal of the same gage and alloy as that to be used in the work. Where color variations are to be expected, submit two (2) or more samples showing the limits of such variations.
5. Assurance / Control Submittals:
 - a. Manufacturer's certificate that the Products meet or exceed the specified requirements.
 - b. Calculations indicating that the products and anchorages satisfy the performance requirements.
 - c. Documentation of experience indicating compliance with the specified qualifications requirements.

1.5 COORDINATION

- A. Verify size, locations and placement of louver units prior to fabrication, wherever possible.
- B. Coordinate with the mechanical subcontractor for size and location of required louvers and vents.
- C. Where size or location of louvers or vents differ with the Drawings, notify the Owner's representative.

1.6 QUALITY ASSURANCE

A. Qualifications:

1. Manufacturer: Company specializing in manufacturing the products specified with a minimum of five (5) years documented experience.

B. Performance Requirements:

1. Provide capacity to withstand the following loading requirements for exterior units:
 - a. Design and install to resist combined positive and negative windloading in accordance with IBC 2009, Section 1609 with a Vmph of 170, qs of 74.0 psf, exposure [B] [C] [D], and importance factor of [1.0] [1.25] [1.5], as applicable per ASCE 7.

- b. Height of louver units above ground level are indicated on or can be calculated from the Drawings.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Section 01600 - Product Requirements: Transport, handle, store and protect the products.
- B. Protect finished aluminum surfaces with a strippable coating. Do not use adhesive papers or sprayed coatings which bond when exposed to sunlight or weather.
- C. Deliver product to the Project Site in the manufacturer's original, unopened protective packaging.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with the Project requirements, manufacturers offering products which may be incorporated into the work include the following:
 - 1. The Airolite Co.
 - 2. Airline Products, Nystrom Building Products.
 - 3. Construction Specialties, C/S Louvers.
- B. Section 01600 - Product Requirements: Product Options: Substitutions permitted.

2.2 MATERIALS

- A. Aluminum: ASTM B 221, extruded shapes.
- B. Bird Screen: 1/4" x 1/4" mesh, aluminum, set in aluminum frame.

2.3 ACCESSORIES

- A. Fasteners and Anchors: Stainless steel.
- B. Flashings: Of the same material as the louver frame.
- C. Sealants: As specified in Section 07900 - Joint Sealers.

2.4 FABRICATION

- A. Louver Panel Thickness: 6" deep; face measurements as shown on the Drawings.
- B. Louver Blade Design: Weatherproof, minimum material thickness of 0.081"; integral and lateral rain water stops positioned on the blades.
- C. Louver Frame: Channel shape, mechanically fastened corner joints, minimum material thickness of 0.081".
- D. Head and Sill Flashings: Extruded to the required shapes, single length, in one piece per location.

- E. Screens: Install screen mesh in shaped frames, reinforce corner construction, shop install to the louvers with non-ferrous fasteners.

2.5 FINISH

- A. Exposed Aluminum Surfaces: Clear anodized or as selected from the manufacturer's standard finishes.
- B. Maintain same color range within each unit. Do not mix light and dark shades within an assembly.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01700 - Execution Requirements: Verification of existing conditions before starting the work.
- B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive the work.
- C. Report in writing, prevailing conditions that will adversely affect satisfactory execution of the work of this Section. Do not proceed with the work until the unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install louver assemblies in accordance with the manufacturer's published instructions.
- B. Install louvers level, plumb, free of rack and securely attached to the structure.
- C. Install flashings and align louver assemblies to ensure that moisture sheds from the flashings, and to the exterior.
- D. Secure louvers in opening framing with concealed fasteners as required to meet the Performance Requirements.
- E. Install perimeter sealant in accordance with Section 07900 - Joint Sealers.

3.3 ISOLATION REQUIREMENTS

- A. Dissimilar Metals: Where aluminum surfaces are in contact with, or fastened to dissimilar metals except stainless steel, zinc or zinc coating, the aluminum shall be protected from the dissimilar metal. Where aluminum contacts another metal, paint the dissimilar metal with epoxy paint. Where drainage from a dissimilar metal passes over aluminum, paint the dissimilar metal with a non-lead pigmented paint.
- B. Cementitious Materials: Paint aluminum where in contact with mortar, concrete, masonry or other cementitious material, with an alkali-resistant coating such as heavy-bodied bituminous paint or epoxy paint.
- C. Wood Contact: Isolate aluminum from cedar, redwood, oak and acid-treated lumber by means of unbroken 6-mil polyethylene construction sheet or a heavy coating of metal-protective paint.
- D. Surfaces in contact with sealants after installation need not be coated with any type of

protective material.

3.4 PROTECTION

- A. Protect the finish from damage during construction by the use of temporary protective coverings approved by the manufacturer.

3.5 ADJUSTING

- A. Section 01700 - Execution Requirements: Adjusting the installed work.
- B. Remove protective covering at project completion or when directed by the Owner's representative.
- C. Restore finishes damaged during installation and construction so no evidence of the corrective work remains.
- D. Return items which cannot be refinished in the field to the shop, make the necessary alterations, and refinish the entire unit, or provide a new unit.

3.6 FIELD QUALITY CONTROL

- A. Section 01450 - Quality Control: Field inspection.
- B. Inspect the installations for correct location, alignment and elevation, plumb, level, true to line, free of rack and secure attachment and anchorage.

3.7 CLEANING

- A. Section 01700 - Execution Requirements: Cleaning installed work.
- B. Immediately prior to final inspection, remove protective wrappings.
- C. Wipe down all louver blades and frames before final acceptance.

END OF SECTION

SECTION 10436

SIGNAGE

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Accessible signage.
2. Directional signage.
3. Tactile exit signs.
4. Elevator signs.
5. Exit enclosure signs.
6. Instructional signage.
7. Room identification signage.
8. Occupant load signs.
9. Fire fighting equipment signs.
10. Fire wall signs.
11. Floor and roof design load signs.
12. Dedication plaque.
13. Exterior signage.

B. Related Documents: The Contract Documents, as defined in Section 01010 - Summary of Work, apply to the work of this Section. Additional requirements and information necessary to complete the work of this Section may be found in other Documents.

C. Related Sections:

1. Section 03300 - Cast-In-Place Concrete: Substrate for attachment.
2. Section 04230 - Reinforced Unit Masonry: Substrate for attachment.
3. Section 09250 - Gypsum Board: Substrate for attachment.
4. Sections of DIVISION 16 - Electrical: Requirements for lighted signs.

1.2 DESCRIPTION OF WORK

- A. The extent of signage work is indicated on the Drawings and as specified herein, and includes providing and installing all interior and exterior signage, and all attachment accessories.

- B. Signage mounting height shall comply with ADAAG.

1.3 REFERENCES

- A. The publications listed below form a part of this Specification to the extent referenced. Publications are referred to in the text by basic designation only.
- B. Americans with Disabilities Act Accessibility Guidelines (ADAAG):
 - 1. Accessibility Guidelines for Buildings and Facilities.
 - 2. Accessibility Guidelines for Schools.

1.4 SUBMITTALS

- A. Section 01330 - Submittal Procedures: Procedures for submittals.
 - 1. Product Data: Manufacturer's product data and mounting details.
 - 2. Shop Drawings:
 - a. Indicate sign styles, lettering font, foreground and background colors, locations, and overall dimensions of each sign.
 - b. Provide installation details.
 - 3. Samples: Two (2) signs, full size, illustrating the type, style, letter font, colors and method of attachment, when requested.
 - 4. Assurance / Control Submittals:
 - a. Manufacturer's certificate that the products meet or exceed the specified requirements.
 - b. Installation templates, attachment devices, and procedures for the care of finished surfaces.
 - c. Documentation of experience indicating compliance with the specified qualifications requirements.
- B. Section 01780 - Closeout Submittals: Procedures for closeout submittal.
 - A. Warranty: Provide a written standard Warranty with forms completed in the name of the Owner and registered with the manufacturer.

1.5 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Manufacturer: Company specializing in manufacturing the products specified with a minimum of five (5) years documented experience.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Section 01600 - Product Requirements: Transport, handle, store, and protect the products.

- B. Deliver products to the Project Site in the manufacturer's original, unopened protective packaging bearing the manufacturer's name, contents, brand name, and applicable standards.
- C. Handle to prevent damage to surfaces and edges.
- D. Store in the manufacturer's original packaging, off the ground and under protective covers.

1.7 WARRANTY

- A. Section 01780 - Closeout Submittals: Procedures for closeout submittals.
- B. Manufacturer's standard for materials and workmanship.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with project requirements, manufacture's offering products which may be incorporated into the work include the following:
 - 1. Mohawk Sign Systems, Inc.
 - 2. APCO Graphics Inc.
 - 3. ASI-Modulex.
 - 4. Best Sign Systems, Inc.
- B. Section 01600 - Product Requirements: Product Options: Substitutions permitted.

2.2 SIGNAGE

- A. Mohawk Sign Systems, Series 200A, is used as the standard for design and quality.
 - 1. Construction: Signs shall be of one-piece construction. Added-on and / or engraved characters are not acceptable. Text shall be accompanied by Grade 2 braille.
 - 2. Design and Location: Comply with ICC A117.1 requirements for visual characters and include the International Symbol of Accessibility.
 - 3. Tactile characters / symbols: Raised 1/32" from the sign plate face.
 - 4. Font: Times Roman Extra Black, upper and lower case.
 - 5. Pictographs: AGA Symbol Signs repro art developed for the U.S. Department of Transportation to be used whenever possible.

2.2.1 ACCESSIBLE SIGNAGE

- A. Accessible Signage: Post signage, including the International Symbol of Accessibility at the following locations:
 - 1. Accessible entrances when not all entrances are accessible.

2. Accessible dressing, fitting and locker rooms where not all such rooms are accessible.
 3. Accessible areas of refuge.
 4. Exterior areas for assisted rescue.
 5. Other locations required by the Building Code.
- B. Directional Signage: Signage, including the International Symbol of Accessibility, indicating the route to the nearest like accessible element at the following locations:
1. Inaccessible building entrances.
 2. Inaccessible public toilets and bathing facilities.
 3. Elevators not serving an accessible route.
 4. At each toilet and bathing room indicating the location of the nearest family or assisted-use toilet or bathing room, where provided.
 5. At exits and exit stairways serving a required accessible space, but not providing an approved accessible means of egress.
- C. Tactile Exit Signs: Provide AEXIT@ sign complying with ICC A117.1 adjacent to each door to exit discharge, exit passageway, exit ramp, exit stairway, area of refuge and exterior area for assisted rescue. Text shall read as follows:
- a.. At doors providing access to an area of refuge from an adjacent floor area - AAREA OF REFUGE@.
 - b. At doors proving access to an exterior area for assisted rescue - AEXTERIOR AREA FOR ASSISTED RESCUE@.
- D. Elevator Signs: Provide an approved pictorial sign of standard design adjacent to each elevator call station on all floors to read - AIN FIRE EMERGENCY, DO NOT USE ELEVATOR. USE EXIT STAIRS@.
- E. Exit Enclosure Signs: Provide at each floor landing in exit enclosures connecting more than three (3) stories. Designate the floor level, terminus of the top and bottom of the enclosure and identification of the stair or ramp. Signage shall state the story of, and direction to, the exit discharge and availability of roof access from the enclosure for the fire department. Comply with the following:
1. Size shall be a minimum 8" X 8".
 2. Letters designating the identification of the stair enclosure shall be a minimum of 2" in height.
 3. All other lettering and numbers shall be a minimum of 1" in height.
 4. Characters and background shall have a non-glare finish. Characters shall contrast in color with their background, with either light characters on a dark background or dark characters on a light background.
 5. Locate 5 feet above the floor landing in a position readily visible when the doors are in the open and closed positions.

6. Floor level identification signs in tactile characters complying with ICC A117.1 shall be located at each floor level landing, adjacent to the door leading from the enclosure into the corridor.
- F. Instructional Signage: In areas of refuge and exterior areas for assisted rescue, instructions on the use of the area under emergency conditions shall be posted. Instructions shall include all of the following:
1. Persons able to use the exit stairway do so as soon as possible, unless they are assisting others.
 2. Information on planned availability of assistance in the use of stairs or supervised operation of elevators and how to summons such assistance.
 3. Directions for use of the two-way communications system, where provided.

2.2.2 ROOM SIGNS

- A Room Identification Signs: Provide wall-mounted signs at each door opening and where indicated on the Drawings.
1. Type A Signs: Size 4A x 6" (typical) at Room entrances indicating room number and name, including braille.
 2. Type P Signs: Size 8" x 8" at Toilet Room doors, including the international symbols for Boys / Men, Girls / Women, including braille.
 3. Type B Signs: Size 2" x 4" (typical) at secondary spaces, indicating room name only.
 4. Type C Signs: Size 10" x 10" (typical) directional signs, including braille.
- B Occupant Load Signs: Provide an approved legible permanent sign indicating the occupant load for all assembly occupancies. Post in a conspicuous place, near the main exit or exit access doorway from the room or space.
- C. Floor and Roof Design Load Signs: Where live loads for floors or roofs, or portion thereof, have been designed to exceed 50 psf, post such design load signs in a conspicuous place in that part of each story or roof in which they apply.

2.2.3 FIRE SIGNS

- A Fire Fighting Equipment Signs: Cabinets containing fire fighting equipment such as standpipes, fire hoses, fire extinguishers or fire department valves shall be identified in an approved manner by a permanently attached sign with letters not less than 2" high in a color that contrasts with the background color, and indicating the equipment contained therein.
- B Fire Wall Signs: Post effective and permanent signs or stenciling along fire walls, fire barriers, fire partitions, smoke barriers and smoke partitions and any other walls required to have protected openings and penetrations. Such identification shall:
1. Be located in accessible concealed floor, floor-ceiling and attic spaces.
 2. Be repeated at intervals not exceeding 30 feet horizontally along the wall or partition.

3. Include lettering not less than 1/2" in height to read - A FIRE AND / OR SMOKE BARRIER - PROTECT ALL OPENINGS® or other similar wording.

2.3 EXTERIOR SIGNAGE

- A. Subject to compliance with project requirements, manufacture's offering products which may be incorporated into the work include the following:
 1. Gemini, Inc.
 2. Metal Arts.
 3. Metallic Arts.
- B. Section 01600 - Product Requirements: Product Options: Substitutions permitted.
- C. Metal Signage:
 1. Size: [8"] [12"] [15"] [36"] height; stroke, depth, and average width per manufacturer's standard for the size and letter style selected.
 2. Material: Cast aluminum.
 3. Finish: [Satin] [Baked enamel] [Anodized]; color as selected.
 4. Letter Style: As selected.
 5. Mounting: Projected Spacer Mount with aluminum tube spacers.
 6. Lettering / Name: To be provided.
 7. Location: Mount in location shown or as directed.
- D. Manufacturer to provide layout template.

2.4 DEDICATION PLAQUE

- A. Metal Plaque:
 1. Size: [16" x 20"] [18" x 18"].
 2. Material: Bronze.
 3. Letter Style: Times and Times Bold, engraved copy and logo, color filled, satin finish, straight edge borders.
 4. Mounting: Concealed.
 5. Locations: Mount in locations, as directed.
- B. Owner to provide sample of graphics, Contractor to prepare the artwork.

2.5 FASTENERS AND OTHER MATERIALS

- A. Provide non-corrosive fasteners, hangers, and mounting devices compatible with the sign material and finish. Concealed or of the same color and finish as the components they

secure where exposed to view.

- B. Other materials, not specifically described but required for a complete and proper installation shall be as selected, and subject to approval.
- C. Sign face surfaces shall not be deformed, distorted or discolored by the attachment of fasteners.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01700 - Execution Requirements: Verification of existing conditions before starting the work.
- B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive the work.
 - 1. Examine walls, doors, ceilings and other areas scheduled to receive signs for conditions that would affect quality and execution of the work. Notify the Owner's representative if a sign will be obscured from view at any location.
- C. Report, in writing, prevailing conditions that will adversely affect satisfactory execution of the work of this Section. Do not proceed with the work until the unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install signage in accordance with the manufacturer's published instructions, and with ADAAG.
- B. Install sign units and components at the locations shown or scheduled, securely mounted with concealed, theft-resistant fasteners.
- C. Install level, plumb, and at the proper height. Cooperate with other trades for the attachment of sign units to finish surfaces.
- D. Installations shall withstand normal wear and tear.
- E. Exterior installations shall withstand environmental actions of wind and rain, and normal wear and tear.

3.3 CONSTRUCTION

- A. Interface with Other Work:
 - 1. Furnish full-size spacing templates for individually bundled letters and numbers for coordination with the work of other trades.
 - 2. Furnish wiring diagrams for illuminated signs for coordination with the electrical trade for service to lighted units.

3.4 ADJUSTING

- A. Section 01700 - Execution Requirements: Adjusting installed work.
- B. Adjust signage, as necessary, for proper mounting height, plumb, level and secure

attachment.

3.5 FIELD QUALITY CONTROL

- A. Section 01450 - Quality Control: Field inspection.
- B. Inspect signage locations, attachments, and messages to verify that the installations conforms to the Drawings or information provided.

3.6 CLEANING

- A. Section 01700 - Execution Requirements: Cleaning the installed work.
- B. Remove protective materials from surfaces.
- C. Wipe clean before final acceptance inspection.

END OF SECTION

SECTION 10520
FIRE PROTECTION SPECIALTIES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Fire extinguishers.
 - 2. Mounting brackets.
 - 3. Fire hose cabinets.
 - 4. Mounting brackets.
- B. Related Documents: The Contract Documents, as defined in Section 01010 - Summary of Work, apply to the work of this Section. Additional requirements and information necessary to complete the work of this Section may be found in other Documents.
- C. Related Sections:
 - 1. Section 03300 - Cast-In-Place Concrete: Substrate for attachment.
 - 2. Section 04230 - Reinforced Unit Masonry: Substrate for attachment.
 - 3. Section 09110 - Non-Load Bearing Steel Framing: Wall framing for attachment of extinguishers and cabinets .
 - 4. Section 09250 - Gypsum Board: Adjacent wall finish.

1.2 DESCRIPTION OF WORK

- A. The extent of the fire protection work is indicated on the Drawings and as specified herein, and includes providing and installing fire extinguisher cabinets, fire extinguishers, fire hose cabinets with hoses, and all mounting brackets, devices and accessories.
- B. Fire protection shall comply with the Building Code, and regulations of the governing authorities having jurisdiction.

1.3 REFERENCES

- A. The publications listed below form a part of this Specification to the extent referenced. Publications are referred to in the text by basic designation only.
- B. National Fire Protection Association (NFPA):
 - 1. NFPA 10 - Portable Fire Extinguishers.
- C. Underwriters Laboratories, Inc. (UL):

1. UL 299 - Dry Chemical Fire Extinguishers.

D. Americans with Disabilities Act Accessibility Guidelines (ADAAG):

1. Accessibility Guidelines for Buildings and Facilities.
2. Accessibility Guidelines for Schools.

1.4 SUBMITTALS

A. Section 01330 - Submittal Procedures: Procedures for submittals.

1. Product Data: Manufacturer's specifications, data and list of items.
 - a. Extinguishers: Type, operational features, color.
 - b. Extinguisher: Type, materials, construction, features, finish, color and attachment method.
 - c. Fire Hose Cabinets: Type, materials, construction, features, finish, color and attachment method.
2. Shop Drawings: Show fabrication and installation details including anchorage and interface with adjacent materials.
3. Assurance / Control Submittals:
 - a. Documentation of experience indicating compliance with the specified qualifications requirements.

1.5 COORDINATION

- A. Coordinate support and opening requirements with other trades.

1.6 QUALITY ASSURANCE

A. Qualifications:

1. Manufacturer: Company specializing in manufacturing the products specified with a minimum of five (5) years documented experience.
 2. Installer: Company experienced in performing the work of this Section with a minimum of five (5) years documented experience.
- B. Regulatory Requirements: Conform to NFPA 10 and the local governing authorities having jurisdiction for extinguisher locations and mounting heights.
- C. Obtain products from one fire protection specialty manufacturer.
- D. Portable fire extinguishers to be UL-listed and bear a UL Alisting mark® for the type, rating and classification of extinguisher indicated.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Section - 01600 - Product Requirements: Transport, handle, store and protect the products.

- B. Deliver products to the Project Site in the manufacturer's original, unopened protective packaging.
- C. Store to prevent damage to materials, finishes and operating mechanisms.

PART 2 PRODUCTS

2.1 GENERAL

- A. Provide extinguisher and holder only where AFE@ is shown on the Drawings. Provide cabinet and extinguisher where AFEC@ is shown. Provide hose cabinet where AFHC@ is shown.

2.2 MANUFACTURERS

- A. Subject to compliance with the Project requirements, manufacturers offering products which may be incorporated into the work include the following:
 - 1. J.L. Industries, Inc.
 - 2. Larsen's Manufacturing Company.
 - 3. Potter Roemer - Fire Protection Equipment.
- B. Section 01600 - Product Requirements: Product Options: Substitutions permitted.

2.3 MATERIALS

- A. (FE-1) Fire Extinguisher (at light hazard areas): Multipurpose dry chemical, UL 299; UL-rated 4-A:60:B:C; 10 lb. nominal capacity; cylinder with pressure gage and hose. Finish as selected.
 - 1. J.L. Industries: Cosmic Series.
 - 2. Larsen's: MP Series.
 - 3. Potter Roemer: 3002-3020.
- B. (FE-2) Fire Extinguisher (at Kitchens and Mechanical Rooms): Surface-mounted; Halotron; 15-1/2 lbs. nominal capacity; cylinder with pressure gage, nozzle and wall mounting bracket. Finish as selected.
 - 1. J.L. Industries: Mercury Series.
 - 2. Larsen's: HT Series.
 - 3. Potter Roemer: 3101-3115.
- C. (FE-3) Fire Extinguisher (at Parking Garages): Surface-mounted; regular dry chemical; 20 lbs. nominal capacity; cylinder with pressure gage, hose and wall mounting bracket. Finish as selected.
 - 1. J.L. Industries: Galaxy Series.

2. Larsen's: DC Series.
 3. Potter Roemer: 3302-3320.
- D. Mounting Bracket: Device necessary for holding extinguishers and hoses in place. Designed to prevent the accidental dislodging of extinguisher. Size as required for the type and capacity of extinguisher specified; screw attached to the wall. Fire extinguisher manufacturer's recommended standard type. Enameled steel finish.
- E. Identification Sign. As approved by Fire Department.
- F. Fire Extinguisher and Fire Hose Cabinets:
1. General: Manufacturer's standard fully welded construction with exposed to view (including inside the cabinet) welds ground smooth and blended with the adjacent surfaces. Miter and weld perimeter door frames.
 2. Door Lock: Self contained keyed cylinder lock assembly with internal cabinet trip lever. Key cabinets alike and provide ten (10) keys.
 3. Pulls: 5/16" diameter x 4" c.c. x 1-1/8" projection wire (rod) aluminum pull.
 4. Door Hinge: Continuous piano type.
 5. Decal: Instruction decal on face of door.
 6. Finishes: Exposed-to-view exterior and interior surfaces of cabinets and doors, interior tub, and door pull. Finish shall be manufacturer's standard:
 - a. [Baked enamel coating.]
 - b. [Polyester coating.]
 - c. [Stainless steel.]
 - d. [Anodized aluminum.]
 7. Identification: Copy to read AFire Extinguisher@ or AFire Hose@, or such other copy necessary to indicate the primary fire device therein each unit. Letter style to be selected from manufacturer's standards.
- G. (FEC-1) Fire Extinguisher and Cabinet: Fully-recessed, 3/8" flat trim, horizontal duo panel style with 1/8" Solargray glass with block letters. Tub: 9" x 24" x 4" or as approved. ADAAG compliant.
1. J.L. Industries: 1525.
 2. Larsen's: AL-C 2409-R.
 3. Potter Roemer: 7340.
- H. (FEC-2) Fire Extinguisher and Cabinet: Semi-recessed, 1-1/4" square edge trim; formed aluminum frame and door with rolled edges; 1/8" thick clear acrylic bubble door with block letters. Tub: 9" x 24" x 4" or as approved. ADAAG compliant.
1. J.L. Industries: Clear VU Series, Model No. 1527.

2. Larsen's: AL-C 2409-6R.
 4. Potter Roemer: Loma Series, Model No. 7342.
- I. (FEC-3) Fire Extinguisher and Cabinet: Surface-mounted, door / frame, clear acrylic bubble door with block letters. Tub: 11-1/2" W x 26-1/2" H x 4" D or as approved. ADAAG compliant.
1. J.L. Industries: SMB Series.
 2. Larsen's: AL-C 2409-SM.
 3. Potter Roemer: 7344.
- J. (FHC) Fire Hose Cabinet: Semi-recessed, formed aluminum frame and door, solid door panel; [1-1/4" square edge] [2-1/2" rolled edge]. Cabinet size 38" x 26" x 8" or as approved. Include fire hose and fire department valve. ADAAG accessible.
1. J.L. Industries: [6426] [6427]
 2. Larsen's: AL-HC2638-RK
 3. Potter Roemer: 1000 Series;
- K Fire Hose Rack Assembly: For one man operation. 1-1/2" FM-approved hose and valve with single jacket lined hose. UL-rated industrial fog nozzle, pin rack and cast brass coupling, angle valve with escutcheon and nipple. Rated 100 GPM at 65 psi at nozzle. Hose length as selected.
1. J.L. Industries: 3000 Series.
 2. Guardian Fire Equipment, Inc.: 3000 Series.
 3. Potter Roemer: 2500 Series.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01700 - Execution Requirements: Verification of existing conditions before starting the work.
- B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive the work.
 1. Verify that rough openings for cabinets are correctly sized and located.
- C. Report, in writing, prevailing conditions that will adversely affect satisfactory execution of the work of this Section. Do not proceed with the work until the unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install brackets, cabinets and extinguishers in accordance with the manufacturer's published instructions.
- B. Coordinate anchorage, support and opening requirements with other installers.

- C. Install in locations and at the mounting heights indicated and as required by applicable regulations of the governing authorities having jurisdiction.
- D. Securely fasten mounting brackets and fire equipment cabinets to the structure; mount square, level and plumb.
- E. Mount brackets so the height of the top of extinguishers is in compliance with ADAAG or not more than 60" above the finished floor.
- F. Install identification signage approved by Fire Department where not part of equipment.
- G. Do not install defective or damaged units that can not be restored or repaired to the satisfaction of the Owner's representative.
- H. Turn over lock keys to the Owner's representative.

3.3 FIELD QUALITY CONTROL

- A. Section 01450 - Quality Control: Field inspection.
- B. Inspect brackets installations for secure attachment and for plumb.
- C. Inspect cabinet installations for secure attachment and for plumb, level, square and flush.

3.4 CLEANING

- A. Section 01700 - Execution Requirements: Cleaning the installed work.
- B. Touch-up abraded paint coatings with matching paint.
- C. Clean units of dirt, stains, and mars without damage to the finishes.

END OF SECTION

SECTION 10810
TOILET ACCESSORIES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Toilet accessories.
 - 2. Attachment hardware.
- B. Related Documents: The Contract Documents, as defined in Section 01010 - Summary of Work, apply to the work of this Section. Additional requirements and information necessary to complete the work of this Section may be found in other Documents.
- C. Related Sections:
 - 1. Section 06100 - Rough Carpentry: Placement of backing and blocking for attachment of accessories.
 - 2. Section 09110 - Non-Load Bearing Steel Framing: Placement of backing plate reinforcement for attachment of accessories.
 - 3. Section 10156 - Phenolic Toilet Partitions: Substrate for mounting toilet accessories.
 - 4. Section 10165 - Plastic Laminate Toilet Partitions: Substrate for mounting toilet accessories.

1.2 DESCRIPTION OF WORK

- A. The extent of toilet accessories work is indicated on the Drawings and as specified herein, and includes providing and installing the various accessory types, locks, keys and miscellaneous attachment hardware.
- B. Mounting heights for toilet accessories shall comply with ADAAG, as applicable.

1.3 REFERENCES

- A. The publications listed below form a part of this Specification to the extent referenced. Publications are referred to in the text by basic designation only.
- B. American Society for Testing and Materials (ASTM):
 - 1. ASTM A 123 - Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - 2. ASTM A 167 - Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
 - 3. ASTM A 366 - Specification for Steel, Carbon, Cold-Rolled, Commercial Quality.

C. Americans with Disabilities Act Accessibility Guidelines (ADAAG):

1. Accessibility Guidelines for Buildings and Facilities.
2. Accessibility Guidelines for Schools.

1.4 SUBMITTALS

A. Section 01330 - Submittal Procedures: Procedures for submittals.

1. Product Data: Manufacturer's catalog and data for each accessory describing size, finish, details of function and attachment method.
2. Samples: Submit one (1) sample of each item and model specified, if requested.
3. Manufacturer's recommended maintenance and operating instructions, parts manual and keys for each item and lock.
4. Assurance / Control Submittals:
 - a. Manufacturer's certificate that products meet or exceed the specified requirements.
 - b. Documentation of experience indicating compliance with the specified qualifications requirements.

B. Section 01780 - Closeout Submittals: Procedures for closeout submittals.

1. Deliver accessories Schedule, keys and Parts Manual for Owner's permanent records. Provide two (2) sets of the following items of manufacturer's literature:
 - a. Technical Data sheets for each accessory item.
 - b. Service and Parts Manuals.
 - c. Name of a local representative to be contacted in the event of need for field service or consultation.
2. Warranty: Submit a manufacturer's special Warranty with forms completed in the name of the Owner and registered with the manufacturer.

1.5 QUALITY ASSURANCE

A. Qualifications:

1. Manufacturer: Company specializing in manufacturing the products specified with a minimum of five (5) years documented experience.
2. Installer: Company experienced in performing the work of this Section with a minimum of five (5) years documented experience.

B. Regulatory Requirements: Comply with Americans with Disabilities Act Accessibility Guidelines (ADAAG). Verify mounting heights and clearances prior to installation.

C. All accessories alike shall be the product of a single manufacturer.

- D. Keyed (tumbler lock) accessories shall be keyed alike except for coin receiving boxes on vending equipment.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Section 01600 - Product Requirements: Transport, handle, store and protect products.
- B. Deliver products to the Project Site in the manufacturer's original, unopened protective packaging, labeled bearing the manufacturer's name and the type of accessory.
- C. Store materials in their original protective packaging to prevent soiling, wetting and physical damage.
- D. Handle to prevent damage to finish surfaces.
- E. Maintain protective covers on all units until installation has been completed. Remove coverings during final clean-up.

1.7 WARRANTY

- A. Section 01780 - Closeout Submittals: Procedures for closeout submittals.
- B. Special Warranty:
 - 1. Provide a written Warranty signed by the manufacturer certifying that the products are free of defective materials and workmanship and agreeing to replace or repair any defective item, in whole or in part, as necessary to restore the product to its original intended state and integrity.
 - 2. Warranty Period:
 - a. Stainless Mirror Frames: Fifteen (15) years against corrosion. b.
Plate Glass Mirrors: Fifteen (15) years against silver spoilage.
 - c. Tempered Glass Mirrors: Five (5) years against silver spoilage.
 - d. Laminated Glass: Five (5) years against silver spoilage.
 - e. Hand Dryers: Ten (10) years.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with the Project requirements, manufacturers offering the specified items which may be incorporated into the work include the following:
 - 1. American Specialties, Inc.
 - 2. Bobrick Washroom Equipment, Inc.
 - 3. Bradley Corp.
 - 4. GOJO Corporation

- 5. San Jamar Oceans Corporation
- 6. TC Corporation

B. Section 01600 - Product Requirements: Product Options: Substitutions permitted.

2.2 MATERIALS

- A. Sheet Steel: ASTM A 366.
- B. Galvanized Sheet Steel: ASTM A 366, ASTM A 123 to 1.25 ounces per square foot.
- C. Stainless Steel Sheet: ASTM A 167, Type 304.
- D. Expansion Shields: Fiber, lead or rubber as recommended by the accessory manufacturer for the component and substrate.
- E. Fasteners, Screws and Bolts: Hot-dip galvanized, tamper-proof. The finish of exposed fasteners shall match the finish of the item secured.

2.3 MANUFACTURED UNITS

A. TA-1 Liquid Soap Dispenser:

1. Model Numbers:

- a. American Specialties: 9343.
- b. Bobrick: B-2112.
- c. Bradley: 6542.

2. Description: Surface-mounted, horizontal tank-type dispenser for all-purpose liquid soap. 22 gage, Type 304 satin finish stainless steel container; drawn one-piece seamless body; mounting bracket attached to back plate for attachment to wall plate; concealed, vandal-resistant mounting. Unbreakable, clear acrylic refill indicator window; lockable hinged stainless steel lid for top filling; special key. Capacity: minimum, 40 ounces. Molded plastic push button and spout. Corrosion resistant to most soaps and detergents. ADAAG compliant.

TA-1A Touch Free Foam Soap Dispenser

1. Model Number:

- a. GoJo TFX 5362.02
- b. TC #450017

2. Description: Surface mounted foaming hand soap dispenser. Refillable. Battery operated automatic touch free dispenser, with skylight window. ADA compliant. 1200 mL refills.

3. Refills: Provide two (2) additional refill packets for each soap dispenser

B. TA-2 Mirror with Stainless Steel Frame:

1. Model Numbers:

- f. American Specialties: 0600.
 - g. Bobrick: B-290 Series.
 - h. Bradley: 780 Series.
 - 2. Description: 1/4" polished, tempered glass mirror. One-piece, roll-formed, 18 gage, Type 304 satin finish stainless steel angle frame; mitered corners welded, ground and polished. Concealed hanging bracket locked into top and bottom of frame with tamper-proof set screws. One piece water-resistant back attached to frame with theft-resistant locking device. Manufacturer's standard size, as indicated.
- C. TA-3 Stainless Steel Mirror:
 - 1. Model Numbers:
 - a. American Specialties: 0600.
 - b. Bobrick: B-290 Series.
 - c. Bradley: 780 Series.
 - 2. Description: Same as TA-2 except with Type 304 polished stainless steel mirror.
- D. TA-4 Combination Paper Towel Dispenser and Waste Receptacle:
 - 1. Model Numbers:
 - a. American Specialties: 0469.
 - b. Bobrick: B-3944.
 - c. Bradley: 234.
 - 2. Description: Recessed, 22 gage, Type 304 satin finish stainless steel, all-welded cabinet. 22 gage, satin finish stainless steel, drawn and beveled one-piece seamless flange. 22 gage, Type 304 satin finish stainless steel dispenser door secured to cabinet with full-length stainless steel piano hinge; semi-concealed tumbler lock. 22 gage, Type 304 satin finish stainless steel dispenser; rounded towel tray with hemmed opening. Capacity: 600 C-fold or 800 multi-fold paper towels. 22 gage, Type 304 satin finish stainless steel waste receptacle; all edges hemmed; secured to cabinet with tumbler lock. Capacity: 12 gallons. Interior hooks for optional vinyl liner. ADAAG compliant.
- E. TA-5 Paper Towel Dispenser:
 - 1. Model Numbers:
 - a. American Specialties: 0215.
 - b. Bobrick: B-2621.
 - c. Bradley: 252.

SECTION 12484
FLOOR MATS AND FRAMES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Reversible floor mats.
 - 2. Recessed mat frames.
 - 3. Accessories.
- B. Related Documents: The Contract Documents, as defined in Section 01010 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other Documents.
- C. Related Sections:
 - 1. Section 03302 - Cast-in-Place Concrete: Floor substitute.
 - 2. Section 08400 - Entrances, Storefronts and Windows: Entrance doors.
 - 3. Section 09300 - Tile: Floor finish.
 - 4. Section 09650 - Resilient Flooring: Floor finish.

1.2 DESCRIPTION OF WORK

- A. The extent of the floor mats and frames work is as indicated on the Drawings and specified herein, and includes providing and installing reversible mats, recessed stainless steel frames and accessories necessary for proper installation.
- B. Mat and frame installations shall comply with the Building Code and ADAAG.

1.3 REFERENCES

- A. The publications listed below form a part of this Specification to the extent referenced. Publications are referred to in the text by basic designation only.
- B. American Society for Testing and Materials (ASTM):
 - 1. ASTM B 117 - Practice for Operating Salt Spray (Fog) Apparatus.
 - 2. ASTM D 2047 - Test Method for Static Coefficient of Friction of Polish - Coated Flooring Surfaces as Measured by the James Machine.
 - 3. ASTM E 648 - Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source.
- C. Americans with Disabilities Act Accessibility Guidelines (ADAAG):

1. Accessibility Guidelines for Buildings and Schools.

1.4 SUBMITTALS

A. Section 01330 - Submittal Procedures: Procedures for submittals.

1. Product Data: Manufacturer's published descriptive literature, complete specifications, installation instructions, method of installation, and substrate preparation.
2. Shop Drawings: Show layout, profiles and product components, include details, direction of traffic, spline locations, anchorage, accessories, finish colors, patterns and textures.
3. Samples: For each type and color of exposed mat, frame and accessory required, two (2) - 12" x 12" samples of the mat material and frame.
4. Assurance / Control Submittals:
 - a. Certified test reports showing compliance with the specified performance characteristics and physical properties.
 - b. Documentation of experience indicating compliance with the specified qualifications requirements.
5. Maintenance Data: Manufacturer's printed instructions for cleaning and maintaining the mats.

B. Section 01780 - Closeout Submittals: Procedures for closeout submittals.

1. Special Warranty: Submit a written special Warranty with forms completed in the name of the Owner and registered with the manufacturer.

1.5 QUALITY ASSURANCE

A. Qualifications:

1. Manufacturer: Company specializing in manufacturing Products specified with a minimum of five (5) years documented experience.
2. Installer: Company experienced in performing the work of this Section with a minimum of five (5) years documented experience.

B. Flammability: Minimum 0.45 watts / sq. m. in accordance with ASTM E 648, Class 1.

C. Slip Resistance: Minimum 0.60 for assembled routes in accordance with ASTM D 2047.

D. Single Source Responsibility: Obtain all floor grids and frames from a single manufacturer.

1.6 DELIVERY, STORAGE AND HANDLING

A. Section 01600 - Product Requirements: Transport, handle store and protect Products.

B. Protect metal framing from corrosion, deformation and other damage during delivery, storage and handling.

- C. Deliver materials to the Job Site ready for use and fabricated in sections and assemblies as large as practical.
- D. Protect finished aluminum surfaces with strippable coating. Do not use adhesive paper or sprayed coating which bond when exposed to sunlight or weather.
- E. Deliver materials to the Project Site in the manufacturer's original, unopened packages, containers or bundles bearing the brand name and identification of manufacturer.
- F. Storage and protection: Store mats and metal frames under weatherproof covering, in a dry and protected location until ready for installation; ventilate to avoid condensation.

1.7 COORDINATION

- A. Coordinate the frame installation with the concrete construction to ensure that the recess and frame anchorage are accurately located, and the base is level and flat. Defer frame installation until the building enclosure is complete and interior finish work is in progress.

1.8 WARRANTY

- A. Section 01780 - Closeout Submittals: Procedures for closeout submittals.
- B. Special Warranty:
 - 1. Provide a written Warranty that the products are free of defective materials and workmanship, and will repair or replace any defective component or the system, in whole or part, as necessary to restore the product to its original intended state and integrity.
 - 2. Warranty Period: Five (5) years from the date of Substantial Completion.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with Project requirements, manufacturers offering products which may be incorporated into the work include the following:
 - 1. MATS, Inc.
- B. Section 01600 - Product Requirements: Product Options: Substitutions permitted.

2.2 MATERIALS

- A. MATS, Inc. component designations are used within this Section to identify mat and frame types.
 - 1. Recessed Foot Grid: Nuway Tuftguard by Mats, Inc.
 - 2. Frame: Aluminum, ADeep Frame®, 1-1/4" mat and frame depth.
 - 3. Mats: Alternating aluminum and unbuffed rubber strips with PVC spacers to allow for the passage of water and debris; reversible.
- B. Fabrication:

1. Fabricate mats to the greatest extent possible, in single units for each installation, but do not exceed the manufacturer's maximum size recommendation for units to be removed for cleaning and reversal. Where joints in mats are necessary, space symmetrically and away from normal traffic lanes. Size as shown on Drawings.
2. Provide frames in single lengths. When frame dimensions exceed the maximum lengths available, use the least number of pieces possible, with hairline joints equally spaced, and spliced with straight connection pins.
3. Miter corners and join with corner gusset and plates for hairline joints.
4. Coat the surfaces of frames to be installed in contact with cementitious material, with a zinc chromate primer.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01700 - Execution Requirements: Verification of existing conditions before starting the work.
- B. Verification of Conditions: Verify that field measurements, surfaces, substrates, and conditions are as required, and ready to receive the work.
- C. Report, in writing, prevailing conditions that will adversely affect satisfactory execution of the work of this Section. Do not proceed with the work until the unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Manufacturer shall provide assistance and guidance, and provide a template for irregular shaped grid assemblies to ensure proper installation.

3.3 INSTALLATION

- A. Strictly comply with the manufacturer's installation instructions and recommendations.
- B. Set the mat height as recommended by the manufacturer for the most effective cleaning action.
- C. Coordinate the top of mat surfaces with the bottom of doors that swing across to provide ample clearance between the door bottom and top of the mat.
- D. Coordinate the installation with adjacent work to avoid a tripping hazard.
 1. The installation shall comply with ADAAG.

3.4 FIELD QUALITY CONTROL

- A. Section 01450 - Quality Control: Field inspection.
- B. Inspect the installation and relationship to adjacent floor finishes to ensure avoidance of trip hazards.

3.5 CLEANING

- A. Section 01700 - Execution Requirements: Cleaning the installed work.
- B. Refer to the Manufacturer's Cleaning and Maintenance Instructions.

3.6 PROTECTION

- A. After completing the frame installation and concrete work, provide a temporary filler of plywood or fiberboard in the recess, and cover the frames with plywood protective flooring. Install mats for Substantial Completion of the Project.
- B. Maintain the temporary protection until construction traffic has ended and the Project is near Substantial Completion.

END OF SECTION

SECTION 12492

BLINDS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Horizontal metal slat louver blinds.
 - 2. Mounting system.
 - 3. Operating hardware.
- B. Related Documents: The Contract Documents, as defined in Section 01010 - Summary of Work, apply to the work of this Section. Additional requirements and information necessary to complete the work of this Section may be found in other Documents.
- C. Related Sections:
 - 1. Section 03300 - Cast-In-Place Concrete: Substrate for attachment.
 - 2. Section 04230 - Reinforced Unit Masonry: Substrate for attachment.
 - 3. Section 09110 - Non-Load Bearing Steel Framing: Structure for attachment.
 - 4. Section 09250 - Gypsum Board: Adjacent wall finish.

1.2 DESCRIPTION OF WORK

- A. The extent of the horizontal metal blinds work is indicated on the Drawings and as specified herein, and includes providing and installing slat louver blinds, mounting systems and operating hardware and devices.

1.3 SUBMITTALS

- A. Section 01330 - Submittal Procedures: Procedures for submittals.
 - 1. Product Data: Data indicating the physical and dimensional characteristics and operating features.
 - 2. Shop Drawings: Indicate opening sizes, quantities of each size, location of each size, tolerances required, method of attachment, clearances and operation.
 - 3. Samples: Two each, 12" long illustrating slat material, finish and color.
 - 4. Assurance / Control Submittals:
 - a. Manufacturer's certificate that products meet or exceed the specified requirements.
 - b. Documentation of experience indicating compliance with the specified qualifications requirements.

- c. Manufacturer's Installation Instructions: Indicate special procedures and any perimeter conditions requiring special attention.
 - B. Section 01780 - Closeout Submittals: Procedures for closeout submittals.
 - 1. Operation and Maintenance Data: Manufacturer's recommendations for maintenance and cleaning.
 - 2. Warranty: Submit a manufacturer's special Warranty with forms completed in the name of the Owner and registered with the manufacturer.
- 1.4 QUALITY ASSURANCE
 - A. Qualifications:
 - 1. Manufacturer: Company specializing in manufacturing the products specified with a minimum of five (5) years documented experience.
 - 2. Installer: Company experienced in performing the work of this Section with a minimum of five (5) years documented experience.
- 1.5 DELIVERY, STORAGE AND HANDLING
 - A. Section 01600 - Product Requirements: Transport, handle, store and protect the products.
 - B. Deliver products to the Project Site in the manufacturer's original, unopened protective packaging.
 - C. Store blinds to prevent damage to the materials, finishes and operating mechanisms.
 - D. Handle to prevent damage to the slats and operating mechanisms.
- 1.6 JOB CONDITIONS
 - A. Existing Conditions: Take field measurements of the openings to determine the exact size required for each opening.
- 1.7 WARRANTY
 - A. Section 01780 - Closeout Submittals: Procedures for closeout submittals.
 - B. Special Warranty:
 - 1. Provide a written Warranty, signed by the blinds manufacturer agreeing to repair or replace blinds that do not meet the requirement, or that fail in materials or workmanship.
 - 2. Warranty Period: Lifetime.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with the Project requirements, manufacturers offering products which may be incorporated into the work include the following:
 - 1. Springs Window Fashions (Bali).
 - 2. Hunter Douglas Contract.
 - 3. Levolor.
- B. Section 01600 - Product Requirements: Product Options: Substitutions permitted.

2.2 MATERIALS

- A. Model / Color:
 - 1. Springs Window Fashions: The Bali Classics Mini Blinds, 1", AMatte White® color or as approved.
 - 2. Hunter Douglas: 1" Mini Aluminum Blinds, Model CD80, ALinen Flirt® color or as approved.
 - 3. Levelor: Mark I DustGuard, 1" Blind, Model MARK 1, "Dover" color or as approved.
- B. Blinds: Horizontal slat louvers, hung from a full-width headrail with full-width bottom rail; manual control for raising and lowering by a cord with full-range locking; open and closed point locking; blade angle adjustable by a control wand.
- C. Metal Slats: Spring-tempered, pre-finished aluminum, radiused slat corners with manufacturing burrs removed.
 - 1. Width: 1".
 - 2. Thickness: 0.008", minimum.
- D. Slat Support: Braided polyester yarn, ladder configuration.
- E. Headrail: Pre-finished, formed steel box with end caps; internally fitted with hardware, pulleys and bearings for operation; same depth as the width of the slats.
 - 1. Color: Same as the slats.
- F. Bottom Rail: Pre-finished, formed steel with top side shaped to match the slat curvature; end caps.
 - 1. Color: Same as the slats.
- G. Lift Cord: Braided polyester, continuous loop.
 - 1. Free end looped through a wall-mounted, spring tensioned pulley.
 - 2. Color: White.
- H. Control Wand: Extruded solid transparent plastic, ribbed or hexagonal shape.
 - 1. Non-removable type.

- 2. Length of window opening height less 3".
- 3. Color: Clear.
- I. Headrail Attachment: Wall brackets.
- J. Accessory Hardware: Type recommended by the blind manufacturer.

2.3 FABRICATION

- A. Fabricate blinds to cover the window frames completely.
- B. At openings requiring multiple blind units, provide separate blind assemblies with a 1" space between assemblies; located at window mullion centers.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01700 - Execution Requirements: Verification of existing conditions before starting the work.
- B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive the work.
 - 1. Verify that structural blocking and supports, if required, are in place and correctly located.
- C. Report, in writing, prevailing conditions that will adversely affect satisfactory execution of the work of this Section. Do not proceed with the work until the unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install blinds in accordance with the manufacturer's published instructions, at each window and where shown on the Drawings.
- B. Secure in place with concealed fasteners.

3.3 CONSTRUCTION

- A. Interface with other Work: Coordinate the work of this Section with the window installation and placement of concealed blocking to support the blinds.
- B. Site Tolerances:
 - 1. Maximum Variation of Gap at Window Opening Perimeter: 1/4".
 - 2. Maximum Offset From Level: 1/8".

3.4 ADJUSTING

- A. Section 01700 - Execution Requirements: Adjusting the installed work.

- B. Adjusting blinds to hang level and plumb.
- C. Adjust operating hardware for smooth operation.

3.5 FIELD QUALITY CONTROL

- A. Section 01450 - Quality Control: Field testing and inspection.
- B. Inspect the installation, attachment and operation of the blinds.

3.6 CLEANING

- A. Section 01700 - Execution Requirements: Requirements for adjusting and cleaning.
- B. Clean blinds surfaces prior to the Final Acceptance inspection.

END OF SECTION

SECTION 15000

MECHANICAL GENERAL REQUIREMENTS

PART 1 GENERAL

1.1 APPLICATION

- A. This section applies to all Sections of Division 15.

1.2 LAWS, REGULATIONS AND CODES

- A. All work shall be in accordance with government laws, ordinances, rules, regulations, and orders.
- B. The Following Shall Govern Where Applicable: The International Building Code, the International Plumbing Code, the Uniform Mechanical Code, Applicable National Fire Protection Association Standards, OSHA Rules and Regulations, and all other codes and standards referenced in these specifications. Where requirements differ in these codes and standards, the more stringent shall apply.

1.3 TRADE NAMES

- A. Mentioning of a trade name indicates that the manufacturer is acceptable to the Engineer. However, certain specified construction and details may not be regularly included in the manufacturer's catalogued product. The Mechanical Contractor shall provide the material or equipment complete as specified.

1.4 AVAILABILITY OF EQUIPMENT AND MATERIALS

- A. Specified equipment and materials may not be available locally and must be ordered off-island. This does not give Contractor the option to substitute non-complying materials or equipment that is locally available.

1.5 DEFINITIONS

- A. "As directed" shall mean that the Mechanical Contractor shall seek instructions of the Architect.
- B. "As indicated" shall mean as shown on plans.
- C. "As necessary" shall mean that the item shall be provided if necessary to have all systems complete, tested, and ready for operation.
- D. "Furnish" shall mean that the Mechanical Contractor shall furnish item indicated, installation will be done under another work.
- E. "Mechanical Contractor" shall mean the Plumbing Contractor, the Air Conditioning Contractor, or the Fire Protection System Contractor.
- F. "Provide" shall mean the Mechanical Contractor shall furnish and install item indicated.

- G. "Or approved equal" used after a trade name shall mean that the trade name mentioned will be used as a basis of comparison and that all makes of similar item will be considered, provided that, in the opinion of the Architect, substituted item has equal or better quality than the trade name mentioned.
- H. "Or approved equivalent as manufactured by" shall mean that only products of manufacturers mentioned in the paragraph are acceptable to the Architect.

1.6 SUBMITTALS

- A. Submit six sets of shop drawings, manufacturer's data and certificates for equipment, materials and finish, and pertinent details for each system where specified in each individual section, and have them approved before procurement, fabrication, or delivery of the items to the job site. Partial submittals will not be acceptable and will be returned without review. Submittals shall include the manufacturer's name, trade name, catalog model or number, nameplate data, size, layout dimensions, capacity, project specification and paragraph reference, applicable industry, and technical society publication references, and other information necessary to establish contract compliance of each item the Contractor proposes to furnish.
 - 1. Shop Drawings: Drawings shall be a minimum of 8.5 inches by 11 inches in size, except as specified otherwise. Drawings shall include floor plans, sectional views, wiring diagrams, and installation details of equipment; and equipment spaces identifying and indicating proposed location, layout and arrangement of items of equipment, control panels, accessories, piping, ductwork, and other items that must be shown to assure a coordinated installation. Wiring diagrams shall identify circuit terminals, and indicate the internal wiring for each item of equipment and the interconnection between each item of equipment. Drawings shall indicate adequate clearance for operation, maintenance, and replacement of operating equipment devices. If equipment is disapproved, drawings shall be revised to show acceptable equipment and be resubmitted.
 - 2. Manufacturer's Data: Submittals for each manufactured item shall be manufacturer's descriptive literature of cataloged products, equipment drawings, diagrams, performance and characteristic curves, and catalog cuts.
 - 3. Standards Compliance: When materials or equipment must conform to the standards of organizations such as the American National Standards Institute (ANSI), American Society for Testing and Materials (ASTM), National Electrical Manufacturers Association (NEMA), and Underwriters Laboratories (UL), proof of such conformance shall be submitted to the Architect for approval. If an organization uses a label or listing to indicate compliance with a particular standard, the label or listing will be acceptable evidence, unless otherwise specified in the individual sections.
 - 4. Certificates of Conformance or Compliance: Submit certification from the manufacturer attesting that materials and equipment to be furnished for this project comply with the requirements of this specification and of the reference publications. Pre-printed certification will not be acceptable; certifications shall be in the original. The certification shall not contain statements that could be interpreted to imply that the product does not meet all requirements specified, such as "as good as"; "achieve the same end use and results as materials formulated in accordance with the referenced publications"; "equal or exceed the service and performance of the specified material". The certification shall simply state that the product conforms to

the requirements specified.

- B. Each submittal shall bear Contractor's Certification that the material, equipment, and other items in the submittal are in compliance with Contract Drawings and Specifications can be installed in allocated spaces.
- C. Each submittal for equipment requiring electrical power supply shall also bear Contractor's Certification that the power requirements of the equipment in the submittal are consistent with the power supply shown on electrical drawings.
- D. Any submittal without Contractor's Certification will be returned without review.
- E. Coordination: Plumbing and Fire Protection Drawings shall be coordinated with air conditioning and ventilation drawings, offset piping around ducts, and offset ducts around structural members.

1.7 OPERATION AND MAINTENANCE MANUAL

- A. For each equipment, furnish an operation and maintenance manual. Furnish three copies of the manual bound in hardback binders or an approved equivalent. Furnish one complete manual prior to the time that equipment tests are performed, and furnish the remaining manuals before the contract is completed. Inscribe the following identification on the cover: the words OPERATION AND MAINTENANCE MANUAL, the name and location of the equipment or the building and the name of the Contractor. The manual shall include the names, addresses, and telephone numbers of each subcontractor installing equipment, and of the local representatives for each item of equipment. The manual shall have a table of contents and be assembled to conform to the table of contents with the tab sheets placed before instructions covering the subject. The instructions shall be legible and easily read, with large sheets of drawings folded in. The manual shall include: wiring and control diagrams with data to explain detailed operation and control of each item of equipment; a control sequence describing start-up, operation and shut-down; description of the function of each principal item of equipment; the procedure for starting; the procedure for operation; shut-down instructions; installation instructions; maintenance instructions; lubrication schedule including type, grade, temperature range, and frequency; safety precautions, diagrams, and illustrations; test procedures; performance data; and parts list. The parts lists for equipment shall indicate the sources of supply, recommended spare parts, and the service organization which is reasonably convenient to the project site. The manual shall be complete in all respects for equipment, controls, accessories, and associated appurtenances provided.

1.8 DELIVERY AND STORAGE

- A. Equipment and materials shall be carefully handled, properly stored, and adequately protected to prevent damage before and during installation. Damaged or defective items shall be replaced.

1.9 CATALOGED PRODUCTS

- A. Materials and equipment shall be cataloged products of manufacturers regularly engaged in production of such materials or equipment and shall be manufacturer's latest design that complies with the specification requirements. Materials and equipment shall duplicate items that have been in satisfactory commercial or industrial use at least two years prior to bid opening. Where two or more items of the same class of equipment are required, these items shall be products of a single manufacturer; however, the component parts of the items

need not be the products of the same manufacturer. Each item of equipment shall have the manufacturer's name, address, model number, and serial number on the nameplate securely affixed in a conspicuous place; the nameplate of the distributing agent will not be acceptable.

1.10 SAFETY REQUIREMENTS

- A. Belts, pulleys, chains, gears, couplings, projecting setscrews, keys and other rotating parts located so that any person can come in close proximity thereto shall be fully enclosed or properly guarded. High-temperature equipment and piping so located as to endanger personnel or create a fire hazard shall be properly guarded or covered with insulation of a type as specified herein.

1.11 MANUFACTURER'S RECOMMENDATIONS

- A. Where installation procedures or any part thereof are required to be in accordance with the recommendations of the manufacturer of the material being installed, printed copies of these recommendations shall be furnished to the Architect prior to installation. Installation of the item will not be allowed to proceed until the recommendations are received. Failure to furnish these recommendations can be cause for rejection of the material.

1.12 WORK INCLUDED IN OTHER SECTIONS

- A. The following are included in the General Contract Work and all pertinent information required shall be provided by the Mechanical Contractor.
 - 1. Concrete Pads or Runners for Equipment: Pads and runners shall be at least 6" above the floor, roof, or grade level and pads shall clear equipment base by at least 4" all around unless indicated otherwise.
 - 2. Toilet and Bathroom Accessories: Toilet and bathroom accessories such as paper holders, towel dispensers, and the like are specified under another section and will be provided under the General Contract Work.
 - 3. Utilities: Cold water service line and building sewer main will be provided up to within 5 feet of the building line or as indicated. Final connection to these utilities shall be done by the Mechanical Contractor.
 - 4. The following are included under Electrical Work
 - a. Power Wiring: All power wiring, including final hook-up to all mechanical equipment will be provided under the Electrical Work. Where control devices are required on power wiring such as a high temperature limit control for an exhaust fan, the control devices shall be installed by the Mechanical Contractor but shall be wired by the Electrical Contractor.

Division 16, ELECTRICAL WORK, is based on electrical ratings of equipment indicated on the mechanical drawings. Any deviation by the Mechanical Work which requires a change in the Electrical Work shall be paid for by the Mechanical Contractor.

1.13 WORK TO BE DONE IN ACCORDANCE WITH OTHER SECTIONS

- A. All electrical work and control wiring, included under Mechanical Work, shall be in

accordance with Division 16, ELECTRICAL WORK.

1.14 AS-BUILT DRAWINGS

- A. The Contractor shall maintain at the site one copy of all Drawings, Specifications, Addenda, approved Shop Drawings, Change Orders, and other modifications, in good order and marked to record all changes made during construction. These shall be made available to the Architect.
- B. At the conclusion of the work, the Mechanical Contractor will be furnished by the Architect, at the Mechanical Contractor's expense, a set of reproducible made from original contract plans. The Mechanical Contractor shall then incorporate all changes made, as recorded, the set of reproducible in a clear, legible and reproducible manner. All underground stub-outs shall be dimensionally located from the building structure. As a condition for acceptance of work, "as-built" reproducible shall be signed by Mechanical Contractor attesting that all changes have been incorporated, dated and delivered to the Architect.
- C. As-built drawings required for:
 - SECTION 15300 - FIRE PROTECTION SYSTEM
 - SECTION 15400 - INTERIOR PLUMBING SYSTEM
 - SECTION 15500 - AIR CONDITIONING AND VENTILATION SYSTEMS

END OF SECTION 15000

SECTION 15300
FIRE PROTECTION SYSTEMS

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. This section provides for an automatic sprinkler system, standpipe systems and portable fire extinguishers.
- B. Provide fire protection systems with drain valves, inspectors test valves and sway braces. There shall be enough drain valves at strategic locations to enable draining all the water from the systems.
- C. Provide fire protection during construction.

1.2 QUALITY ASSURANCE

- A. Installation of automatic sprinkler system, standpipe system, and portable fire extinguishers shall be in accordance with the 2009 International Building Code, 2009 International Fire Code and applicable NFPA Standards.
- B. All equipment and system components shall bear UL or FM label or marking.
- C. Specialist Firm: A Company specializing in the installation of sprinklers and other fire protection systems with at least five (5) years experience, such as Grinnell Fire Protection Systems Company or Pacific Fire Protection, Inc.
- D. Installation of the Sprinkler Systems shall be done by a Specialist Firm. If experienced in the installation of sprinklers and other fire protection systems for at least five (5) years the Mechanical Contractor may install the fire protection systems under the supervision of the specialist firm.

1.3 SUBMITTALS

- A. Installation Shop Drawings:
 - 1. Within 35 calendar days after award of Contract, submit sprinkler head layout.
 - 2. Within 30 calendar days after approval of sprinkler head layout, submit sprinkler and other fire protection systems layout. Include hydraulic calculations based on installation shop drawing layout and recent fire flow test conducted by the contractor.
- B. Product Data: Within 35 calendar days after award of Contract, submit:
 - 1. Catalog cuts and other data required to demonstrate compliance with the specified requirements for the following:

Alarm Check Valve
Fire Department Connections

Check Valve
Gate Valve
Floor Control Valve
Monitor Switch
Sprinkler Heads
Sprinkler Cabinet
Fire Pump, Jockey Pump and Controller Package (DEDUCTIVE BID ITEM
FP-1)
Fire Extinguisher Cabinets
Portable Fire Extinguishers
Hose Gate Valves
Roof Manifolds

PART 2 - MATERIALS

2.1 PIPING

- A. Underground piping shall be Class 150 cast iron pipe conforming to ANSI 21.51 (AWWA C151). Fitting shall be cast iron conforming to ANSI A21.10 (AWWA C110), mechanical coupling.
- B. Aboveground sprinkler piping shall be Schedule 40 black steel pipe with black cast iron screwed fittings for pipe sizes up to 2". Pipes and fittings bigger than 2" shall be roll-grooved black steel, schedule 10 for pipe sizes up to 5", 0.134" for 6" pipes and 0.188 for 8" and 10" pipes.
- C. All piping shall be rated for a minimum of 175 psig working pressure. Maximum system pressure shall not exceed 300 psig.

2.2 ALARM CHECK VALVE

- A. Divided seat ring type alarm check valve with external bypass and retarding chamber. Basic trimmings shall include nipples, fittings, devices for external by-pass, alarm test by-pass, gauge and drain connections, and mounting supports for retarding chamber and drip funnel. Standard alarm trimmings shall be provided for use with, and including a water motor alarm and a pressure switch. Alarm check valve shall be "Grinnell" model A with Model A-3 retarding chamber or approved equal.

2.3 FIRE DEPARTMENT CONNECTION

- A. For sprinkler system double clapper flush wall connection type, straight body connection, 4" x 2-1/2" x 2-1/2" with plugs and chains, exposed parts with polished brass finish, threads to conform to those used by local fire department, with "Auto-Spkr" lettering, "Potter-Roemer" No. 229 or approved equal.

2.4 CHECK VALVE

- A. Swing check type, with iron body, bronze mounted, renewable seat and disc, bolted cap, asbestos gaskets. Steel bolts, 175 lbs. water working pressure, flanged ends with drip connection.

2.5 GATE VALVES

- A. Iron body with bronze trim, solid wedge, outside screw and yoke, rising stem, flanged ends, 175 lbs. water working pressure.
- 2.6 MONITOR SWITCH
- A. Single pole double throw switch with a roller type switch actuator and a spring loaded plunger mounted in a housing, design to make an electrical contact when O.S. & Y. Control gate valve at sprinkler main riser is closed, "Grinnell" Model F640 or approved equal.
- 2.7 SPRINKLER HEADS
- A. 1/2" N.P.T. pipe connection 1/2" nominal orifice size, intermediate degree rating, "Grinnell" Duraspeed Sprinkler with SSP-1 or SSP-3 deflector or approved equal. At areas with ceiling, sprinkler heads shall be pendent type, chrome finish with Figure 410 chrome ceiling plate. At areas without ceiling, sprinkler heads shall be upright, plain brass, with Model F774 sprinkler guard finish painted to match brass color of sprinkler head. Side wall sprinkler heads shall be standard horizontal side wall type brass finish with matching escutcheon plate enamel finish to match adjacent surface. At detention cell areas, sprinkler heads shall be institutional type side wall. Sprinkler and deflector to be of bronze construction, with 1/2" NPT thread. Levered fusible solder link shall consist of an approved black-painted beryllium-nickel link assembly. Fusible link shall be designed to release a suspended load that exceeds 50 lbs. (22.7 kg) when dropped from a 1-inch (25.4 mm) height. Water seal shall consist of a Teflon-coated Bellville spring washer and bronze diffuser sub- assembly containing no plastic parts. Institutional escutcheons shall be of zinc or aluminum construction with zinc ring plate and tamper resistant screws. Sprinkler K- factor shall be nominal 5.6 (81.0). Sprinkler temperature rating shall be Ordinary 165 F (74 C). Standard cover finish: Bright chrome plated. Quick response institutional sprinklers shall be Reliable Model XL Institutional Horizontal Sidewall, Standard Coverage (SIN R1334) or equal. Glass bulb type temperature rated for specific area hazard.
- 2.8 SPRINKLER CABINET
- A. Fabricated from sheet steel and finished painted with red enamel, to be provided complete with 12 spare sprinkler heads (6 plain brass and 6 chrome plated) and two sprinkler wrenches.
- 2.9 HOSE GATE VALVES
- A. 2-1/2", polished brass finished, hose threads to match local fire department equipment.
- 2.10 ROOF MANIFOLDS
- A. Cast brass with female N.P.T. inlet and male N.P.T. outlet, two ways, 4" x 2-1/2", back inlet.
- 2.11 FIRE EXTINGUISHER CABINET
- A. 22 gauge steel box, one piece 22 gauge tubular steel door, one piece 20 gauge steel frame with continuous hinge, white baked enamel finish, with break glass door. Provide each fire extinguisher cabinet with one dry chemical type, portable fire extinguisher, 10 lbs., 4A-60 BC rating, "Potter-Roemer" No. 3010 or approved equal.
- B. See plans for type of fire extinguisher cabinet and provide the following as required:

1. Recessed type - "Potter-Roemer" Figure No. 1704 or approved equal.
2. Semi-Recessed type - "Potter-Roemer" Figure No. 1724 or approved equal.
3. Surface-Mounted type - "Potter Roemer" Figure No. 1754 or approved equal.

2.12 PACKAGED FIRE PUMP, JOCKEY PUMP, CONTROLS AND ACCESSORIES (DEDUCTIVE BID ITEM FP1.0)

A. FIRE PUMP

1. Type: Centrifugal, direct connected, horizontal.
2. Casing: Cast iron, split case, rated for greater of 150 psig or 1.25 times actual working discharge pressure, as verified by hydraulic calculations, renewable bronze wearing rings, flanged suction and discharge.
3. Impeller: Bronze, fully enclosed, keyed to shaft.
4. Shaft: High grade alloy steel with copper, bronze, or stainless steel shaft sleeves.
5. Bearings: Grease lubricated ball bearings.
6. Drive: Flexible coupling with coupling guard
7. Seals: Packing gland with minimum four rings graphite asbestos packing.
8. Base plate: High grade heat-treated cast iron or reinforced heavy steel with integral drain rim, and grout base.

B. Accessories

1. Check valve in discharge pipe.
2. OS&Y gate or butterfly valves on system side of check valve and on supply side of pump.
3. Fire pump bypass fitted with OS&Y gate or butterfly valves and check valve.
4. Pressure gages, suction and discharge.
5. Circulation relief valve.
6. Umbrella cock, automatic air release.
7. Splash shield between pump and motor.
8. Flow metering system for closed loop testing.

C. Drive

1. Motor: Squirrel cage type; drip proof.

2. Controller: NFPA 20 transfer switch type with auto-transformer reduced voltage, starter, in NEMA 4 enclosure, including the following:
 - a. Two circuit breakers of 30,000 amperes interrupting capacity (one for emergency start).
 - b. Magnetic starter capable of being energized by pressure switch or manually.
 - c. Alarm circuit for power failure.
- D. Controls
 1. Controller: Hands-off automatic switch, fire water pressure switch to operate pump drive, fire water pressure switches for alarms.
 2. Local alarm with indicating lights for low fire water pressure and high fire water pressure.
 3. Contacts for remote circuits to indicate pump operational status and alarm status.
- E. Acceptable Manufacturers
 1. "Aurora" Pumps.
 2. "Peerless" Pumps.
 3. "Worthington" Pumps.
 4. "Fairbanks Morse".
 5. ITT
- F. Jockey Pump
- G. Electrically operated pressure booster pump to maintain pressure.
- H. Provide shut-off valves, check valve, and relief valves.
- I. Acceptable Manufacturers
 1. Aurora Pumps.
 2. Peerless Pumps.
 3. Worthington Pumps.
 4. Fairbanks Morse.
 5. ITT

PART 3 - EXECUTION

3.1 PIPING

- A. Install buried shut-off valves in valve box. Provide post indicator.
- B. Locate fire department connection with sufficient clearance from walls, obstructions, or adjacent siamese connectors to allow full swing of fire department wrench handle.
- C. Locate outside alarm gong on building wall as indicated.
- D. Place pipe runs to minimize obstructions to other work.
- E. Place piping in concealed spaces above finished ceilings.

3.2 MONITOR SWITCH

- A. Shall be installed on the unthreaded section of the O.S. & Y control gate valve at the sprinkler main, to make an electrical contact when the valve is closed. Wiring to Alarm system will be done by electrical contractor.

3.3 PRESSURE SWITCH

- A. Pressure switch on alarm check valve shall be arranged to make an electrical contact when sprinkler system is activated. Wiring to alarm system will be done by electrical contractor.

3.4 SPRINKLER CABINET

- A. Shall be installed near sprinkler main riser as directed.

3.5 INSPECTOR TEST PIPE

- A. Arrange to discharge outside the building or as indicated. Test valve shall be installed in a wall box with access panel, permanent identification.

3.6 FIRE PUMP

- A. Pipe drain from pump bases, pump stuffing boxes, and pump casings to floor sinks or drains.
- B. SIGNS
 - 1. Properly lettered approved metal signs conforming UBC Standard 9-1 shall be attached to each valve in the sprinkler system.
- C. ACCEPTANCE REQUIREMENTS
 - 1. Perform all acceptance requirements in accordance with the referenced standards.
 - a. Flushing of Piping: Underground mains and lead-in connections to system

risers shall be completely flushed before connection is made to the sprinkler piping. Before connecting sprinkler system to the water main, the sprinkler system shall be sterilized. Sterilization shall be in accordance with Guam EPA requirements.

- b. Hydrostatic Test: All interior piping and attached appurtenances subjected to system working pressure shall be hydrostatically tested at 200 psig and shall maintain that pressure without loss for two (2) hours.
 - c. Dry System Air Test: An air pressure leakage test at 40 psig shall be conducted for 24 hours. Correct all leakage that will result in a pressure loss in excess of 1-1/2 psi.
 - d. System Operational Tests: Contractor shall request the Fire Department to witness all system operational tests.
- 2. Complete, sign, and submit all required Contractor's Material and Test Certificates.
 - 3. Provide all literature and instructions provided by the manufacturers describing proper operation and maintenance of any equipment and devices installed. Provide three (3) publications titled NFPA 13A, Recommended Practice for Inspection, Testing and Maintenance of Sprinkler System.

END OF SECTION 15300

SECTION 15400
INTERIOR PLUMBING SYSTEM

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Work included: The plumbing system for this Work includes all hot and cold water distribution systems, soil, waste and vent system, plumbing fixtures and trim and all other plumbing items indicated on the Drawings or described in these Specifications, plus all other plumbing items needed for a complete and proper installations. The work also includes plumbing and final connections to other equipment furnished under other sections, including indirect waste lines from fixtures to waste receptors.
- B. Related work described elsewhere: Perform all trenching and backfilling associated with the plumbing installation in strict accordance with the provisions of "Earthwork" Section.

1.2 QUALITY ASSURANCE

- A. Use sufficient journeyman plumbers and competent supervisors in execution of this portion of the Work to ensure proper and adequate installation throughout. In the acceptance or rejection of installed plumbing, no allowance will be made for lack of skill on the part of workmen.

1.3 SUBMITTALS

- A. General: Comply with the provisions of Section 15000.
- B. Product Data: Within 35 calendar days after award of Contract, submit:
 - 1. Catalog cuts and other data required to demonstrate compliance with the specified requirements shall be provided for the following:
 - a. Plumbing Fixtures & Trims
 - b. Pumps
 - c. Drains
 - d. Cleanouts
 - e. Hose Bibb
 - f. Valves
 - g. Insulation
 - i. Booster pumps & Water Tank (DEDUCTIVE BID ITEM P1.1)
- C. Operation and Maintenance Manual: Upon completion of this portion of the Work, and as a condition of its acceptance, compile and submit manuals as required under Section 15000 of these Specifications.

1.4 PRODUCT HANDLING

- A. Protection: Use all means necessary to protect the materials of this Section before, during, and after installation and to protect the work and materials of all other trades.

- B. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect and at no additional cost to the Owner.

PART 2 PRODUCTS

2.1 PIPE

A. Soil, Waste Vent AND Storm Drain Piping

1. Underground building drainage shall be Polyvinyl Chloride (PVC) pipes and fittings conforming to ASTM D 2665; ASTM F 891; ASTM F 1488 with solvent weld joints conforming to ASTM D 2235.
2. Building sewer shall be Polyvinyl Chloride (PVC) pipes and fittings conforming to ASTM D 2665; ASTM F 891; ASTM F 1488 with solvent weld joints conforming to ASTM D 2235.
3. Soil, waste, and storm drainage piping aboveground shall be PVC or ABS plastic pipes and fittings with solvent welded joints, per ASTM D 2665 or ASTM D 1785
4. Vent shall be Polyvinyl Chloride (PVC) pipes and fittings conforming to ASTM D 3034 and ASTM D 2949 with solvent weld joints conforming to ASTM D 2235.

B. Domestic Water Piping

1. All domestic hot and cold water piping shall be hard-drawn copper tube conforming to ASTM B88 with wrought copper fittings.
2. Below-grade and below-slab copper piping shall be type "K" with brazed joints; all other copper piping shall be type "L" with joints made up of 95-5 tin-antimony solder.

2.2 PIPE WRAPPING

- A. Wrap all water piping buried in the ground, with "Scotchrap". Wrap all straight runs with 0.020-inch thick tape, spirally applied in half-lap layers. Pre-wrap all joints, valves, and similar irregular surfaces using 0.020-inch thick tape.

2.3 VALVES

- A. Gate valves shall be bronze, solid wedge, inside screw, traveling stem, screw-in-bonnet, 200 lbs. W.O.G., solder ends, "Milwaukee" Figure No. 1153 or approved equal.
- B. Check valves shall be bronze, swing check type, renewable disc, and wrench grip removable caps, soldered ends, 200 lbs. W.O.G., "Milwaukee" Figure No. 508 or approved equal.
- C. Ball valves shall be bronze, two piece body, chrome plated brass ball, regular port, teflon seats and stuffing box ring, blow-out proof stem, lever handle, solder ends.

2.4 PIPE SLEEVES AND ESCUTCHEONS

- A. All pipe sleeves and escutcheons shall be steel pipe and shall have ample clearance for pipe and covering, and shall have chrome plated wall and floor escutcheons over the pipe in

finished areas.

2.4 HANGERS AND SUPPORTS

A. Hangers and supports shall equal or exceed the quality of the following:

	<u>Item</u>	<u>Manufacturer and Number</u>
1.	Pipe ring hanger	Grinnell Fig. 97cp, plastic coated for plastic pipes
2.	Clevis Type Hanger	Grinnell Fig. 260, galvanized, for cast iron or steel pipe

B. Hanger rods shall be galvanized and shall conform to the following:

	<u>Pipe Size</u>	<u>Rod Diameter</u>
1.	1/2 inch to 2 inch	3/8 inch
2.	2-1/2 inch to 3-1/2 inch	1/2 inch
3.	4 inch to 5 inch	5/8 inch

2.5 WATER HAMMER ARRESTERS

A. Provide permanently sealed, all stainless steel water hammer arresters properly sized in accordance with Fixture Unit requirement, equaling or exceeding the quality of J.R. Smith Hydrotols.

2.6 CLEANOUTS

A. General: Provide cleanouts equaling or exceeding the quality of the following:

1.	Floor cleanouts	J. R. Smith number 4023.
2.	Yard cleanouts	J. R. Smith number 4283 with round frame and cover.
3.	Wall cleanouts	"Tee" fittings with J. R. Smith number 4531 or 4551, and chrome plated access cover.

B. Finishes: All exposed parts of floor cleanouts shall be scoriated nickel bronze. All grade cleanouts shall have rough scoriated bronze covers.

2.7 ISOLATION

A. Isolate all dissimilar metals with dielectric unions.

2.8 DRAINS

A. The following are products of "J.R. Smith". Equivalent items as manufactured by "Josam", "Wade" or "Zurn" are acceptable:

1. Floor and shower drains shall be Figure 2010-A, with 5 inch diameter strainer, cast

iron body, flashing collar, nickel bronze adjustable strainer head, and caulked outlet.

2. Scupper drains shall be Figure 1530, galvanized cast iron body, flashing device and secured grate, threaded outlet.
3. Roof drains shall be Fig. No. 1010 with galvanized cast iron body, low profile rough bronze dome, and flashing clamp, caulked outlet.
4. Overflow drains shall be Fig. No. 1080 with galvanized cast iron body, rough bronze dome, cast iron collar, flashing clamp, caulked outlet.
5. Deck drains shall be Fig. No. 1410 with galvanized cast iron body, polished bronze top, flashing clamp with seepage openings, and caulked outlet.

2.9 PLUMBING FIXTURE

A. The following fixtures are products of "Sloan" unless indicated otherwise. Equivalent fixtures as manufactured by "American Standard", "Eljer", or "Kohler" are acceptable.

1. Water Closet – WC-1: (Flush Valve, Floor-Mounted, Elongated Bowl, 1.28 gpf, for Handicapped)
 - a. Fixture: Sloan complete HET system with exposed manual Royal closet flushometer and vitreous china water closet. Elongated bowl, floor mounted, 1-1/2" top spud inlet, vitreous china, high efficiency toilet (1.28 gpf), white, "Sloan" WETS 2020.1001-1.28 with "Olsonite" No. 95 open front seat less cover and No. 481310-100 bolt caps.
 - b. Flush Valve: PERMEX synthetic rubber diaphragm with dual filtered fixed bypass, ADA compliant metal oscillating non-hold open handle non-hold-open handle with triple seal handle packing, , fixed metering bypass and no external volume adjustment to ensure water conservation.
2. Water Closet - WC-1: (Flush Valve, Floor-Mounted, Elongated Bowl, 1.28 gpf)
 - a. Fixture: Sloan complete HET system with exposed manual Royal closet flushometer and vitreous china water closet. Elongated bowl, floor mounted, 1-1/2" top spud inlet, vitreous china, high efficiency toilet (1.28 gpf), white, "Sloan" WETS 2000.1001-1.28 with "Olsonite" No. 95 open front seat less cover and No. 481310-100 bolt caps.
 - b. Flush Valve: PERMEX synthetic rubber diaphragm with dual filtered fixed bypass, non-hold-open handle, fixed metering bypass and no external volume adjustment to ensure water conservation.

2.a Penitentiary Combination Water Closet with lavatory (**ALTERNATE BID ITEM**)

Product of "Acorn" or equal, Penal-Ware 18" wide Lav-Toilet Comby - Front Access (specify model number and options), arranged to be installed on finished wall through access panels. Fixture shall have factory installed Air-Control lavatory valve and a hydraulic flush valve. Provide Air-Control pneumatically operated pushbutton valve. Valve and bubbler conform with lead free requirements for NSF61, Section 9 and

CHSC 116875. Fixture shall be fabricated from type 304 stainless steel. Construction shall be seamless welded and exposed surfaces shall have a satin finish. Access panels shall be secured with tamper-resistant screws. Countertop shall have an air-circulating, self-draining soap dish. Toilet shall be concealed blowout jet type with an elongated bowl, a self - draining flushing rim, and an integral contoured seat. Toilet shall meet ASME A112.19.3 and CSA B45.4 requirements and will flush with a minimum of 25 PSI flow pressure when used in conjunction with a minimum of 1.28 GPF. Toilet trap shall have a minimum 3-1/2" seal that shall pass a 2-1/8" diameter ball and be fully enclosed. Cabinet interior is sound-deadened with fire-resistant material. Fixture shall withstand loadings of 5,000 pounds without permanent damage. Fixture shall be furnished with necessary fasteners for proper installation.

3. Urinal – UR:

- a. Fixture: Sloan complete HEU system with exposed manual Royal urinal Flushometer and vitreous china urinal, "Sloan" WEUS 1000.1001-0.13, wall hung, washdown flushing action, 3/4" I.P.S. top spud inlet, integral flushing rim.
- b. Flush Valve: PERMEX synthetic rubber diaphragm with dual-filtered fixed bypass, ADA compliant metal oscillating non-hold-open handle with triple seal handle packing, fixed metering bypass and no external volume adjustment to ensure water conservation.

4. Lavatory – LAV (Countertop):

- a. Fixture: 20" x 17", vitreous china, countertop, front overflow, faucet ledge, self-rimming, 16" x 10" x 5-5/8" deep bowl, "Aqualyn" No. 0475.020.
- b. Faucet: Two-handle widespread lavatory faucet with conventional spout, "Amarilis/Heritage" Model No. 4801.000.002 with wrist-blade handles Kit No. 372V, cast brass valve bodies with reinforced flexible hose connections, 1/2" male inlet shanks with brass coupling nuts and shank nuts, 1/4 turn washerless ceramic valve cartridges reversible for use with round or lever handles, aerator with 2.5 gpm flow restrictor.
- c. Trap: Catalog No. 4401-014 "P" cast brass trap with tubing drain to wall, 1-1/4" inlet and outlet, ground swivel joint, cleanout plug and escutcheon, chrome finish.
- d. Supply: Catalog No. 2303.154 with flexible tube riser, escutcheon, wheel handle, and chrome finish.

5. Lavatory - LAV (Handicapped):

- a. Fixture: 20-1/2" x 18"-1/4", vitreous china, wall-hung, front overflow, self-draining deck area with contoured back and side splash shields, faucet ledge, 15" x 10" x 6-3/4" deep D-shaped bowl, white, with wall-hanger, "Lucerne" No. 0356.421. Top of front rim mounted 34" from finished floor.
- b. Faucet: Single control lavatory faucet Cebaron Model No. 2081.101X all brass body with metal handle, hot limit safety stop, reinforced flexible hose

connections, brass shank nuts and coupling nuts, washerless ceramic disc valve cartridge reversible for use with round or lever handles, 6-3/4" spout, pop-up drain, with 1-1/4" tailpiece, polished brass finished.

- c. Trap: Catalog No. 4401-014 "P" cast brass trap with tubing drain to wall, 1-1/4" inlet and outlet, ground swivel joint, cleanout plug and escutcheon, chrome finish.
- d. Supply: Catalog No. 2303.154 with flexible tube riser, escutcheon, wheel handle, and chrome finish.
- e. Under-Sink Protective Enclosure: "Truebro" Lav Shield or approved equal.

6. Kitchen Sink

- a. Fixture: "Just" Model No. DL-2233-A-GR, 33" x 22" x 8" deep, double bowl sink, type 304 18 gauge stainless steel, sound deadened, self-rimming.
- b. Faucet: "Just" Model No. J-902, deck mounted single lever washerless mixing faucet with escutcheon and hose spray, 8" spout with aerator, spray head mounted on escutcheon, chrome plated cast brass.
- c. Supplies: 1/2" angle valves with flexible risers and wall flanges.
- d. Trap: 1-1/2" chrome plated cast brass with wall flange.
- e. Food Waste Disposer: "Thermador" Model No. 6T722 Royal Deluxe, 1/2" Hp, 115 V, 1 phase, 60 Hz., 1725 Rpm motor, 1-1/2" brass tubing drain.

7. Shower Valve and Fitting

- a. Ceramix Model 2000.501 Pressure Balance Shower with ceramic disc valve, hot limit safety stop, check stops, direct sweat inlets, polished chrome finish.
- b. Adjustable spray brass shower head with 2.5 gpm flow restrictor.

8. Electric Water Cooler

- a. Unit shall be U.L. listed, air-cooled dual height water cooler complying with ARI Standard 1010-84. Capacity shall be 8.0 gph at 90 degrees F, ambient temperature, 80 and 50 degrees F, entering and leaving water temperatures respectively.
- b. Receptors, backplate and grille shall be heavy gauge stainless steel with No. 4 satin finish. Bubblers shall be one piece polished chrome-plated, with anti-squirt angle stream. Valves shall be chrome-plated brass with self-closing lever handle valves.
- c. Mounting frame manufactured of heavy gauge galvanized steel with predrilled mounting holes.
- d. Push actuation mechanism shall be self-closing, polished chrome plated push buttons, with automatic stream height regulator.

- e. Refrigeration system shall be hermetic using refrigerant 134a. Compressor shall have an automatic reset overload protection. Air cooled condenser shall be non-ferrous construction. Cooling unit shall be tube type with continuous coil of seamless copper tubing, complete with moisture and vermin proof insulation. Thermostat shall have an adjustable range of 45 to 55 degrees F. Motor shall be 430 watts, 115 volts, single phase, and 60 hertz.
- f. Electric water cooler shall be "Haws" Model HWCD8-2 or approved equal.

2.10 ELECTRIC WATER HEATER

- A. Storage tank shall be .064 inch marine grade 316L stainless steel fully MG welded acid washed passivized and shall require anode rod or preventive maintenance. Water storage tank shall be capable to withstand water temperatures up to 212 F(100 C) without degradation. The storage tank shall be designed to operate in a horizontal orientation, test pressure shall be 300 psi operating pressure shall not exceed 150 psi. Units shall be U.L.listed.

2.11 HOSE BIBBS

- A. Hose bibbs shall be "Chicago Faucet Co." No. 998 3/4" key operated sill faucet with cast brass body, 3/4" hose connection, vacuum breaker, flanged inlet, and square head shut-off cocks.

2.12 HOT WATER PIPE INSULATION

- A. Hot water pipe insulation shall be 1-1/2 lb. density 1" thick fiberglass pipe insulation with all service jacket vinyl scrim-butt-joint strips. Insulation shall be products of "Owens-Corning", "Johns-Manville", or "PPG Industries".

2.13. OTHER MATERIALS

- A. All other materials, not specifically described but required for a complete and proper installation of the work of this Section, shall be new, first quality of their respective kinds, and as selected by the Contractor subject to the approval of the Architect.

2.14 WASHER BOX

- A. Fabricated of 18 gauge stainless steel, recessed in wall, complete with 1/2" hose bibbs, and 2" drains. "Guy Gray" Model No. B-200 or equal, 9" x 10-3/4". Provide hose bibbs with vacuum breakers.

2.15 TANK, PUMPS AND PRESSURE BOOSTER SYSTEM (DEDUCTIVE BID ITEM P1.1)

- A. See plans for capacities, manufacturer, and model number of Tank, Pumps and Booster systems.

PART 3 EXECUTION

3.1 INSPECTION

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.
- B. Install all piping promptly, capping or plugging all open ends.
- C. Install all piping generally level and plumb, free from traps, and in a manner to conserve for other work.
- D. Provide uniform pitch of at least 1/4 inch per foot for all horizontal waste and soil piping within the building.
- E. Pitch all vents for proper drainage. Install vent piping with each bend 45 degrees minimum from the horizontal wherever structural conditions will permit.
- F. Conceal all piping unless otherwise shown on the Drawings.
- G. Inspect each piece of pipe, couplings, fittings, and equipment for defects and obstructions. Promptly remove all defective material from the site.
- H. Maintain fixtures to the following heights above finished floor (unless otherwise indicated on architectural drawings):

Lavatory:

- 1. Standard 31 inches to top of basin rim
- 2. Accessible (ADA) 34 inches to top of basin rim

- I. Maintain utilities connections to the following heights above finished floor (unless otherwise indicated on architectural drawings):

		<u>HotWater</u>	<u>ColdWater</u>	<u>Waste</u>
1.	Lavatory	20-3/4"	20-3/4"	19-1/2"
2.	Kitchen Sink	20-3/4"	20-3/4"	19-1/2"
3.	Water Closet:			
	a. Flush Tank Floor Mounted Regular	----	26-1/2"	----
4.	Shower	32"	32"	----

3.2 FIXTURE ROUGH-IN SCHEDULE

- A. Rough-in fixture piping connections in accordance with following table of minimum sizes for particular fixtures:

		<u>HotWater</u>	<u>ColdWater</u>	<u>Waste</u>	<u>Vent</u>
1.	Lavatory	1/2"	1/2"	1-1/2"	1-1/4"
2.	Service Sink	1/2"	1/2"	2"	1-1/2"
3.	Kitchen Sinks	1/2"	1/2"	1-1/2"	1-1/4"
4.	Water Closet	--	1"	4"	2"

3.3 JOINTS AND CONNECTIONS

- A. Preparation: Properly ream all cut pipes. Cut all threads straight and true, apply best quality teflon tape to male pipe threads, but not to inside the fittings. Use graphite on all cleanout plugs.

3.4 HANGERS AND SUPPORTS

- A. Spacing: Do not exceed the following spacing, on centers:

	<u>Type of pipe</u>	<u>Spacing</u>
1.	PVC	Five feet
2.	Copper or steel, 1-1/2 inch and smaller	Six feet
3.	Copper or steel, two inches and larger	Ten feet

- B. Supporting: Use a separate hanger for each branch. Support vertical risers at the floor with extension pipe clamps approved by the Architect.
- C. Secure all branch take-off to fixture immediately before fixture faucet inlet connections, conceal support or clamp in wall.

3.5 EQUIPMENT

- A. Install all equipment in accordance with manufacturer's published instructions and recommendations.

3.6 CLOSING IN UNINSPECTED WORK

- A. Do not cover up or enclose work until it has been properly and completely inspected and approved. Should any of the work be covered up or enclosed prior to all required inspections and approvals, uncover the work as required and, after it has been completely inspected and approved, make all repairs and replacements with such materials and workmanship as are necessary to the approval of the Architect, and at no additional cost to the Owner.

3.7 TESTING

- A. General: Furnish all test pumps, gages, equipment, and personnel required, and test as necessary to demonstrate the integrity of the finished installation to the approval of all

SECTION 16050

BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 GENERAL

- 1.1 RELATED DOCUMENTS: This Section supplements all sections of Division 16, and shall apply to all phases of work specified, shown on the drawings, and required to provide all electrical systems complete and operable for the project. The work required under the Division is not limited to the work shown on the electrical drawings. Refer to site, architectural, structural and mechanical drawings, coordinate all such work to attain fully operational systems throughout the project. The intent of this specification is to provide a complete and operating electrical system in accordance with all Contract Documents.
- 1.2 WORK INCLUDED: Provide all labor, materials, services and skilled supervision necessary for the construction, erection, installation, connection, testing, and adjustment of all circuits and electrical equipment required by the Contract Documents, complete in all respects and ready for use.
- 1.3 SUPERVISION OF WORK
- A. Electrical work shall be under the full supervision of a professional electrical engineer or a master electrician registered to practice in the Territory of Guam. Within 30 calendar days after the Contractor has received the Owner's Notice to Proceed, submit a certification from the Professional Engineer or master electrician stating that the work will be done under his full supervision. At the conclusion of the work, prior to final inspection, submit certification that the work was done in accordance with electrical construction documents and the installation complies with the latest edition of the National Electrical Code.
 - B. Fire alarm system manufacturer's Technical Representative shall supervise, approve and certify installation and testing of Fire Alarm System devices and wiring.
- 1.4 COORDINATION OF WORK
- A. Plan all work so that it proceeds with a minimum of interference with other trades. Coordinate all openings required for equipment and conduit required for work of other trades. Provide all special frames, sleeves and anchor bolts as required. Coordinate electrical work with the mechanical installation.
 - B. Work lines and established heights shall be in accordance with architectural drawings. Verify all dimensions shown and establish all elevations and detailed dimensions not shown.
 - C. Lay out and coordinate all work well in advance to avoid conflicts or interference with other work in progress so that in the event of interference, the electrical layout may be altered to suit the conditions, prior to the installation of any work, and without additional cost to the Owner. Conflicts arising from lack of coordination shall be the contractor's responsibility.
 - D. Maintain all code required clearance around electrical equipment. Unless specifically noted otherwise, establish the exact location of electrical equipment based on the actual dimensions of equipment furnished.
- 1.5 COOPERATION WITH OTHER TRADES
- A. Cooperate and coordinate all work of Division 16 with that of other trades; afford reasonable opportunity for the execution of their work. Properly connect and coordinate this work with

the work of other trades at such time and in such a manner as not to delay or interfere with their work.

- B. Examine the drawings and specifications for the general and mechanical work and the work of other trades. Coordinate this work accordingly.
- C. Promptly report to the Contracting Officer any delay or difficulties encountered in the installation of this work which might prevent prompt and proper installation, or make it unsuitable to connect with or receive the work of others. Failure to report shall constitute an acceptance of the work of other trades as being fit and proper for the execution of this work.

1.6 CODES, PERMITS AND FEES

- A. Perform work in accordance with the National Electrical Code, applicable building ordinances, and other applicable codes, hereinafter referred to as the "Code". Where the Contract Documents exceed minimum requirements, the most stringent shall apply unless variance is approved.
- B. Comply with all requirements for permits, licenses, fees, and codes. Obtain all required permits, licenses, inspections, and pay all fees required to perform the work described in the Contract Documents.
- C. Comply with all requirements of the applicable utility authorities serving the project. Make all arrangements with the utility authorities for proper coordination of the work.

1.7 MATERIALS AND EQUIPMENT FURNISHED BY OTHERS: The electrical work includes the installation or connection of certain materials and equipment furnished by others. Verify installation details. Foundations for apparatus and equipment will be furnished by others unless otherwise noted or detailed.

1.8 CONTRACT DRAWINGS: The Contract Drawings are shown in part diagrammatic, and intend to convey the scope of work, indicating the intended general arrangement of equipment, conduit and outlets. Follow the drawings in laying out the work and verify spaces for the installation of materials and equipment based on actual dimensions of equipment furnished. Wherever a question exists regarding the intended location of outlets or equipment, circuiting, etc., obtain instructions from the Contracting Officer before proceeding with the work.

1.9 EQUIPMENT OR FIXTURES: Equipment or fixtures shall be connected to provide circuit continuity in accordance with applicable codes whether or not each piece of conductor, conduit, or protective device is shown between such items of equipment or fixtures, and the point of circuit origin.

1.10 NEW EQUIPMENT AND MATERIAL:

- A. Unless otherwise specified, equipment and materials of the same type of classification, and used for the same purpose shall be products of the same manufacturer. Use only new and unweathered material.
- B. Furnish products listed and classified by Underwriter's Laboratories, Inc.

1.11 APPLICABLE DOCUMENTS: Design, manufacture, testing and method of installation of all apparatus and materials furnished under Division 16 of the specifications shall conform to the latest publications or standard rules of the following:

Institute of Electrical and Electronic Engineers
(Formerly American Institute of Electrical Engineers) - IEEE
National Electrical Manufacturers' Association - NEMA

Underwriters' Laboratories, Inc. - UL National Fire
Protection Association - NFPA American Society for
Testing and Materials - ASTM American National
Standards Institute - ANSI National Electrical Code -
NEC
National Electrical Safety Code - NESC
Uniform Fire Code - UFC
International Building Code - IBC
Insulated Power Cable Engineers Association – IPCEA
Americans with Disabilities Act Guidelines - ADAG
American Institute of Steel Construction - AISC
Department of Public Works Standards, Government of Guam - DPW
Guam Fire Department Standards, Government of Guam - GFD
Guam Power Authority Standards, Government of Guam - GPA
GTA Standards - GTA
Guam Environmental Protection Agency - GEPA

1.12 EXECUTION OF THE WORK

- A. Install equipment and materials in neat and workmanlike manner and align, level and adjust for proper operation. Install equipment so that all parts are easily accessible for inspection, operation, maintenance, and repair.
- B. Where damage, marring or disfigurement has occurred, replace or refinish the damaged surfaces as directed, and to the satisfaction of the Contracting Officer.
- C. Provide the design, fabrication, and erection of all supplementary structural framing required for attachment of hangers or other devices supporting electrical equipment. Submit design/shop drawing to the Contracting Officer for approval.
- D. Outlet Location:
 - 1. Position of outlets: Center all outlets with regard to panelling, furring and trim. Symmetrically arrange outlets in the room. Satisfactorily correct outlets improperly located or installed. Repair or replace damaged finishes. Set outlets plumb and extend to the finished surface of the wall, ceiling or floor without projecting beyond same.
 - 2. Install all receptacles, switches, and outlets shown on the wood trim, cases or office fixtures symmetrically, and where necessary, set the long dimension of the plate horizontal, or ganged in tandem.

1.13 SPECIAL CONSIDERATION

- A. Cutting, Patching and Piercing: Obtain written permission from the Contracting Officer before cutting or piercing structural members.
 - 1. Use craftsmen skilled in their respective trades for cutting, fitting, repairing, patching of plaster and finishing of materials including carpentry work, metal work or concrete work required for by Division 16. Do not weaken walls, partitions or floor by cutting. Holes required to be cut in floors must be drilled or cored without breaking or spalling around the holes. Do all necessary patching and/or refinishing as instructed by the Contracting Officer.
 - 2. Sleeves through floors and walls to be galvanized rigid steel flush with walls, ceiling or finished floors; size to accommodate the raceway.

3. Use care in piercing waterproofing. After the part piercing waterproofing has been set in place, seal opening and make absolutely watertight.
 4. Provide baked white enamel painted spring-clipped escutcheon plates where exposed pipe passes through walls, floors, or ceilings. Cover sleeves and entire opening made for the pipe with escutcheon plates. Field applied paint finish shall match color of surrounding finish. Seal all conduit openings through floor slabs, masonry walls, and continuous partitions to make air and watertight. Tightly caulk space between conduit and abutting materials with fiberglass insulation and nonflammable sealant.
- B. Seal equipment or components exposed to the weather and make watertight and insect-proof. Protect equipment outlets and conduit openings with temporary plugs or caps at all times that work is not in progress.
- C. Equipment Access: Locate starters, switches, receptacles, and pull boxes to allow easy Equipment Identification: Identify each piece of equipment including disconnect switches and motor starters, with plastic laminate nameplates, black face with white core letters, having proper and complete identification. Clearly identify on the equipment served, and spell out the full name of the equipment, such as "Air Handling Unit AHU-1" and "Hot Water Cir. Pump P-1". Do not use abbreviated plan references such as "AHU-1" or "P-1".
- D. Equipment Access: Locate starters, switches, receptacles, and pull boxes to allow easy access for operation, repair and maintenance, and if concealed, provide access doors.
- E. Equipment Bases: Provide equipment bases on all floor-mounted equipment furnished under this Contract.
- F. Protection of apparatus, materials and equipment: Take all necessary precautions to properly protect all apparatus, fixtures, appliances, material, equipment and installations from damage of any kind. The Contracting Officer may reject any particular piece or pieces of material, apparatus, or equipment which has scratches, dents or otherwise damaged.
- G. Operation and Maintenance Manuals: During the time of the Contract and before final acceptance of the electrical installation, submit to the Contracting Officer three copies of all descriptive literature, maintenance recommendations from the equipment manufacturer, data of initial operation, wiring diagrams and parts list of each item of electrical equipment installed under the Contract; submit all manufacturer's guarantees and warranties. Submittal shall include: switchboards, motor control centers, generators, and fire alarm system.
1. Refer to Division 1 for additional requirements.
- H. Painting Preparation: Prepare all exposed fittings, boxes, supports and panelboards for painting; remove traces of oil, grease and dirt. Employ all necessary precautionary methods to prevent scratching or defacing of all electrical apparatus and devices.
- I. Painting: Exposed conduit, boxes installed after room has been painted, shall be painted to match room finish by this contractor.
1. Corrosion Control: All corrosive metal surfaces, conduits/fittings, pipelines and structures shall be provided with corrosion inhibiting primer before installation. Appropriate surface preparation shall be made before application of primer.
- J. Rust Prevention: Provide hot dip galvanized finish for all ferrous materials. In addition, outdoor installations shall be field painted with two coats of enamel paint.

- K. Tests: Provide all tests as outlined hereinafter, and other tests necessary to establish the adequacy, quality, safety, completed status, and suitable operation of each system. Tests shall be conducted in the presence of the Contracting Officer.
1. Ground Rod Test: Immediately after installation, test driven grounds with direct-reading single-test megger, utilizing the AC fall-of-potential method and two reference electrodes. Orient the ground to be tested and two reference electrodes in a straight line spaced 50 feet apart. Drive the reference electrodes 5 feet deep. Disconnect the ground rod to be tested from other ground system at the time of testing. Ground resistance for the electrical service shall be 25 ohms or less. Ground resistance for communication system shall meet manufacturer's minimum requirements. Submit the results, date of test, and soil conditions, to the Contracting Officer in writing, immediately after testing.
 2. System voltage at each panelboard measure voltage between phases; phase to neutral; phase to ground; and neutral to ground. Measurements shall be conducted during unloaded condition and repeated during loaded condition. Adjust system voltage to within $\pm 3\%$ of nominal voltage.
 3. Insulation resistance of conductors.
- L. Seismic Consideration: Installation shall meet Seismic Zone 4 requirements.
- M. Windload Consideration: Installation exposed to outdoors shall be designed to withstand 170 MPH wind speed IBC 2009 Exposure C and ASCE7-05.

1.14 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Division.
- B. Without additional cost to the Owner, provide such other labor and materials as are required to complete the work of this Division in accordance with the requirements of governmental agencies having jurisdiction, regardless of whether such materials and associated labor are called for elsewhere in these Contract Documents.

1.15 PROTECTIVE DEVICES COORDINATION STUDIES

Contractor shall provide the services of a qualified relay coordination engineer to perform a complete relay coordination study of the entire electrical distribution system. The studies shall include a complete single-line diagram of the power system covered by this specification, time-current characteristic curves, current transformer ratios, and relay device numbers and settings; fully coordinated composite time-current characteristic curves including recommended ratings and settings of all protective devices in tabulated form. Provide associated calculations to demonstrate that the power system protection will be selectively coordinated by the use of devices or equipment supplied. These studies shall be certified by a registered Professional Electrical Engineer. Final copy of the report shall be incorporated in the electrical O&M Manual. Perform testing and calibration of power relays by a certified relay technician.

1.16 ELECTRICAL SERVICE

- A. Electrical service to the building is as indicated on the drawings.

- B. Make all necessary arrangements with the serving utilities, and pay all costs and fees, assessed to the project by the serving utilities. All work shall be in accordance with serving utilities standards and subject to their approval. Coordinate the installation of service entrance equipment with GPA prior to start of construction.
 - C. Application for power service must be submitted to GPA eight months before service connection to allow for timely delivery of transformers.
- 1.17 PRODUCT HANDLING: Comply with pertinent provisions of Division 1.
- 1.18 WARRANTY: Provide one year warranty on all labor and materials.
- 1.19 AS-BUILT DRAWINGS
- A. The Contractor shall maintain at the site one copy of all Drawings, Specifications, Addenda, approved Shop Drawings, Change Orders, and other modifications, in good order and marked to record all changes made during construction. These shall be made available to the Contracting Officer.
 - B. At the conclusion of the work, the Contractor will be furnished by the Contracting Officer, at the Contractor's expense, a set of reproduces made from original contract plans. The Contractor shall then incorporate all changes made, as recorded, into the set of reproduces in a clear, legible and reproducible manner. All feeders, main alarm and communication lines, service entrance, and stub-outs shall be dimensionally located within the building structure. As a condition for acceptance of work, "as-built" reproduces shall be signed by Contractor attesting that all changes have been incorporated, dated and delivered to the Contracting Officer.
- 1.20 SPARE PARTS AND MAINTENANCE PRODUCTS
- A. Provide spare parts, maintenance, and extra Products in quantities specified in individual specification sections.
 - B. Deliver to Project site and place in location as directed; obtain receipt prior to final payment.

END OF SECTION

SECTION 16208

DIESEL ENGINE-GENERATOR SET

PART 1 GENERAL

- 1.1 RELATED WORK SPECIFIED IN OTHER SECTIONS: Section 16050 "Basic Electrical Materials and Methods," applies to this section except as specified otherwise.
- 1.2 DESCRIPTION: Provide diesel electric generating unit with accessories, auxiliary equipment, and associated work as specified.
- 1.3 QUALITY ASSURANCE: Provisions of Division 1 apply.
 - A. Operating Experience Requirements: Engines installed shall meet all of the operating experience requirements listed below:
 1. Only electric generation service is considered as equivalent experience. Engines driving pumps or compressors, or those in marine propulsion or railroad service, are not acceptable.
 2. Only experience on the same engine model is acceptable. Engine model is considered to be a given series or class of identical bore and stroke and of the same type of engine, such as in-line or Vee. In-line and Vee engines with identical bore and stroke are considered as two separate models of engines.
 3. Only experience at the identical rotative speed as that which is offered is acceptable.
 4. Only experience at the identical or higher brake mean effective pressure as that which is offered is acceptable.
 5. Only experience with fuel oil is acceptable.
- 1.4 SUBMITTALS
 - A. Furnish certificate(s) within 30 days after award certifying that not less than two engines of identical number of cylinders and cylinder size, identical rotative speed, and identical or higher BMEP, and of the same basic configuration (in-line or Vee) as the engine to be furnished, shall have driven generators which have satisfactory operated not less than 3-years. Certificate(s) shall include:
 1. A list of at least two engine installations meeting the experience requirements set forth in paragraph entitled "Operating Experience Requirements".
 2. Owner and location of each such installation.
 3. Date of initial operation of each such installation.
 4. Number of KW hours produced at each installation.
 5. Horsepower rating, KW rating, and rotative speed of each unit.
 6. Design characteristics of each unit, such as bore and stroke, number of cylinders, and configuration (in-line or Vee).

- B. Manufacturer's Data:
 - 1. Diesel engine driven electric generator set.
 - 2. Valves.
 - 3. Fuel oil day tank (specified under Division 15).
 - 4. Fuel line strainers.
 - 5. Engine muffler.
- C. Shop Drawings and Calculations: Submit for diesel generating unit and auxiliary equipment, including the following:
 - 1. Certified outline, general arrangement (setting plan), and anchor bolt details. Drawings shall show the total weight and center of gravity of the assembled equipment on the mounting skid.
 - 2. General arrangement drawings showing location of all auxiliary equipment in relation to the diesel generating unit.
 - 3. Piping schematics for fuel oil, lubricating oil, jacket water, and cooling water integral with diesel engine.
 - 4. Battery sizes and cranking time calculations.
 - 5. Critical speed calculations.
 - 6. Drawings for the transfer switch, including certified outline, electrical ratings, general arrangement, and detail drawings.
 - 7. Electrical elements, schematics and wiring diagrams, including details of the safety shutdown systems and main generator circuit breaker trip system.
- D. Certified Test Reports:
 - 1. Diesel engine shop tests.
 - 2. Generator shop test.
 - 3. Diesel engine driven electric generator set shop tests.
 - 4. Automatic transfer switch.
 - 5. Radio-interference suppression.
- E. Manuals: Provide two sets of operation and maintenance manuals for equipment. Identification symbols for all replaceable parts and assemblies shall be included. Information in manuals shall be comprehensive and specific.
- F. Safety Requirements: Comply with ANSI B15.1.

- G. Approved Manufacturers: Manufacturer shall have local on-island distributor with spare parts and repair services available.

1. Generator Set:

- a. Caterpillar
- b. Onan
- c. Kohler

PART 2 PRODUCTS

2.1 MATERIALS

- A. Standard Commercial Product: Generator set shall, as a minimum, be in accordance with the requirements of this specification and shall be the manufacturer's standard commercial product with any added features needed to comply with the requirements. Additional or better features which are not specifically prohibited by this specification, but which are a part of the manufacturer's standard commercial product shall be included in the generator set being furnished. Standard commercial product is a product which has been or will be sold on the commercial market through advertisements or manufacturer's catalogs, or brochures, and represents the latest production model(s).
- B. Materials and Equipments: Furnish new materials of high quality which will give long life and reliable operation. Equipment shall not have been in prior service except as required by factory test. Workmanship shall be of highest quality in every detail.

2.2 DIESEL-ELECTRIC GENERATOR SET AND AUXILIARY EQUIPMENT: Each generator set shall consist of a diesel engine connected to an alternating current generator with brushless excitation system mounted on a steel subbase and provided with all necessary accessories, auxiliaries, and control equipment resulting in a complete self-contained unit capable of operation. Set shall be arranged for automatic unattended starting. Generator set must be capable of providing full rated power within 10 seconds after failure of normal power. Generator set shall be "tropicalized".

- A. Equipment Rating and Capability: Diesel-electric generating set shall have a standby rating indicated at 0.8 power factor. Gross KW rating of each diesel generating set shall be not more than the figure obtained by multiplying the delivered shaft horsepower rating of the engine by 0.746 and by the overall efficiency of the generator at the corresponding load. Overall efficiency of the generator shall allow for power required to operate the exciter. Rated net capacity of each generating set is defined as gross electrical power output of generator minus total electrical power requirements of electric motor driven engine accessories normally constituting part of "engine assembly," as defined in DEMA publication "Standard Practices for Stationary Diesel and Gas Engines." All auxiliary equipment furnished shall be designed for continuous duty at 110 percent of rated net capacity of generating set.
- B. Critical Speeds: Each complete diesel-electric generating set shall be free of critical speeds of either a major or minor order that will endanger satisfactory operation of the set. Satisfactory operation will be considered endangered if torsional vibration stresses exceed 5,000 psi within 10 percent above or below rated engine speed.

2.3 DESIGN AND CONSTRUCTION: Rotating or reciprocating parts, or other parts that may present a hazard to operating personnel shall be isolated or shielded to minimize danger. Design characteristics shall limit operating temperatures at critical points of maximum wear at full-load operating conditions.

2.4 DIESEL ENGINE AND ACCESSORIES

- A. Engine shall be 4-cycle, naturally aspirated, turbocharged, turbocharged-intercooled, vertical in-line or vertical "V" type. Design and construct engine so as to eliminate undue heating, vibration, and wear. Engine shall be capable of burning diesel fuel oil conforming to Fed. Spec. W-F-800 (Grade DF-2). Limiting characteristics of engine shall be as follows:
 - 1. Maximum engine speed, 1,800 rpm:
 - 2. Maximum piston speed, 1,950 fpm:
- B. Base rating of each engine on plant site elevation of 1,000 feet above mean sea level and an atmospheric temperature of 104 degrees F. Offer engine only at speeds and ratings not higher than those for which they have been designed, which fulfill requirements specified in paragraph entitled "Operating Experience Requirements."
- C. General Construction: Engine shall be constructed adequately to withstand sudden changes from no load to rated load, and to preserve alignment of integral components under all conditions of operation. Engine shall be neat in appearance and shall permit easy access to various parts for maintenance purposes. The crankshaft shall incorporate drilled passages for pressure lubrication of bearings, and the journals shall be hardened or chromium plated to provide a hard shock-resistant surface with ductile core. Crankshaft and connecting rod bearings shall be the replaceable precision sleeve type. Cylinders shall be provided with replaceable liners. The piston rings shall be constructed of a heat-resisting alloy steel or chromium plated cast iron. Camshafts shall be gear or chain driven, and shall have higher wear resistance at cams and journals. Timing marks shall be clearly indicated on the crankshaft and gears. Valves shall operate in removable stem guides and seat inserts. The fly-wheel shall be balanced, and shall be capable of being rotated 50 percent above the maximum rated engine rotative speed without danger of breaking or exploding. Flywheel housings shall be provided with a drain hole at the lowest point. Means for turning the crankshaft manually shall be provided.
- D. Assembly: Completely factory assembles each engine. Mount turbocharger, intercooler if provided and all piping integral with the engine on the engine.
- E. Engine Speed Governing System: Governing system shall be electronic type suitable for controlling the speed of the generator set within the requirements specified herein without intermediate adjustment and shall maintain the specified stability without hunting or cycling.
 - 1. Speed (Frequency) Governing System: Set shall have an engine speed (frequency) governing system conforming to IEEE 126, Section II. Engine speed governing system shall be adjusted to meet the performance requirements of IEEE 126, Section II, when tested in accordance with ASME PTC26.
- F. Overspeed Shutdown Device: The overspeed shutdown device shall be entirely independent of the engine speed governing system and shall consist of solid-state overspeed device positive engaged so that engine speed shall not exceed 110 percent of synchronous speed, and shall react to shut-off the engine's air or fuel supply and trip the set output circuit breaker. The overspeed device shall require manual resetting after emergency tripping.
- G. Engine Fuel System: The engine shall be provided with all necessary equipment, including piping, fittings, valves, fuel coolers, filters, strainers, day tank, and appurtenances. A mechanical fuel injection system shall be employed. Injection pump shall be driven in a positive manner from cam or drive shaft. Injection pump and injection valves shall be of type

not requiring adjustment in service and shall be capable of quick replacement in a few minutes by ordinary mechanics without special diesel experience. A pump for priming the fuel system shall be provided to facilitate easy starting. Internal parts forming the high-pressure portion of the fuel system shall have wear-resistant surfaces where relative movement between surfaces exists. The fuel system shall include the following fuel related equipment supplied and factory installed by the engine-generator set manufacturer. A sub-base fuel storage tank with capacity of minimum 24 hours continuous operation at 80% capacity. It shall have the structural integrity to support the engine generator set along with the associated vibrations and shall be designed to meet Seismic Zone 4 requirements. Minimum features shall include double walled all welded construction, fuel gauge, low fuel alarm, line check valve, fuel leak indicator and fittings for fuel supply fill and vent.

- H. Engine Lubricating Oil System: Provide with a full pressure lubricating system arranged to distribute oil to all moving parts of the engine and to cool the pistons. System shall include an engine-driven positive displacement pump, pressure regulating valves, oil filter, oil pressure indicator, crankcase ventilator for four-cycle engines, and the necessary piping and fittings. The pump shall have ample capacity to circulate the lubricating oil required for engine lubrication, and to cool the pistons. All necessary stop, check, pressure relief, and pressure control valves shall be provided.
1. Lubricating Oil Filters: Shall be the full-flow type (throw-away-type) and shall be capable of filtering the full rate of oil flow of the oil pump at maximum engine speed. Means shall be provided to insure delivery of lubricating oil to vital wearing surfaces regardless of the condition of the filter. Additionally, the filter must provide a means of automatically bypassing filter if it should become flow-restricting.
 2. Lubricating Oil Coolers: Provide to maintain the lubricating oil within the temperature limits recommended by the manufacturer. Oil cooler shall utilize the engine jacket cooling water from the radiator as the cooling medium. Temperature rise of the jacket water across the lubricating oil cooler shall be limited so that the temperature of the water leaving the lubricating oil cooler will be not higher than the optimum temperature as recommended by the engine manufacturer for jacket water to the engine. Cooler shall be either the shell and tube single or multipass design, or shall be built in as an integral part of the engine cooling radiator. The core shall be constructed of copper base alloys. The cooler shall be designed for jacket water to pass through the tubes. The temperature of the oil to the engine shall be maintained at a reasonably constant value. Thermostats used in the oil cooler shall be of the nonadjustable type and factory set at the temperature as recommended by the manufacturer. Where temperature of the oil in the cooler is regulated by controlling the jacket water temperature, the system design shall assure proper oil temperature under operating conditions.
- I. Engine Cooling System: The radiator fan shall direct the air flow from the engine outward through the radiator, with horizontal air discharge. The fan shall be driven directly from the engine crankshaft or through V-belt drive. The radiator shall have sufficient capacity to dissipate not less than the total British Thermal Units per hour rejected by the engine to the cooling system at 110 percent rated load in 104 degrees F ambient, and against a static restriction of 0.5 inches of water as may be imposed by louvers, ductwork, etc. Cooling section shall have a tube and fin type core which shall consist of copper or copper base alloy tubes with nonferrous fins. The radiator shall be protected by a strong grille or metal bar guard on the exterior, and the fan shielded with a metal canopy. Filler caps shall be designed for pressure relief prior to removal. A thermostatic control valve shall be installed in the jacket water system of the engine to maintain the water system temperature of the engine. The thermostatic valve shall be the standard modulating type utilizing self-contained thermostats. The valve shall be capable of passing the water flow as determined by the

manufacturer without excessive pressure drop across the valve. The valve shall be provided with one or more interchangeable thermostatic elements. The elements shall be nonadjustable type and the operating temperature shall be set at the temperature recommended by the engine manufacturer. The valve shall be designed so that in event of the thermostatic element failure, water will be able to flow through the engine. Radiator core shall be treated with anti corrosion coating.

- J. Engine Exhaust System: Provide a complete exhaust system, including exhaust flexible connection and residential type silencer.
- K. Engine Air Induction System: The air induction system shall be equipped with heavy-duty dry type air cleaners of adequate capacity to effectively remove the dirt and abrasives from the combustion air to the engine. When the engine air intake noise level is above the audible mechanical noise level of the engine, a combination filter-silencer or a separate silencer shall be provided. For two-stroke engines, an air intake shutoff shall be provided which shall be operated by the engine overspeed shutdown device.
 - 1. Scavenging air blowers for two-stroke cycle engines shall be built integrally with and driven directly from the engine.
 - 2. Turbocharger shall be a combination centrifugal blower driven by an exhaust gas turbine, with the air blower directly connected to the intake air manifold. Systems that require cooling of the intake air below ambient air temperature ahead of the turbocharger or scavenger air blower will not be acceptable. They may be lubricated from the engine pressure lubrication system or as recommended by the manufacturer. All necessary supports and connections shall be provided.
 - 3. Intercooler: Tubular heat exchangers will be accepted only if available jacket water can be used as the cooling medium. Supplementary water cooling equipment is not acceptable. When intercooling is included, provide and install on the engine all necessary intercooling equipment, including valves, controls, and integral piping.
- L. Cranking System: NEMA ICS 1 and NEMA ICS 2. An electric cranking system shall be furnished, capable of rotating the engine at a speed sufficient for rapid starting in an ambient temperature of 60 degrees F. The system shall be arranged to permit starting of the engine automatically upon signal from the automatic transfer switch.
 - 1. Cranking: The electric cranking system shall utilize direct current (DC) electrical circuit, with the negative polarity grounded, energized by storage batteries. The cranking motor shall be of the heavy-duty type with adequate capacity to crank the engine continuously to start the engine in an ambient temperature of 60 degrees F. The drive mechanism for engaging the starting motor with the engine flywheel shall be designed to inherently engage and release without binding. When the engine starts, a "stop cranking" switch, which is engine speed actuated, shall cause disengagement of the starting gearing and the shutdown of the starting motor. Starting shall be automatic. Automatic cranking panel shall crank the engine for 15 seconds cranking and 15 seconds off for three consecutive cycle before locking out the starting circuitry, sounding an alarm and illuminating an "overcrank" indicating light which shall remain lighted until it is manually reset.
 - 2. Storage Battery: The engine cranking battery shall be S.A.E. Type "D", diesel engine starting type and of sufficient size and capacity in a fully charged condition to start the engine-generator six consecutive times. Batteries shall comply with Fed. Spec. W-B-133.

3. Battery Charger: The battery charger shall be enclosed, wall-mounted, automatic, dual rate, solid-state, constant voltage type having AC voltage compensation, DC voltage regulation, and current limiting. The charger shall employ transistor-controlled magnetic amplifier circuits to provide continuous taper charging. Charger shall have two ranges, float and equalize, with 0-24 hour equalizer time, DC cranking relay, silicon diode full-wave rectifiers, automatic surge suppressors, DC ammeter, DC voltmeter, and fused inputs and outputs. Charger shall have a continuous rated output of not less than 10 amps. Battery charger shall conform to UL 1236.
- M. Safety Shutdown Controls and Alarms: Control shall be provided that will function to immediately shut off delivery of fuel to the engine cylinders, when actuated by a condition of low lubricating oil pressure, high water temperature, overspeed, or low water level. The values at which the controls for low lubricating oil pressure and high water temperature are actuated shall be as recommended by the manufacturer, and the overspeed governor shall be set to actuate at the value specified herein. The low lubricating oil pressure shutdown control shall be provided with a means to make it inoperative during the period of low oil pressure when the engine is started. Each shutdown shall initiate its individual light and sound an alarm within the cranking panel, and shall require manual reset to release each indicating light. Normal startup and shutdown shall not actuate the manual reset indicator system.

2.5 GENERATORS AND EXCITATION SYSTEMS

- A. Generators: The generators for each unit shall be rated as indicated, 60 Hz, 0.80 power factor alternating-current type with revolving field. The speed of the generator shall be that of the engine. The generator shall be capable of carrying continuously an 0.80 power factor load equal to the gross kilowatt rating of the diesel generating unit at normal voltage and with a temperature rise of not more than 130 degrees C as measured by resistance based on 40 degrees C ambient temperature. Enclosures shall be the general-purpose open type with ventilating openings covered with removable screens having a mesh not larger than 1/2 inch. The generator shall conform to ANSI C50.10, and to NEMA MG-1. The generator shall have Class H insulation. The stator winding shall be arranged for "wye" connection with both line and neutral leads of each of the three-phase windings brought out of the bottom of the generator frame, and the neutral grounded. The generator and flywheel shall have sufficient flywheel effect to meet the requirements of regulation and operation as specified. The rotor shall have continuous or interconnected amortisseur windings. The generator rotor shall be mounted on an extended shaft which shall be coupled rigidly to the engine crankshaft. Impellers shall be mounted on the rotor for cooling the generator. The rotor shall be capable of safe operation at a speed 25 percent in excess of its rated synchronous speed. The generator armature, field, and ground leads shall have clamp-or crimp-type lugs or connectors for electrical connections. Terminal markings shall conform to NEMA MG-1.
 1. Generator Space Heater: Provide 120 ac volt heaters. Heater capacity shall be as recommended by the generator manufacturer to aid in keeping the generator insulation dry.
- B. Excitation and Voltage Regulation System: The excitation system shall be the integral brushless-type consisting of a rotating AC exciter and rectifier diode assembly together with a static-type voltage regulating system and including surge protection and the required accessories. The system shall serve as an individual excitation and regulation system for the generator specified herein, and there is no requirement for parallel operation with other exciters. The excitation system shall have a continuous current rating of not less than the generator excitation current required when the generator operates at 105 percent rated voltage under the condition of continuous rating requiring maximum field current. The

voltage rating of the system shall be as required to match the generator field requirements. The excitation system response ratio shall be not less than 0.5 and the ceiling voltage shall be not less than 120 percent of rated voltage.

1. Exciter: The exciter shall be a rotating AC generator having a rotating armature on the rotor spider and a stationary field on the stator frame. The exciter insulation shall be Class B and the temperature rise shall not exceed 70 degrees C when measured by resistance based on a 40 degree C ambient temperature.
2. Rectifiers: Shall be full-wave silicon diode type, with each diode protected by individual fuses. The rectifiers shall be mounted on the rotating part of the exciter to convert AC exciter output to DC for the main generator excitation. Connections shall be provided between the exciter, rectifiers, and generator field without use of brushes or slip rings.
3. Voltage Regulator: The voltage regulator shall be completely solid-state type for control of generator voltage by control of the exciter field. The regulator shall be suitable for mounting in the generator switchgear. The regulator shall control the generator exciter field as required to maintain a constant and stable generator output voltage within plus or minus 1/4 of one percent of nominal for all steady-state loads from no load to full load, including a 5 percent variation in frequency and the effects of field heating. The regulator shall be designed for single-phase voltage sensing. Electromagnetic interference suppression shall be an integral part of the regulator. Thermal protection for power semiconductors, inherent overvoltage protection, and fuse protection shall be provided internally in the regulator. No electrolytic capacitors, vacuum tubes, or electromechanical relays shall be used in the voltage regulator. The regulator shall have provisions for switching to manual control to allow the generator voltage to be controlled either manually or automatically. The following regulator components shall be mounted on the front of the generator switchgear:
 - a. Voltage adjusting rheostat.
 - b. Manual voltage control with adjusting rheostat and manual automatic-off transfer switch.
4. Engine-Generator Instruments and Controls: NEMA ICS 1, 2, 3, 4, and 6.
5. Engine Instruments: Include the following as minimum components:
 - a. Lubricating Oil Pressure Gauge: Shall be electronic, utilizing a Bourdon tube for confining the pressure medium. The Bourdon tube shall be seamless and made of phosphor bronze. Gauge shall be accurate to within 2 percent of full scale reading. Gauge subject to rapid pressure surges shall be properly suppressed.
 - b. Coolant Temperature Indicators: Shall be electronic. Capillary tubing shall be covered with a protective casing throughout its entire length and reinforced with an additional casing at the connection to the bulb or socket. The temperature indicator shall be accurate to within 2 percent of full scale reading.
 - c. Running Time Meter: Totalize engine running time to 9999.9 hours total.

- d. Oil Temperature Gauge: Shall be indicating dial type. Indicator shall be accurate to within 2% of full scale reading.
 - e. Fuel Pressure Gauge: Shall be indicating dial type, utilizing a Bourdon tube. Gauge shall be accurate to within 2% of full scale reading.
 - 6. Generator Controls and Instruments: NEMA ICS 1, 2, 3, and 4 and shall include the components listed below: Instruments shall comply with ANSI C39.1.
 - a. Voltmeter and Ammeter: Semiflush mounted electronic type.
 - b. Frequency Meter: Analog or Electronic type.
 - c. Control Switches: Voltage and ampere ratings suitable for the intended use. Contacts shall be rated in accordance with NEMA Standards ICS 2-125.
 - d. Generator Output Circuit Breaker: Shall comply with Fed. Spec. W-C-375. Molded case type, trip-free, and shall be mounted to allow operation from outside the control panel. Frame size shall be adequate for generator amperage when operating at standby rating, and an adjustable trip shall be provided. Lugs shall be provided for electrical connections.
 - e. Voltage adjustment rheostat.
 - f. Panel lights and control switch.
 - g. Alarm indicating panel.
- 2.6 GENERATOR CIRCUIT BREAKER: UL 489, molded case, adjustable thermal magnetic trip type circuit breaker. The circuit breaker continuous current rating shall be adequate for the power rating of the engine-generator set and the circuit breaker shall be rated to withstand the short circuit current provided by the generator set. Provide circuit breaker in a NEMA ICS 6, Type 1 enclosure mounted on the engine-generator set.
- 2.7 BASE ASSEMBLY AND ENCLOSURE: NEMA ICS 6.
 - A. Engine-Generator: Shall be mounted on a fabricated steel skid base suitable for supporting, transporting, and skidding engine and generator without damage to equipment or alignment.
 - B. Vibration Isolators: Shall be provided to isolate the engine-generator set from the building floor. At least four isolators, as recommended by the isolator manufacturer, are required. The isolators shall be manufactured by a firm specializing in this product, and the unit shall be specifically listed for this application and have a maximum deflection of one inch. Isolators shall be suitable for outdoor application and shall be corrosion resistant.
- 2.8 TREATMENT AND PAINTING: All parts, including engine subject to high temperature, shall be treated and painted in accordance with manufacturer's standards. The generator and all associated electrical equipment shall be thoroughly cleaned and treated prior to painting. Color shall be manufacturer's standard.

PART 3 EXECUTION

- 3.1 INSTALLATION: Installation shall conform to the requirements of NFPA 70. Muffler and fuel connections shall be made under the Mechanical sections of this contract.

- 3.2 DIESEL ENGINE-GENERATOR: Install diesel generating unit as indicated. Provide vibration isolators to isolate vibrations from the diesel generating unit to the foundation.
- 3.3 TESTING: Perform the following tests on the generator set system provided. The Contracting Officer shall be given 5 working days' notice prior to each test. The Contractor shall provide all test equipment, load bank, fuel, lubricants, and personnel and submit written copies of all test results.
- A. Factory Tests: The engine-generator shall be subject to the manufacturer's standard run-in and conditioning tests. Following the run-in tests, test the engine-generator set at rated speed and voltage for 4 hours of continuous operation with 2 hours each at 50 and 100 percent of rated load, consecutively, 0.8 power factor. Determine generator frequency, phase current, and voltage and record at 15-minute intervals. Run tests on the voltage regulator to determine the variation in terminal voltage under conditions of constant load, and under conditions of abrupt load changes to determine the maximum voltage change during the surging period and the time required as specified in paragraph entitled "Voltage Regulator".
1. Speed Governing Test: Engine speed governing system shall be tested in accordance with ASME PTC26.
- B. Field Tests and Inspections: The Contractor shall perform all field tests and trial operations, and conduct all field inspections (except final field inspection). The Contractor shall provide all labor, equipment, load bank, and incidentals required for the tests. The Government Representative(s) will witness all field tests and trial operations, and conduct final field inspections. The Contractor shall give the Contracting Officer ample notice of the dates and times scheduled for tests, trial operations, and inspections which require the presence of the Owner Representative(s). All deficiencies found shall be rectified and work affected by such deficiencies shall be completely retested at the Contractor's expense. A qualified factory representative shall assist the Contractor with the field checkout, startup, and test. Field tests shall include the following:
1. Demonstrate proper operation of all systems.
2. Simulate power failure and demonstrate complete automatic start, load, unload, by-pass, and stop sequence.
3. Conduct 6-hour load run utilizing Contractor-furnished portable load banks as follows:
- a. 1/2 load--2 hours
- b. Full load--4 hours
- C. Failure to Meet Requirements: In the event any of the equipment fails to meet specified performance or fails to operate satisfactorily, the Owner shall have the right to operate the equipment until the defects have been corrected. Any equipment proved to be faulty or inadequate for the service specified will be rejected, but the Owner shall have the right to operate the rejected equipment until such time as new equipment is provided by the Contractor to replace the equipment rejected.
- D. Instruction of Operators: After equipment is ready to be placed in service, the Contractor shall provide the services of the manufacturer's technical representative to fully instruct the Owner's designated plant operators in operation and maintenance of the equipment.

- E. Cleaning: Clean work under provisions of Division 1. Clean engine and generator surfaces.
Replace oil and fuel filters.
- F. Operating Permit: Obtain EPA operating permit.

END OF SECTION

SECTION 16402
INTERIOR WIRING SYSTEMS

PART 1 GENERAL

- 1.1 RELATED REQUIREMENTS: Section 16050, "Basic Electrical Materials and Methods," applies to this section with additions and modifications specified herein.
- 1.2 SUBMITTALS
- A. Shop Drawings - Submit for the following:
Panelboards
 - B. Manufacturer's Data:
Receptacles
Circuit breakers
Switches
Conduit and fittings (each type)
Surface metal raceway
Ground rods Device
plates Insulated
conductors
Outlet and junction boxes
 - C. Test Reports: Submit test results for approval in report form.
 - 1. 600-volt wiring test.
 - 2. Grounding system test.
- 1.3 QUALITY ASSURANCE: In each standard referred to herein, consider the advisory provisions to be mandatory, as though the word "shall" has been substituted for "should" wherever it appears. Interpret references in these standards to "authority having jurisdiction," or words of similar meaning to mean Contracting Officer.

PART 2 PRODUCTS

- 2.1 MATERIALS AND EQUIPMENT: Materials, equipment and devices shall, as a minimum, meet the requirements of UL, where UL standards are established for those items, and the requirements of NFPA 70.
- 2.2 CONDUIT AND FITTINGS
- A. Rigid Steel Conduit (Zinc-Coated): ANSI C80.1, UL 6.
 - B. Rigid Aluminum Conduit: ANSI C80.5, UL 6.
 - C. Rigid Nonmetallic Conduit: PVC Type EPC-40, in accordance with NEMA TC2 fiberglass conduit in accordance with NEMA TC14.

- D. Electrical Metallic Tubing (EMT): UL 797, ANSI C80.3.
 - E. Plastic-Coated Rigid Steel and IMC Conduit: NEMA RN1, Type 40 (40 mils thick).
 - F. Flexible Metal Conduit: UL 1.
 - 1. Liquid-Tight Flexible Metal Conduit (Steel): UL 360.
 - G. Fittings for Metal Conduit, EMT and Flexible Metal Conduit: UL 514B. Ferrous fittings shall be cadmium- or zinc-coated in accordance with UL 514B.
 - 1. Fittings for Rigid Metal Conduit and IMC: Threaded type. Split couplings unacceptable.
 - 2. Fittings for EMT: Compression-type.
 - 3. Fittings for use in Hazardous Locations: UL 886.
 - H. Fittings for Rigid Nonmetallic Conduit: NEMA TC3.
- 2.3 SURFACE METAL RACEWAY AND FITTINGS: UL 5, two-piece painted-steel, totally-enclosed, snap-cover type. Provide multiple-outlet type raceway with grounding-type receptacle where indicated. Receptacles shall be as specified herein and shall be spaced as indicated.
- 2.4 OUTLET BOXES AND COVERS: UL 514A, cadmium- or zinc-coated, if of ferrous metal. UL 514C, if nonmetallic.
- A. Floor Outlet Boxes: Boxes shall be adjustable and concrete-tight. Each outlet shall consist of a nonmetallic or cast-metal body with threaded openings or sheet-steel body with knockouts for conduits, adjustable ring, brass flange ring, and cover plate with 1-inch or threaded plug. Telephone outlets shall consist of a flush brass housing with one-inch bushed side opening. Telephone outlets shall have provisions to accommodate a 10-wire telephone terminal block. Receptacle outlets shall consist of flush brass housing with a duplex-type receptacle, as specified herein. Gaskets shall be used where necessary to ensure watertight installation.
- 2.5 CABINETS, JUNCTION BOXES AND PULL BOXES (WITH VOLUME GREATER THAN 100 CUBIC INCHES): UL 50, hot-dip zinc-coated, if of sheet steel.
- 2.6 WIRES AND CABLES: Wires and cables shall meet the applicable requirements of NFPA 70 and UL for the type of insulation, jacket, and conductor specified or indicated. Wires and cables manufactured more than 12 months prior to date of delivery to the site shall not be used.
- A. Conductors: No. 10 AWG and smaller shall be solid; No. 8 AWG and larger shall be stranded. Conductors shall be copper, unless indicated otherwise.
 - 1. Minimum Conductor Sizes: Minimum size for branch circuits shall be No. 12 AWG; for Class 1 remote-control and signal circuits, No. 14 AWG; and for Class 2 Low-energy, remote-control and signal circuits, No. 16 AWG.
 - B. Color Coding: Provide for all service, feeder, branch, control, and signaling circuit conductors. Color shall be green for grounding conductors, and white for neutrals, except where neutrals of more than one system are installed in same raceway or box, the other

neutral shall be white with a colored (not green) stripe. The color of the ungrounded conductors in different voltage systems shall be as follows:

1. 120/208 volt, 3-phase:
 - Phase A - black
 - Phase B - red
 - Phase C - blue

- C. Insulation: Unless specified or indicated otherwise or required by NFPA 70, all power and lighting wires shall be 600-volt, Type THW, THWN, XHHW, or RHW, except that grounding wire may be Type TW; remote-control and signal circuits shall be Type TW, THW or TF. Conductors shall conform to UL 83. Where lighting fixtures require 90 degree C conductors, provide only conductors with 90 degree C insulation or better.
 - D. Bonding Conductors: ASTM B 1, solid bare copper wire for sizes No. 8 AWG and smaller diameter; ASTM B 8, Class B, stranded bare copper wire for sizes No. 6 AWG and larger diameter.
- 2.7 SPLICES AND TERMINATION COMPONENTS: UL 486A for wire connectors, and UL 510 for insulating tapes. Connectors for wires No. 10 AWG and smaller diameter wires shall be insulated, pressure-type in accordance with UL 486A or UL 486C (twist-on splicing connector). Provide solderless terminal lugs on stranded conductors.
- 2.8 DEVICE PLATES: Provide UL listed, one-piece device plates for outlets and fittings to suit the devices installed. Plates on finished walls shall be urea or phenolic, minimum 0.10-inch wall thickness. Plates shall be the same color as the receptacle or toggle switch with which they are mounted. Screws shall be machine type with countersunk heads in a color to match the finish of the plate. The use of sectional type device plates will not be permitted. Plates installed in wet locations shall be gasketed and UL listed for "wet locations".
- 2.9 SWITCHES
- A. Toggle Switches: Fed. Spec. W-S-896, totally enclosed with bodies of thermosetting plastic and a mounting strap. Handles shall be ivory. Wiring terminals shall be of the screw type, side wired. Switches shall be rated quiet-type AC only, 120/277 volts, with the current rating and number of poles indicated.
 - B. Disconnect Switches: NEMA KS1. Switches serving as motor-disconnect means shall be horsepower rated. Provide heavy duty type switches where indicated, where switches are rated higher than 240 volts, and for double throw switches. Fused switches shall utilize Class R fuseholders and fuses, unless indicated otherwise. Provide switches in NEMA enclosure as indicated, per NEMA ICS 6.
- 2.10 RECEPTACLES: UL 498 and NEMA WDI, heavy-duty, specification grade grounding type. Ratings and configurations shall be as indicated. Wiring terminals shall be of the screw type, side wired. Connect grounding pole to the mounting strap. Bodies shall be ivory thermosetting plastic supported on a metal mounting strap.
- A. Switched Duplex Receptacles: Provide separate terminals for each ungrounded pole. The top receptacles shall be switched when installed.
 - B. Weatherproof Receptacles: Provide in a cast metal box with a gasketed, weatherproof, cast-metal cover plate and a gasketed cap over each receptacle opening. Receptacle shall be UL approved for use in "wet locations". All outdoor-location receptacles shall be GFCI and

weather-resistant rated. Device cover shall be weatherproof rated, "in-use" type. Receptacles to be installed at dwelling units shall be tamper-resistant rated.

- C. Ground Fault Circuit Interrupter (GFCI) Receptacles: UL 943, duplex type for mounting in a standard outlet box. The device shall be capable of detecting a current leak of 6 milliamperes or greater and tripping per requirements of UL 943 for Class A GFCI devices.
 - D. Special Purpose Receptacles: Receptacles serving special purpose. Provide in ratings indicated. Furnish one matching plug with each receptacle.
- 2.11 PANELBOARDS: UL 67 and UL 50. Panelboards for use as service disconnecting means shall additionally conform to UL 869. Panelboards shall be circuit breaker equipped bolt on type. Design shall be such that any individual breakers can be removed without disturbing adjacent units or without loosening or removing supplemental insulation supplied as a means of obtaining clearances as required by UL. Where "space only" (PFB) is indicated, make provisions for the future installation of a breaker sized as indicated. All panelboard locks shall be keyed same. Directories shall be typed to indicate load served by each circuit and mounted in a holder behind transparent protective covering.
- A. Panelboard Buses: Provide panelboard with copper bus. Support bus bars on bases independent of the circuit breakers. Main buses and back pans shall be designed so that breakers may be changed without machining, drilling, or tapping. Provide an isolated neutral bus in each panel for connection of circuit neutral conductors. Provide a separate ground bus identified as equipment grounding bus per UL 67 for connecting grounding connectors; bond to steel cabinet.
 - B. Circuit Breakers: Fed. Spec. W-C-375 thermal magnetic type with interrupting capacity as indicated. Series rated circuit breakers are unacceptable. Breaker terminals shall be UL listed as suitable for the type of conductor provided. Plug-in circuit breakers unacceptable.
 - 1. Multipole Breakers: Provide common-trip type with a single operating handle. Breaker design shall be such that an overload in one pole automatically causes all poles to open. Maintain phase sequence throughout each panel so that any three adjacent breaker poles are connected to Phases A, B and C, respectively.
 - 2. Circuit Breaker with GFCI: UL 943 and NFPA 70. Provide with "push-to-test" button, visible indication of tripped condition, and ability to detect and trip on current imbalance of 6 milliamperes or greater per requirements of UL 943 for Class A GFCI devices.
- 2.12 ENCLOSED CIRCUIT BREAKERS: UL 489. Individual molded case circuit breakers with voltage and continuous current ratings, number of poles, overload trip setting, and short circuit interrupting rating as indicated. Enclosure type as indicated. Provide solid neutral.
- 2.13 TELEPHONE SYSTEM: Provide a system of telephone wire supporting structures, including conduits with pull wires, terminal boxes, outlet and junction boxes and other accessories for telephone outlets, telephone cabinets.
- A. Outlet Boxes for Telephone System: Standard type, as specified herein. Mount flush in finished wall at height indicated. Outlet boxes for wall-mounted telephones shall be 2 inches by 4 inches; mounted at height as indicated. Outlet boxes for handicapped station shall be mounted at height 48 inches above finished floor.
 - B. Cover Plates: Blank cover with 5/8-inch hole, modular telephone type of the finish specified for receptacles and switch cover plates.

- C. Conduit Sizing: Unless otherwise indicated, conduit for single outlets shall be a minimum of 3/4 inch and for multiple outlets a minimum of 1 inch. Size conduits for telephone risers to telephone cabinets, junction boxes, distribution centers, and telephone service as indicated.
 - D. Backboards: Interior grade plywood, 3/4 inch thick.
 - E. Terminal Cabinets: Construct of cold-rolled sheet steel. Match trim, hardware, doors and finishes to lighting panelboards.
 - F. Receptacles for Telephone Service: Provide receptacles, 125 volts, single phase, 60 Hz, adjacent to telephone backboards, served from panelboard circuit as indicated.
- 2.14 GROUNDING AND BONDING EQUIPMENT: UL 467. Ground rods shall be copper-encased steel, with minimum diameter of 3/4 inch and minimum length of 10 feet.
- 2.15 CONTACTOR: NEMA ICS 2, electrically operated, mechanically held contactor rated as indicated. Provide in NEMA 1 enclosure conforming to NEMA ICS 6. Contactor shall have silver alloy double-break contacts and coil clearing contactor with hand-off automatic selector switch.
- 2.16 NAMEPLATES: Fed. Spec. L-P-387. Provide as specified in Section 16050, "Basic Electrical Materials and Methods."
- 2.17 SOURCE QUALITY CONTROL: Test opening around electrical penetrations through fire resistive-rated walls, partitions, floor or ceiling for fire resistive integrity in accordance with ASTM E 814.

PART 3 EXECUTION

- 3.1 INSTALLATION: Electrical installations shall conform to requirements of NFPA 70 and to requirements specified herein.
- A. Underground Service: Underground service conductors and associated conduit shall be continuous from service entrance equipment to outdoor power system connection.
 - B. Service Entrance Identification: Service entrance disconnect devices, switches, or enclosures shall be labeled or identified as such.
 - 1. Labels: Wherever work results in service entrance disconnect devices in more than one enclosure, as permitted by NFPA 70, each enclosure, new and existing, shall be labeled as one of several enclosures containing service entrance disconnect devices. Label, at minimum, shall indicate number of service disconnect devices housed by enclosure and shall indicate total number of enclosures that contain service disconnect devices. Provide laminated plastic labels. Use lettering of at least 0.25 inch in height, and engrave on black-on-white matte finish. Service entrance disconnect devices in more than one enclosure shall be provided only as permitted by NFPA 70.
 - C. Wiring Methods: Provide insulated conductors installed in conduit, except where specifically indicated or specified otherwise, or required by NFPA 70 to be installed otherwise. Provide insulated, green equipment grounding conductor in all feeder and branch circuits, including lighting circuits. Grounding conductor shall be separate from electrical system neutral conductor. Provide insulated, green conductor for grounding conductors installed in conduit

or raceways. Minimum conduit size shall be 1/2 inch in diameter for low voltage lighting and power circuits. Vertical distribution in multiple story buildings shall be made with metal conduit in fire-rated shafts. Metal conduit shall extend through shafts for minimum distance of 6 inches. Conduit which penetrates fire walls, fire partitions, or floors shall be metallic on both sides of fire walls, fire partitions, or floors for minimum distance of 6 inches.

1. Aluminum Conduit: Use in exposed installation and in unairconditioned spaces.
 - a. Do not install underground or encase in concrete.
 - b. Do not use brass or bronze fittings.
 2. Electrical Metallic Tubing: Use in dry partitions and above drop ceiling.
 - a. Do not use in feeder circuits.
 - b. Do not install underground.
 - c. Do not encase in concrete.
 - d. Do not use in areas where subject to severe physical damage (including, but not limited to, mechanical equipment rooms and electrical equipment rooms).
 - e. Do not use in hazardous areas.
 - f. Do not use in outdoor work.
 3. Nonmetallic Conduit:
 - a. Underground Conduit: PVC, Type EPC-40; or fiberglass.
 - b. Conduit Embedded in Concrete: PVC, Type EPC-40.
 - c. Restrictions applicable to PVC Schedule 40 and PVC Schedule 80:
 - (1) Do not use in areas subject to severe physical damage (including, but not limited to, mechanical equipment rooms, electrical equipment rooms, etc.).
 - (2) Do not use in hazardous areas.
 - (3) Do not use in penetrating fire-rated walls or partitions, fire rated floors, etc.
- D. Conduit Installation: Unless indicated otherwise, conceal conduit within finished walls, ceilings, and floors. Keep conduit minimum 6 inches away from parallel runs of flues and steam or hot-water pipes. Install conduit parallel with or at right angles to ceilings, walls, and structural members where located above accessible ceilings and where conduit will be visible after completion of project.
1. Where conduits rise through floor slabs, the curved portion of bends shall not be visible above the finish slab.

2. Conduit Support: Support conduit by pipe straps, wall brackets, hangers, or ceiling trapeze. Fasten by wood screws to wood; by toggle bolts on hollow masonry units; by concrete inserts or expansion bolts on concrete or brick; by machine screws, welded threaded studs, or spring-tension clamps on steel work. Threaded C-clamps may be used on rigid steel conduit only. Do not weld conduits or pipe straps to steel structures. The load applied to fasteners shall not exceed one-fourth of the proof test load. Fasteners attached to concrete ceiling shall be vibration resistant and shock resistant. Holes cut to a depth of more than 1-1/2 inches in reinforced concrete beams or to a depth of more than 3/4-inch in concrete joints shall not cut the main reinforcing bars. Fill unused holes. In partitions of light steel construction, use sheet-metal screws. In suspended-ceiling construction, run conduit above the ceiling. Spring steel fasteners may be used for lighting branch circuit conduit supports in suspended ceiling in dry locations. Where conduit crosses building expansion joints provide a suitable watertight expansion/deflection fitting that maintains the conduit electrical continuity by bonding jumpers or other means.
3. Make changes in direction of runs with symmetrical bends or cast-metal fittings. Make field-made bends and offsets with a hickey or conduit-bending machine. Do not install crushed or deformed conduits. Avoid trapped conduits. Prevent plaster, dirt, or trash from lodging in conduits, boxes, fittings, and equipment during construction. Free clogged conduits of all obstructions.
4. Install pull wires in empty conduit in which wire is to be installed by others. The pull wire shall be plastic having minimum 200-pound tensile strength. Leave a minimum 12 inches of slack at each end of the pull wire.
5. Telephone and Television System Conduits: Install in accordance with the specified requirements for conduit and with the additional requirement that no length of run shall exceed 150 feet for trade sizes 2 inches and smaller and shall not contain more than two 90-degree bends or the equivalent. Provide pull or junction boxes where necessary to comply with these requirements. Inside radii of bends in conduits one-inch trade size and larger shall be minimum five times the nominal diameter. Terminate conduit at bottom edge of backboard.
6. Conduit Installed in Concrete Floor Slabs: Locate so as not to adversely affect the structural strength of the slabs. Install conduit within the middle one-third of the concrete slab. Do not stack conduits. Space conduit horizontally minimum three diameters except at cabinet locations. Curved portions of bends shall not be visible above the finish slab. Increase slab thickness as necessary to provide a minimum one-inch cover over conduit. Where embedded conduits cross expansion joints, provide suitable watertight expansion/deflection fittings and bonding jumpers. Conduit larger than one-inch trade size shall be parallel with or at right angles to the main reinforcement; when at right angles to the reinforcement, the conduit shall be close to one of the supports of the slab.
7. Fasten conduits to sheet metal boxes and cabinets with two locknuts where required by NFPA 70, where insulated bushings are used, and where bushings cannot be brought into firm contact with the box; otherwise, use minimum single locknut and bushing. Locknuts shall have sharp edges for digging into the wall of metal enclosures. Install bushings on the ends of conduits and provide insulating type where required by NFPA 70.
8. Stub-Ups: Provide conduits stubbed up through concrete floor for connection to free-standing equipment with an adjustable top or coupling threaded inside for plugs,

set flush with the finished floor. Extend conductors to equipment in rigid steel conduit, except that flexible metal conduit may be used 6 inches above the floor. Where no equipment connections are made, install screwdriver-operated threaded flush plugs in conduit end.

9. Flexible Connections: Provide flexible connections of short length, 6 feet maximum, for recessed and semi-recessed lighting fixtures; for equipment subject to vibration, noise transmission, or movement; and for all motors. Provide liquid-tight flexible conduit in wet locations. Provide separate ground conductor across flexible connections.
- E. Boxes, Outlets and Supports: Provide boxes in the wiring or raceway systems wherever required for pulling of wires, making connections, and mounting of devices or fixtures. Boxes for metallic raceways shall be of the cast-metal hub type when located in wet locations, when surface mounted on outside of exterior surfaces, when installed exposed up to 7 feet above interior floors and walkways, or when installed in hazardous areas. Boxes in other locations shall be sheet steel, except that aluminum boxes may be used with aluminum conduit; nonmetallic boxes may be used with nonmetallic conduit system. Each box shall have the volume required by NFPA 70 for the number of conductors enclosed in the box. Boxes for mounting lighting fixtures shall be minimum 4 inches square or octagonal, except that smaller boxes may be installed as required by fixture configurations, as approved. Boxes for use in masonry-block or tile walls shall be square-cornered tile-type, or standard boxes having square-cornered tile-type covers. Provide gaskets for cast-metal boxes installed in wet locations and boxes installed flush with the outside of exterior surfaces. Provide separate boxes for flush or recessed fixtures when required by the fixture terminal operating temperature; fixtures shall be readily removable for access to the boxes unless ceiling access panels are provided. Support boxes and pendants for surface-mounted fixtures on suspended ceilings independently of the ceiling supports or make adequate provisions for distributing the load over the ceiling support members. Fasten boxes and supports with wood screws on wood, with bolts and expansion shields on concrete or brick, with toggle bolts on hollow masonry units and with machine screws or welded studs on steel. In open overhead spaces, cast boxes threaded to raceways need not be separately supported except where used for fixture support; support sheet metal boxes directly from the building structure or by bar hangers. Where bar hangers are used, attach the bar to raceways on opposite sides of the box and support the raceway with an approved type fastener maximum 24 inches from the box. When penetrating reinforced-concrete members, avoid cutting any reinforcing steel.
1. Boxes for use with raceway systems shall be minimum 1-1/2 inches deep, except where shallower boxes required by structural conditions are approved. Boxes for other than lighting-fixture outlets shall be minimum 4 inches square, except that 4 inch by 2 inch boxes may be used where only one raceway enters the outlet. Telephone outlets shall be a minimum of 4 inches square by 1-1/2 inches deep.
 2. Pull Boxes: Construct of at least the minimum size required by NFPA 70 of code-gage aluminum or galvanized sheet steel, except where cast-metal boxes are required in locations specified herein. Furnish boxes with screw-fastened covers. Where several feeders pass through a common pull box, tag the feeders to indicate clearly the electrical characteristics, circuit number, and panel designation.
 3. Extension Rings: Used only on existing boxes in concealed conduit systems where wall is furred out for new finish.
- F. Mounting Heights: Mount panelboards, circuit breakers, and disconnecting switches so the height of the operating handle at its highest position maximum 72 inches above the floor.

Mount lighting switches receptacles and other devices as indicated. Measure mounting heights of wiring devices and outlets to the center of device or outlet.

- G. Conductor Identification: Provide conductor identification within each enclosure where a tap, splice, or termination is made. For conductors No. 6 AWG and smaller diameter, color coding shall be by factory-applied color-impregnated insulation. For conductors No. 4 AWG and larger diameter, color coding shall be by plastic-coated self-sticking markers, colored nylon cable ties and plates, or heat-shrink type sleeves. Identify control circuit terminations.
- H. Splices: Make splices in accessible locations. Make splices in conductors No. 10 AWG and smaller diameter with an insulated pressure type connector. Make splices in conductors No. 8 AWG and larger diameter with a solderless connector and cover with an insulation material equivalent to the conductor insulation.
- I. Covers and Device Plates: Install with edges in continuous contact with finished wall surfaces without the use of mats or similar devices. Plaster fillings are not permitted. Plates shall be installed with an alignment tolerance of 1/16 inch. The use of sectional type device plates are not permitted. Plates installed in wet locations shall be gasketed.
- J. Electrical Penetrations: Openings around electrical penetrations through fire resistance rated walls, partitions, floors, or ceilings shall be sealed to maintain fire resistive integrity as tested per ASTM E 814.
- K. Grounding and Bonding: In accordance with NFPA 70. Ground all exposed non-current-carrying metallic parts of electrical equipment, metallic raceway systems, grounding conductor in metallic and nonmetallic raceways, and neutral conductor of wiring systems. Make ground connection at the main service equipment and extend grounding conductor to the point of entrance of the metallic water service. Make connection to the water pipe by a suitable ground clamp or lug connection to a plugged tee. If flanged pipes are encountered, make connection with the lug bolted to the street side of the flanged connection. Supplement the metallic water service grounding system with an additional made electrode in compliance with NFPA 70. Make ground connection to driven ground rods on the exterior of the building. Where ground fault protection is employed, ensure that the connection of ground and neutral does not interfere with the correct operation of the fault protection. Bond building foundation rebars to ground.
 - 1. Grounding Conductor: Provide an insulated, green equipment grounding conductor in all feeder and branch circuits including lighting circuits. Grounding conductor shall be separated from the electrical system neutral conductor. Provide insulated, green conductor for grounding conductors installed in conduit or raceways.
 - 2. Resistance: The maximum resistance to ground of the grounding system shall not exceed 25 ohms under normally dry conditions. Where the resistance obtained exceed 25 ohms provide additional ground rods to achieve the resistance level. Spacing of ground rods shall not exceed 10 feet apart.
 - 3. Telephone and Television Service: Provide a main service equipment ground consisting of a separate No. 6 AWG ground wire in conduit between the equipment backboard and a readily accessible grounding connection. The equipment end of the ground wire shall consist of a coiled length at least twice as long as the terminal cabinet or backboard height.

- L. Motor Load: When motor size provided differs from the size indicated or specified, make adjustments to the wiring, disconnect devices, and branch circuit protection to accommodate the equipment actually provided.
- 3.2 FIELD QUALITY CONTROL: Furnish test equipment and personnel and submit written copies of test results to the Contracting Officer. Give five working days notice prior to each test.
- A. Devices Subject to Manual Operation: Each device subject to manual operation shall be operated at least five times, demonstrating satisfactory operation each time.
 - B. Test on 600-Volt Wiring: Test all 600-volt wiring to verify that no short circuits or accidental grounds exist. Perform insulation resistance tests on all wiring No. 6 AWG and larger diameter using an instrument which applies a voltage of approximately 500 volts to provide a direct reading of resistance; minimum resistance shall be 250,000 ohms.
 - C. Grounding System Test: Test the grounding system to ensure continuity and resistance to ground is not excessive. Test each ground rod for resistance to ground before making any connections to the rod; tie grounding system together and test for resistance to ground. Make resistance measurements in dry weather, not earlier than 48 hours after rainfall. Submit written results of each test to the Contracting Officer and indicate the location of the rods as well as the resistance and soil conditions at the time the measurements were made.

END OF SECTION

SECTION 16510
LIGHTING SYSTEM

PART 1 GENERAL

- 1.1 GENERAL REQUIREMENTS: Section 16050, "Basic Electrical Materials and Methods", applies to this Section, with the additions and modifications specified herein.
- 1.2 DESCRIPTION OF WORK: The work includes providing lighting fixtures, photocell switches, dimmer switches, time switches, contactors, and battery-powered units and systems for interior use, including lighting fixtures and accessories mounted on the exterior surfaces of buildings. Materials not normally furnished by manufacturers of these devices are specified in Section 16402, Interior Wiring Systems.
- 1.3 SUBMITTALS: Data, shop drawings and reports shall employ the terminology, classifications and methods prescribed by the IES Lighting Handbook, as applicable, for the lighting system specified.
- A. Manufacturer's Data:
1. Lighting Fixtures, including Lamps and Ballasts
 2. Lighting Contactors
 3. Photocell Switch
 4. Timer Switch
 5. Emergency Lighting Equipment
 6. Light Pole
- B. Shop Drawings:
1. Lighting fixture assemblies.
 2. Emergency lighting systems.
 3. Light Pole Assembly and Foundation.

PART 2 PRODUCTS

- 2.1 FLUORESCENT LIGHTING FIXTURES: UL 1570, except lighting fixtures for damp and wet locations shall conform to UL 57.
- A. Fluorescent Lamps: Provide the number, type and wattage indicated. Provide lamp conforming to ANSI C78.
- B. Fluorescent Ballasts: UL 935, ANSI C82.1 and shall be labeled Certified Ballast Manufacturers (CBM) certified by Electrical Testing Laboratories (ETL).
1. Electronic Ballasts: Provide energy-saving fluorescent ballasts of the CBM certified full light output type. The ballasts shall have an average input wattage of 112 or less

when operating four F032T8 lamps, 62 or less when operating two F032T8 lamps, 36 or less when operating one F032T8 lamp, tested in accordance with ANSI C82.2 methods. Ballast shall have a frequency of operation of 20 Khz or greater, and operate without visible flicker. Total Harmonic Distortion shall be less than 20%. Ballast shall meet all applicable ANSI and IEEE standards regarding transient protection. Ballast shall be designed for parallel lamp connection, meaning, if one or more lamps fail, the companion lamps remain fully lit. Ballast shall maintain constant light output over operating range of $\pm 10\%$ of the input voltage. Ballast factor shall be 0.88 or higher. Nominal power factor shall be 0.95 or higher. Lamp current crest factor shall be below 1.7. Manufacturer shall provide warranty that ballast will be free from defects in material and workmanship for a period of 5 years from the date of manufacture. Warranty shall cover labor and material to replace the defective ballast. Only new ballasts manufactured not earlier than 6 months at time of installation will be accepted. Use single ballast for two or three lamps light fixtures.

b. Acceptable Manufacturers for Fluorescent Electronic Ballast:

EBT (Electronic Ballast Technology)
 Motorola
 Magnetek
 Valmont

- C. Open-Tube Fluorescent Fixtures: Provide with spring-loaded telescoping sockets or lamp retainers (two per lamp).

2.2 HIGH-INTENSITY-DISCHARGE (HID) LIGHTING FIXTURES: UL 1572.

- A. HID Lamps: Provide the number, type and wattage indicated.
- B. HID Ballasts: UL 1029 and ANSI C82.4 and shall be constant wattage autotransformer (CWA) or regulator, high power factor type, unless otherwise indicated. Ballasts shall be designed to operate on the voltage system to which they are connected. Single-lamp ballasts shall have a minimum starting temperature of minus 30 degrees C. Ballasts shall be designed for installation in a normal ambient temperature of 40 degrees C. Ballasts shall be constructed so that open circuit operation will not reduce the average life. High Pressure Sodium (HPS) ballasts shall have a solid-state igniter/starter with an average life in the pulsing mode of 10,000 hours at an igniter/starter case temperature of 90 degrees C. Average life is defined as the time after which 50 percent will have failed and 50 percent will have survived under normal conditions.

- 2.3 RECESS AND FLUSH-MOUNTED FIXTURES: Provide type that can be relamped from the bottom. Trim for the exposed surface of flush-mounted fixtures shall be as shown on sketches or as indicated.

- 2.4 SUSPENDED FIXTURES: Provide hangers capable of supporting twice the combined weight of the adjoining fixtures. Provide with swivel hangers to insure a plumb installation. Hangers shall be cadmium-plated steel with swivel-ball tapped for the conduit size indicated. Hangers shall allow fixtures to swing within an angle of 20 degrees. Brace pendants 4 feet or longer provided in shops or hangers to limit swinging. Single-unit suspended fluorescent fixtures shall have twin-stem hangers. Multiple-unit or continuous row fluorescent fixtures shall have a tubing or stem for wiring at one point and a tubing or rod suspension provided for each unit length of chassis, including one at each end. Rods shall be a minimum 3/16-inch diameter.

- 2.5 LIGHTING CONTACTOR: NEMA ICS 2, electrically operated, mechanically held contactor rated as indicated. Provide in NEMA 1 enclosure conforming to NEMA ICS 6. Contactor shall have silver

alloy double-break contacts and coil clearing contacts and shall require no arcing contacts. Provide contactor with hand-off-automatic selector switch. Contactor shall be hermetically sealed.

- 2.6 TIME SWITCH: Astronomic dial type arranged to turn "ON" at sunset, and turn "OFF" at predetermined time between 8:30 p.m. and 2:30 a.m. or sunrise, automatically changing the settings each day in accordance with seasonal changes of sunset and sunrise. Provide switch with automatically wound spring mechanism to maintain accurate time for a minimum of 15 hours following failure. Provide time switch with a manual on-off bypass switch. Housing for the time switch shall be surface mounted, NEMA 1 conforming to NEMA ICS 6.
- 2.7 PHOTO-INITIATED TIME SWITCH: UL and CSA listed. Photo-initiated time control with 7-day calendar dials. 120 Volts, 2 NO, 1 NC contacts rated for 20 ampere tungsten load. Photocontrol turns lights on, time control turns lights off at preset time. Seven day calendar dial shall permit different off time each day of week or omit any day(s). Provide automatic springwound to carry-over and to keep the control running up to 10 hours during power outage. Heavy duty synchronous timing motor suitable for operation up to 140°F. Enclosure shall have provisions for padlock.
- 2.8 PHOTOCCELL SWITCH: UL 773 or UL 773A, as applicable, hermetically sealed cadmium-sulphide cell rated as indicated. in a high-impact resistant non-corroding and non-conductive molded plastic housing with a locking-type receptacle. The switch shall turn on below 3 footcandles and off at 3 to 10 footcandles. A time delay shall prevent accidental switching from transient light sources. Mount a directional lens in front of the cell to prevent fixed light sources from creating a turnoff condition. Aim switch according to manufacturer's recommendations.
- 2.9 EXIT SIGNS: UL 924, NFPA 70 and NFPA 101.
 - A. Exit signs shall be as indicated.
 - B. Self-Powered Exit Signs (Battery Type): Provide with automatic power failure device, test switch, pilot light and fully automatic high/low trickle charger in a self-contained power pack. Battery shall be sealed wet or gel electrolyte type, operate unattended, and require no maintenance (including additional water) for a period of not less than 5 years.
- 2.10 LIGHT POLES: Light pole assembly, foundation, fixtures, and fittings shall be designed to withstand 170 MPH wind speed IBC 2009 Exposure C and ASCE7-05 while supporting luminaires. Poles shall have oval-shaped handhole having a minimum clear opening of 2.5 by 5 inches. Handhole cover shall be secured by stainless steel captive screw. Aluminum poles shall be corrosion resistant aluminum alloys, seamless extruded or spun seamless type. Steel poles shall have a minimum yield strength of 48,000 psi and hot-dipped galvanized in accordance with ASTM A123. Factory finish shall be as indicated. Provide a pole grounding connection designed to prevent electrolysis when used with copper ground wire.

PART 3 EXECUTION

- 3.1 INSTALLATION: Set lighting fixtures plumb, square, and level with ceiling and walls, in alignment with adjacent lighting fixtures, and secure in accordance with manufacturers' directions and approved shop drawings. The installation shall meet with the requirements of NFPA 70. Mounting heights specified or indicated shall be to bottom of fixture for ceiling-mounted fixtures and to center of fixture for wall-mounted fixtures. Obtain approval of the exact mounting for lighting fixtures on the job before installation is commenced and, where applicable, after coordinating with the type, style, and pattern of the ceiling being installed. Light fixtures shall be supported from building main structure. Do not support fixtures by ceiling acoustical panels. Where fixtures of sizes less than the ceiling grid are indicated to be centered in the acoustical panel, support such fixtures independently and with at least

two 3/4-inch metal channels spanning, and secured to, the ceiling tees. Provide rods or wires for lighting fixture support under this section of the specifications. Rods or wires shall conform to the requirements of Division 9. Additionally, for recessed fixtures, provide support clips securely fastened to ceiling grid members, a minimum of one at or near each corner of each fixture.

- A. Exit and Emergency Lights: Wire exit light on separate circuits and serve from an emergency panel. Connect this panel ahead of the main service disconnect switch. The lights shall have only one control, which shall be the circuit breaker in the emergency panel. Wire emergency lights ahead of the switch to the normal lighting circuit located in the same room or area.
- 3.2 GROUNDING: Ground noncurrent-carrying parts of equipment as specified in Section 16402, "Interior Wiring System". Where the copper grounding conductor is connected to a metal other than copper, provide specially treated or lined connectors suitable for this purpose.
- 3.3 FIELD TESTS: The Contractor shall provide electric power required for field tests.
- A. Operating Test: Upon completion of the installation, conduct an operating test to show that the equipment operated in accordance with the requirements of this section.
 - B. Insulation Resistance Test: Perform as specified in Section 16402, "Interior Wiring Systems", both before and after connection of fixtures and equipment.
 - C. Ground Resistance Test: Perform as specified in Section 16402, "Interior Wiring Systems".
- 3.4 RELAMPING: Relamp luminaires which have failed lamps at completion of work.
- 3.5 ADJUSTING AND CLEANING:
- A. Align luminaires and clean lenses and diffusers at completion of work. Clean paint splatters, dirt, and debris from installed luminaires.
 - B. Touch up luminaire and pole finish at completion of work.

END OF SECTION

SECTION 16721

FIRE ALARM AND DETECTION SYSTEMS

PART 1 GENERAL

1.1 DESCRIPTION

- A. Work Included: Provide fire alarm and detection systems where shown on the Drawings, as specified herein, and as needed for a complete and proper installation including, but not necessarily limited to:
 - 1. Control panel;
 - 2. Annunciator;
 - 3. Smoke detectors;
 - 4. Signal devices;
 - 5. Manual stations;
 - 6. Audiovisual Alarms;
 - 7. Auxiliary Power; and
 - 8. Connection to related items furnished under other Sections of these Specifications, or under separate contract, such as (when required):
 - a. Air Handling Unit (AHU) Control.
- B. Related Work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications;
 - 2. Section 16402: Interior Wiring System.

1.2 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Qualifications of Installer:
 - 1. Prior to installation, the Prime Contractor shall submit data for the approval of the Contracting Officer which will show that he has successfully installed fire alarm systems of the same type and design as specified herein, or that he has a firm contractual agreement with a subcontractor having such required experience. The data shall include the names and locations of at least two installations where the Contractor, or the subcontractor referred to above, has installed such systems. The

Contractor shall indicate the type and design of these systems and certify that these systems have performed satisfactorily in the manner intended for a period of not less than 18 months; and

2. Manufacturer's Representative: The service of a qualified manufacturer's representative or technician, experienced in the installation and operation of the type of system being provided shall be furnished to supervise the complete installation including all wiring, testing, final testing, adjustment of the system and instruction to Owner's representative.

C. Codes and Regulations:

1. In addition to complying with the specified requirements, comply with pertinent regulations of governmental agencies having jurisdiction; and
2. In the event of conflict between or among requirements specified herein and those of governmental agencies having jurisdiction, the more stringent requirement shall govern if so determined by the Contracting Officer.

D. Certificates:

1. Submit with the Shop Drawings a certified statement that the battery installation conforms to the referenced operating requirements; and
2. Submit with the O&M manual a certified statement that the complete installation is installed in accordance with latest code, contract documents, and that the system is in proper operation.

1.3 SUBMITTALS

A. Comply with pertinent provisions of Division 1.

B. Product Data: Within 35 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:

1. Materials list of items proposed to be provided under this Section;
2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements;
3. Shop Drawings in sufficient detail to show fabrication, installation, anchorage, and interface of the work of this Section with the work of adjacent trades; and
4. Manufacturer's recommended installation procedures which, when approved by the Contracting Officer, will become the basis for accepting or rejecting actual installation procedures used on the Work.

C. Upon completion of the work of this Section, and as a condition of its acceptance, deliver to the Contracting Officer three copies of an operation and maintenance manual compiled in accordance with the provisions of Section 16050 of these Specifications.

1.4 PRODUCT HANDLING: Comply with pertinent provisions of Section 16050 and Division 1.

PART 2 PRODUCTS

2.1 DESIGN

- A. Design a fire alarm and detection system acceptable to the Contracting Officer and to all governmental agencies having jurisdiction, providing the following functions and such others as are required:
1. Upon activation of any manual station or automatic detectors or sprinkler flow switch, visual and audible signals shall occur immediately, light the red alarm light at the control panel, turn off the AHU, send signal to elevator controller, and signals shall remain locked-in until manually reset at the control panel;
 2. Upon activation of any sprinkler supervisory switch, visual and audible signals shall occur immediately at the control panel, and signals shall remain locked-in until manually reset at the control panel; and
 3. All detection and signal circuits shall be supervised with warning and visual trouble light for each zone, in case of grounds or loss of continuity.

2.2 MATERIALS

- A. Acceptable Manufacturers:
1. To the maximum extent practicable, use only the products of a single manufacturer; and
 2. Use products of one of the following, or an equal approved in advance by the Contracting Officer:
 - a. Edwards;
 - b. Honeywell;
 - c. Simplex;
 - d. Gamewell;
 - e. Faraday; or
 - f. FCI
- B. Fire Alarm Control Panel:
1. Provide zoned, non-coded, solid state type, with rechargeable batteries and ground fault protection, able to be flush-mounted or surface-mounted, and expandable for future use; and
 2. Provide for expansion by simple insertion of additional zone modules.
- C. Annunciator:
1. Provide LED type with long life and high reliability, flush mounted and with engraved face plate (add-on plastic labels or tags will not be acceptable); and
 2. Provide face plate finish as selected by the Contracting Officer from standards of the approved manufacturer.

- D. Smoke Detectors: Provide photoelectric detectors. Operate on a multiple cell concept using a LED light source. Failure of the LED shall not cause an alarm condition but shall operate the detector indicating lamp. The detector shall automatically reset when smoke condition clears.
- E. Duct Smoke Detectors: Refer to Division.
- F. Audiovisual Alarms: Provide an approved audiovisual alarm devices consisting of a vibrating type alarm horn suitable for use in an electrically-supervised circuit and top-mounted integral flashing strobe light. Horn shall have a sound rating of at least 90 decibels at 10 feet. Strobe light shall be in accordance with ADA current requirements.
- G. Magnetic Door Holders: Provide wall-mounted type, with brush aluminum finish.
- H. Manual Stations: Shall be pull levers type with cast-in operating directions. Switch shall be normally open, U.L. approved for fire alarm service.
- I. Power Supply:
 - 1. Primary Power: Power shall be 120 volts AC service, transformed through a two winding isolation type transformer and rectified to low voltage DC for operation of all signal initiating, signal sounding, trouble signal and annunciator tripping circuits. A secondary DC power supply for operation of system in the event of failure of the AC supply shall be provided. Transfer from normal to secondary power shall be fully automatic and shall not cause transmission of a false alarm. AC operating power shall be obtained at the location indicated with provisions for locking the cover. The switch box shall be painted red and shall be suitably identified by a lettered designation.
 - 2. Auxiliary Power: Consist of maintenance-free nickel cadmium or lead calcium rechargeable storage batteries and battery charger. Batteries shall have sufficient ampere-hour rating to operate the system under supervisory and trouble condition for 24 hours and audible and visual signal devices under alarm conditions for an additional 10 minutes.
- J. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Contracting Officer.

PART 3 EXECUTION

- 3.1 SURFACE CONDITIONS: Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 INSTALLATION

- A. Coordinate as required with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this Section.
- B. Install the work of this Section in strict accordance with pertinent requirements of governmental agencies having jurisdiction, and with the manufacturer's recommendations as approved by the Contracting Officer.

- C. Put all components through at least five complete cycles of operation, adjust as required, and verify that the complete system functions at optimum operating level.

3.3 PRELIMINARY TESTS

- A. Conduct the following tests during installation of wiring and system components. Correct any deficiency pertaining to these requirements prior to formal functional and operational tests of the system.
 - 1. Ground Resistance: Measure the resistance of each connection to ground. Ground resistance shall not exceed 25 ohms.
 - 2. Dielectric Strength and Insulation Resistance: Test the dielectric strength and the insulation resistance of the system interconnecting wiring by means of an instrument capable of generating 500 volts dc and equipped to indicate leakage current in 1000 megohms. For the purpose of this test, the instrument shall be connected between each conductor on the line and between each conductor and ground at the control panel end of the line, with the other extremity open circuited and all series-connected devices in place. The system shall withstand the test without breakdown and shall indicate a resistance of not less than 500,000 ohms, the measurement being taken after an electrification of not more than 1.0 minute with a dc potential of not less than 100 volts nor more than 550 volts.
 - 3. Smoke Detector Tests: Prior to formal inspection and tests, clean and perform sensitivity tests on each smoke detector. Clean the smoke detectors in accordance with the manufacturer's recommended procedures. Present recorded data at the formal inspection for verification. Approved copies shall become part of the operations and maintenance manual for the fire alarm system.

- 3.4 FIELD INSPECTION AND TEST: Before final acceptance of the work, test each system to demonstrate compliance with the contract requirement. Each system shall be subjected to complete functional and operations test including tests in place of each heat and smoke detector. When tests have been completed and corrections made, submit a signed and dated certificate with a request for formal inspection and tests.

- 3.5 FORMAL INSPECTION AND TEST: The Contracting Officer and Fire Chief will witness formal tests after receipt of written certification that preliminary tests have been completed and that the system is ready for final inspection. The system manufacturer's technical representative shall be present for the final inspection and test. Preliminary tests shall be repeated, and functional and operational tests conducted, as requested by the Contracting Officer or Fire Chief. Correct defects and conduct additional tests to demonstrate that the system conforms to contract specifications.

END OF SECTION

IFB# GHURA-23-02-CDBG-GPDESS

**Specification
for the**

Guam Police Division Eastern Sub-Station

**OWNER
Guam Housing and Urban Renewal Authority**

BY: _____
Elizabeth F. Napoli, EXECUTIVE DIRECTOR

Contractor: _____

By: _____
Signature and Title

Date: _____

END OF SPECIFICATION