

LEWIS COUNTY COMMUNITY DEVELOPMENT TENANT IMPROVEMENTS

LEWIS COUNTY FACILITIES DEPARTMENT
351 NW North Street
Chehalis, Washington 98532

Project Manual – Re-Bid Set

Volume 1 - Divisions 00 - 12

November 23, 2021

KMB Project No. J2037C

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Project Manual

Volume 1 - Specifications (Divisions 00 – 12)

LEWIS COUNTY COMMUNITY DEVELOPMENT TENANT IMPROVEMENTS

KMB Project No. J2037C

Owner:

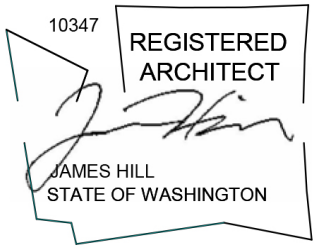
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TS1SK COLLABORATIVE

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RB ENGINEER

91 SW 13th Street

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Phone: 206.200.4098

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ASPEN DESIGN

P.O. Box 2394

Issaquah, Washington 98027

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Phone: 425.292.9845

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CALL FOR BIDS

Lewis County Community Development Tenant Improvement Project

NOTICE IS HEREBY GIVEN that Lewis County will open sealed bids and publicly read them aloud at or after 2:30 PM., on Thursday December 16, 2021 for the above project. The Bid Opening will take place in the Historical Courthouse, 351 NW North St, on the 2nd floor in the BOCC Hearing Room.

Each bid shall be in accordance with the plans, specifications, and other contract documents available digitally from AlphaGraphics in Olympia, WA. Contact information: 360-956-1010.

Drawings and project manuals will be available to bidders in digital format. Hard copy sets may be requested at bidders' expense.

Project Name and #: Lewis County Community Development Tenant Improvement, #31-2102

Location of work: 351 NW North St., Chehalis, WA

Contact Person: Doug Carey, Manager (360) 740-1337 Doug.Carey@lewiscountywa.gov

Pre-Bid Walk:

Each bid shall be accompanied by acceptable bid security in the sum of five percent (5%) of the bid amount, a signed non-collusion affidavit and a **signed** bid form.

Bid envelopes must be sealed and clearly labeled as:

Bid For: Lewis County Community Development Tenant Improvement, #31-2102

and delivered by 2:00 PM on the due date. Bids may be mailed or hand delivered to the BOCC Office.

Mailing Address:
Lewis County BOCC
351 NW North St.
Chehalis, WA 98532
Attn: Clerk of the Board

Physical Address:
Lewis County BOCC Office
351 NW North St., Room 210
Chehalis, WA

SEALED BIDS MUST BE DELIVERED BY OR BEFORE
2:00 P.M. on December 16, 2021

(Lewis County official time is displayed on Mitel phones in the Facilities Office. **Bids submitted after 2:00 PM will not be considered for this project**.)

The Lewis County Internal Services Department in accordance with Title VI of the Civil Rights Act of 1964, 78 Stat. 252, 42 U.S.C. 2000d to 2000d-4 and Title 49, Code of Federal Regulations, Department of Transportation, subtitle A, Office of the Secretary, Part 21, nondiscrimination in Federally assisted programs of the Department of Transportation issued pursuant to such Act, hereby notifies all bidders that it will affirmatively ensure that in any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color or national origin in consideration for an award.

PART 0 – GENERAL CONDITIONS

0.01 EXPLANATION TO PROSPECTIVE BIDDERS

A. Any prospective bidder desiring an explanation or interpretation of the solicitation, drawings, specifications, etc., must submit a request in writing to the Architect/Engineer (A/E) or owner if no A/E, 7 calendar days before the bid due date. Oral explanations or instructions given before the award of a contract will not be binding. Any information given a prospective bidder concerning a solicitation will be furnished promptly to all other prospective bidders by addendum 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. In accordance with the legislative findings and policies set forth in Chapter 39.19 RCW, the State of Washington encourages participation in all of its contracts by Minority and Women's Business Enterprises (MWBE) firms certified by the Office of Minority and Women's Business Enterprises (OMWBE). Participation may be either on a direct basis in response to this invitation or as a subcontractor to a bidder. However, unless required by federal statutes, regulations, grants, or contract terms referenced in the contract documents, no preference will be included in the evaluation of bids, no minimum level of MWBE participation shall be required as a condition for receiving an award, and bids will not be rejected or considered non-responsive on that basis.

C. Any affirmative action requirements set forth in federal regulations or statutes included or referenced in the contract documents will apply.

D. In accordance with RCW 39.04.320 the State of Washington requires 15% **Apprenticeship Participation** for all projects estimated to cost one million dollars or more. On applicable projects the bid advertisement and Bid Proposal form shall establish a minimum required percentage of apprentice labor hours compared to the total labor hours. Bidders may contact the Department of Labor and Industries, Specialty Compliance Services Division, Apprenticeship Section, P.O. Box 44530, Olympia, WA 98504-4530, by phone (360) 902-5320, and e-mail at thum235@lni.wa.gov, to obtain information on available apprenticeship programs.

0.02 PREPARATION OF BIDS – CONSTRUCTION

A. Bids must be: (1) submitted on the bid proposal forms, or copies of forms, furnished by the Owner or the Owner's agent, and (2) signed in ink. The person signing a bid must initial each change appearing on any bid form. If the bid is made by a corporation, it shall be signed by the corporation's authorized designee. The address of the bidder shall be typed or printed on the bid form in the space provided.

B. The bid form may require bidders to submit bid prices for one or more items on various bases, including: (1) lump sum base bid; (2) lump sum bid alternate prices; (3) unit prices; or (4) any combination of items (1) through (3) above.

C. If the solicitation includes alternate bid items, failure to bid on the alternates may 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.

D. Substitute bid proposals will not be considered unless this solicitation authorizes their submission.

0.03 BID GUARANTEE

A. When the sum of the base bid plus all additive bid alternates is $35,000.00 or less, bid security is not required. When the sum of the base bid plus all additive alternates is greater than $35,000.00, a bid guarantee in the amount of 5% of the base bid amount is required. Failure of the bidder to provide bid guarantee when required shall render the bid non-responsive.

B. Acceptable forms of bid guarantee are: A bid bond or postal money order, or certified check or cashier's check made payable to the Lewis County Treasurer. The Owner will return bid guarantees (other than bid bond) to unsuccessful bidders as soon as practicable, but not sooner than the execution of a contract with the successful bidder. The successful bidder's bid guarantee will be returned to the successful bidder with its official notice to proceed with the work of the contract.

C. The bidder will allow 60 days from bid opening date for acceptance of its bid by the Owner. The bidder will return to the Owner a signed contract, insurance certificate and bond or bond waiver within 15 days after award of the contract. If the apparent successful bidder fails to sign all contractual documents or provide the bond and insurance as required or return the documents within 15 days after award of the contract, the Owner may terminate the award of the contract.

D. In the event a bidder discovers an error in its bid following the bid opening, the bidder may request to withdraw its bid under the following conditions:

   1. Written notification is received by the Owner within 24 hours following bid opening.

   2. The bidder provides written documentation of the claimed error to the satisfaction of the Owner within 72 hours following the bid opening. The Owner will approve or disapprove the request for withdrawal of the bid in writing. If the bidder's request for withdrawal of its bid is approved, the bidder will be released from further obligation to the Owner without penalty. If it is disapproved, the Owner may retain the bidder's bid guarantee.

0.04 ADDITIVE OR DEDUCTIVE BID ITEMS

A. The low bidder, for purposes of award, shall be the responsive bidder offering the low aggregate amount for the base bid item, plus additive or deductive bid alternates selected by the Owner, and within funds available for the project. The bidder agrees to hold all bid alternate prices until bid award and contract execution.

0.05 ACKNOWLEDGEMENT OF ADDENDA

A. Bidders shall acknowledge receipt of all addenda to this solicitation by identifying the addenda numbers in the space provided for this purpose on the bid proposal form. Failure to do so may result in the bid being declared non-responsive.

0.06 SITE INVESTIGATION AND CONDITIONS AFFECTING THE WORK

A. The bidder acknowledges that it has taken steps necessary to ascertain the nature and location of the work, and that it has investigated and satisfied itself as to the general and local conditions which can affect the work or its cost, including but not limited to (1) conditions bearing upon transportation, disposal, handling, and storage of materials; (2)

the availability of labor, water, electric power, and road; (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 the work. The bidder also acknowledges that it has satisfied itself as to 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 exploratory work done by the Owner, as well as from the drawings and specifications made a part of this contract. Any failure of the bidder to take the actions described and acknowledged in this paragraph will not relieve the bidder from responsibility for estimating properly the difficulty and cost of successfully performing the work.

0.07 BID AMOUNTS

A. The bid prices shown for each item on the bid proposal shall include all labor, material, equipment, overhead and compensation to complete all of the work for that item.

B. The actual cost of building permit (only) and the public utility hookup fees will be a direct reimbursement to the Contractor or paid directly to the permitting agency by the Owner. Fees for these permits should not be included by the Bidder in the bid amount.

C. The Bidder agrees to hold the base bid prices until bid award and contract execution.

0.08 TAXES

A. The bid amounts shall not include Washington State Sales Tax (WSST). All other taxes imposed by law shall be included in the bid amount. The Owner will include WSST in progress payments. The Contractor shall pay the WSST to the Department of Revenue and shall furnish proof of payment to the Owner if requested. [NOTE: Contractor must bond for contract amount plus the WSST.]

0.09 SUBMISSION OF BIDS

A. Bid Proposals must be submitted on or before the time specified in the Advertisement for Bids.

B. If the base bid and the sum of the additive alternates is one million dollars or more, the Bid Proposal shall comply with the following requirements:

1. Pursuant to RCW 39.30.060, if the base bid and the sum of the additive alternates is one million dollars or more, the Bidder shall provide names of the Subcontractors with whom the Bidder will subcontract for performance of heating, ventilation and air conditioning (HVAC), plumbing, and electrical.
2. The Bidder can name itself for the performance of the work.
3. The Bidder shall not list more than one Subcontractor for each category of work identified UNLESS Subcontractors vary with bid alternates, in which case the Bidder must indicate which Subcontractor will be used for which alternate.
4. Failure of the Bidder to submit as part of the bid the NAMES of such Subcontractors or to name itself to perform such work shall render the Bidder's bid nonresponsive and, therefore, void.

C. The Bid Proposal shall be submitted in a sealed envelope addressed to the office specified in the Advertisement for Bids. The envelope shall have printed on the outside:

1. The project number and description.
2. The name and address of the bidder.
3. Identification as Bid Proposal.

D. Prior to the bid opening, the Owner's representative will designate the official bid clock. Any part of the bid proposal or bid modification not received prior to the times specified, per the designated bid clock, will not be considered and the bid will be returned to the bidder unopened.

E. A bid may be withdrawn in person by a bidder's authorized representative before the opening of the bids. Bidder(s) representative will be required to show ID and sign on bid summary sheet before it will be released.

F. People with disabilities who wish to request special accommodation, (e.g., sign language interpreters, Braille, etc.) need to contact the Owner ten (10) working days prior to the scheduled bid opening.

0.10 BID RESULTS

A. After the Bid Opening, Bidders may obtain the tabulation of apparent bids from Lewis County by calling (360) 740-1192 or accessing the project information page on the Lewis County website.

0.11 LOW RESPONSIBLE BIDDER

A. If applicable, it is the intent of the Owner to award a contract to the low responsible bidder. In determining the bidder's responsibility, the Owner shall consider an overall accounting of the attached Document 00 45 12, Responsibility Criteria. Upon Owner's request, the apparent low bidder must supply the requested information within two (2) business days of request by Owner. Withholding information or failure to submit all the information requested within the time provided shall render the bid nonresponsive. If the Owner determines that the apparent low bidder is not responsible, the Owner will notify the bidder of its preliminary determination in writing. Within three (3) days after receipt of the preliminary determination, the bidder may withdraw its bid or request a hearing. The Owner will schedule a hearing within three (3) working days of receipt of the bidder's request. The hearing members will include the Central Services Director, Public Works Director and Central Services Project Manager. The Owner will issue a Final Determination after reviewing information presented at the hearing. The Owner's Final Determination is specific to this project, and will have no effect on other or future projects.

B. "**SUBCONTRACTOR RESPONSIBILITY CRITERIA"** In accordance with SHB 2010 amending RCW 39.04 the Contractor shall include the language of this paragraph in each of its first tier subcontracts, and shall require each of its subcontractors to include the same language of this section in each of their subcontracts, adjusting only as necessary the terms used for the contracting parties. The requirements of this paragraph apply to all subcontractors regardless of tier. At the time of subcontract execution, the Contractor shall verify that each of its first tier subcontractors meets the following bidder responsibility criteria:

1. Have a current certificate of registration as a contractor in compliance with chapter 18.27 RCW, which must have been in effect at the time of subcontract bid submittal;
2. Have a current Washington Unified Business Identifier (UBI) number; and if applicable, have:
    a. Have Industrial Insurance (workers' compensation) coverage for the subcontractor's employees working in Washington, as required in Title 51 RCW;
    b. A Washington Employment Security Department number, as required in Title 50 RCW;
    c. A Washington Department of Revenue state excise tax registration number, as required in Title 82 RCW;
    d. An electrical contractor license, if required by Chapter 19.28 RCW;
    e. An elevator contractor license, if required by Chapter 70.87 RCW.
    f. Not be disqualified from bidding on any public works contract under RCW 39.06.010 or 39.12.065 (3).

0.12 CONTRACT AWARD

A. The Owner will evaluate bid responsiveness and bidder responsibility.
    1. A bid will be considered responsive if it meets the following requirements:
        a. It is received at the proper time and place.
        b. It meets the stated requirements of the bid proposal.
        c. It is submitted by a licensed/registered contractor within the State of Washington at the time of bid opening and is not banned from bidding by the Department of Labor and Industries.
        d. It is accompanied by a bid guarantee, if required.
    2. A bid will be considered responsible if it meets the following requirements:
        a. It meets an overall accounting of the responsibility criteria established for the project.

B. The Owner reserves the right to accept or reject any or all bid proposals and to waive informalities that do not affect the essential fairness of the bidding process.

C. The Owner may negotiate bid price adjustments with the low responsive bidder, including changes in the contract documents, to bring the bid within the available funding per RCW 39.04.015.

D. The apparent low bidder, for purpose of award, shall be the responsive bidder offering the low aggregate amount for the base bid plus selected additive or deductive bid alternates and meeting all other bid submittal requirements.

E. The Contract will only become effective when signed by the Owner. Prior to the Owner's signature, any and all costs incurred shall be the sole responsibility of the bidder.

END OF INSTRUCTIONS TO BIDDERS

Project Name: Lewis Co. Community Development Tenant Improvements Project No.: J2037C

Contractor Name: _____

Document 00 41 00
B I D F O R M

In compliance with the contract documents, the following bid form is submitted:

1) BASE BID (*Including Trench Excavation Safety Provisions)*

_____ $_____

(Please print dollar amount in space above) **(do not include Washington State Sales Tax)**

TRENCH EXCAVATION SAFETY PROVISIONS $ _____

(*Included also in Base Bid*)

If the bid amount contains any work which requires trenching exceeding a depth of four feet, all costs for trench safety shall be included in the Base Bid **and indicated above** for adequate trench safety systems in compliance with Chapter 39.04 RCW. 49.17 RCW and WAC 296-155-650. Bidder must include a lump sum dollar amount in blank above (even if the value is $0.00) to be responsive.

2) BID ALTERNATES *(Specify whether additive or deductive)*

(1) _____ $_____

(2) _____ $_____

(3) _____ $_____

(4) _____ $_____

(5) _____ $_____

(6) _____ $_____

Do not include Washington State Sales Tax **in alternate amounts**.

The Owner reserves the right to accept or reject any or all bid prices within sixty (60) days of the bid date.

TIME FOR COMPLETION:

Contract Time - The undersigned hereby agrees to Substantially Complete all the work under the Base Bid (and accepted Alternates) within 300 calendar days after the date of Notice to Proceed.

Final Completion – All the Work shall be fully and finally completed in accordance with the contract documents within 45 calendar days after the date of Substantial Completion.

SUBCONTRACTOR LISTING REQUIREMENTS

If the base bid and the sum of the additive alternates is one million dollars or more, the undersigned agrees to submit Subcontractor Listing Form A (HVAC, Plumbing, Electrical) within one hour of bid submittal time & Subcontractor Listing Form B (Structural Steel Install, Rebar Install) within 48 hours of the bid submittal time, as applicable to the work, according to RCW 39.30.060 and the Instructions to Bidders.

LIQUIDATED DAMAGES

The undersigned agrees to pay the Owner as liquidated damages the sum of $ 320.00 for each consecutive calendar day that is in default after the Contract Time. Liquidated damages shall be deducted from the contract invoice after taxes and retainage.

RECEIPT OF ADDENDA

Receipt of the following addenda is acknowledged:

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

Name of Firm _____

NOTE: *If Bidder is a corporation, write State of Incorporation; if a partnership, give full names and addresses of all parties below.*

Signed by _____ Official Capacity _____

Print Name _____

Address _____

City _____ State _____ Zip Code _____

Date _____ Telephone _____ FAX _____

State of Washington Contractor's License No. _____

Federal Tax ID # _____ E-mail address: _____

Employment Security Department No. _____

CONTRACTOR CERTIFICATION
WAGE THEFT PREVENTION – RESPONSIBLE BIDDER CRITERIA
WASHINGTON STATE PUBLIC WORKS CONTRACTS

Return this signed "Contractor Certification" with your signed Bid Form or within two (2) business days of request by Owner.

Prior to awarding a public works contract, the Owner is required to determine that a bidder meets the responsibility criteria to be considered a 'responsible bidder' and is qualified to be awarded a public works project. See RCW 39.04.350(1)(g) & (2). Pursuant to legislative enactment in 2017, the responsibility criteria include a contractor certification that the contractor has not willfully violated Washington's wage laws. See Chap. 258, 2017 Laws (enacting SSB 5301).

Project No.: J2037C

Project Name: Lewis Co. Comm. Dev. Tenant Impr.

Procurement Solicitation Date: _____

I hereby certify, on behalf of the firm identified below, as follows (check one):

☐ **NO WAGE VIOLATIONS**. This firm has NOT been determined by a final and binding citation and notice of assessment issued by the Washington Department of Labor and Industries or through a civil judgment entered by a court of limited or general jurisdiction to have willfully violated, as defined in RCW 49.48.082, any provision of RCW chapters 49.46, 49.48, or 49.52 within three (3) years prior to the date of the above-referenced procurement solicitation date.

OR

☐ **VIOLATIONS OF WAGE LAWS**. This firm has been determined by a final and binding citation and notice of assessment issued by the Washington Department of Labor and Industries or through a civil judgment entered by a court of limited or general jurisdiction to have willfully violated, as defined in RCW 49.48.082, a provision of RCW chapters 49.46, 49.48, or 49.52 within three (3) years prior to the date of the above-referenced procurement solicitation date.

I hereby certify, under penalty of perjury under the laws of the State of Washington, that the certifications herein are true and correct and that I am authorized to make these certifications on behalf of the firm listed herein.

FIRM NAME: _____
Name of Contractor/Bidder – Print full legal entity name of firm

By: _____ _____
Signature of authorized person — Print Name of person making certifications for firm

Title: _____ Place: _____
Title of person signing certificate — Print city and state where signed

Date: _____

Project Name: Lewis Co. Community Development Tenant Improvements Project No.: J2037C

Contractor Name: _____

LEWIS COUNTY
FACILITIES DEPARTMENT

Subcontractor List Form A

For HVAC, Plumbing, and Electrical

Within One Hour of the Bid Submittal Time

In compliance with the contract documents, the following subcontractor list is submitted:

SUBCONTRACTOR LISTING – RCW 39.30.060

If the base bid and the sum of the additive alternates is one million dollars or more, the Bidder shall provide names of the subcontractors with whom the Bidder will **directly** subcontract for performance of the following work. If the Bidder intends to perform the work, the Bidder must enter its name for that category of work.

The Bidder shall not list more than one subcontractor for each category of work identified UNLESS subcontractors vary with bid alternates, in which case the Bidder must indicate which subcontractor will be used for which alternate. Substitutions are prohibited except as outlined in RCW 39.30.060.

Failure of the Bidder to submit the NAMES of such subcontractors or to name itself to perform such work shall render the Bidder's bid nonresponsive and, therefore, VOID.

Bidders who name themselves to perform the work are expected to perform the work and the Owner reserves the right to reject substitution of the bidder with a subcontractor unless the bidder demonstrates a change in circumstances from the time of bid submission that is outside of the control of the bidder.

Category of Work	Alternate Bid # (if applicable)	Firm Name
1. HVAC, Base Bid	n/a	
a. HVAC, Alternate Bid		
2. Plumbing, Base Bid	n/a	
a. Plumbing, Alternate Bid		
3. Electrical, Base Bid	n/a	
a. Electrical, Alternate Bid		

Bidder may attach a separate sheet for additional alternate bid subcontractors.

Submitted By: _____
Print Name and Title of Authorized Person

Project Name: Lewis Co. Community Development Tenant Improvements Project No.: J2037C

Contractor Name: _____

LEWIS COUNTY
FACILITIES DEPARTMENT

Subcontractor List Form B

For Structural Steel Installation and Rebar Installation

Within 48 Hours of Bid Submittal Time

In compliance with the contract documents, the following subcontractor list is submitted:

SUBCONTRACTOR LISTING – RCW 39.30.060

If the base bid and the sum of the additive alternates is one million dollars or more, the Bidder shall provide names of the subcontractors with whom the Bidder will **directly** subcontract for performance of the following work. If the Bidder intends to perform the work, the Bidder must enter its name for that category of work.

The Bidder shall not list more than one subcontractor for each category of work identified UNLESS subcontractors vary with bid alternates, in which case the Bidder must indicate which subcontractor will be used for which alternate. Substitutions are prohibited except as outlined in RCW 39.30.060.

Failure of the Bidder to submit the NAMES of such subcontractors or to name itself to perform such work shall render the Bidder's bid nonresponsive and, therefore, VOID.

Bidders who name themselves to perform the work are expected to perform the work and the Owner reserves the right to reject substitution of the bidder with a subcontractor unless the bidder demonstrates a change in circumstances from the time of bid submission that is outside of the control of the bidder.

Category of Work	Alternate Bid # (if applicable)	Firm Name
1. Structural Steel Installation, Base Bid	n/a	
a. Structural Steel Installation, Alternate Bid		
2. Rebar Installation, Base Bid	n/a	
a. Rebar Installation, Alternate Bid		

Bidder may attach a separate sheet for additional alternate bid subcontractors.

Submitted By: _____
Print Name and Title of Authorized Person

Document 00 45 12
Bidder Responsibility Criteria

Low Responsible Bidder

It is the intent of the Owner to award a contract to the low responsible bidder. In determining the bidder's responsibility, the Owner shall consider an overall accounting of the items listed below. The bidder must submit the following information, demonstrating that they meet the listed criteria:

1. Capacity

Category	Required Information / Criteria
❒ Current Workload	On a separate sheet, list all the major projects your firm has in progress or are projected to commence during the next 6 months, giving the name of project, Owner, architect, contract amount, percentage complete and scheduled completion date. Failure to list all major projects shall render the bid non-responsive. List the current or projected workload for the next 12 months including this Contract, expressed in total contract value. $ _____ List actual contracted workload for the previous 12 months, expressed in total contract value. $ _____ The bidder's current or projected workload, during the life of this contract, shall not exceed 150% of the actual contracted workload over the previous 12 months unless the bidder can demonstrate to the Owner's satisfaction that it has the capacity to assume the additional work of this project, provide adequate staffing, and meet project demands.

2. Previous Experience

	Category	Required Information / Criteria
❒	List of Completed Projects (Use Form 1)	On a separate sheet, list all the major projects ($75,000 and above) your firm has completed in each of the past five (5) years, giving the name of project, Owner (contact name and phone numbers, architect (contact name and phone numbers), contract amount, date of completion and percentage of the cost of the work performed with your own forces. This information will be used for references.
	Experience of Superintendent or Project Manager (Use Form 2)	Submit resume and references if different than above, of the person proposed by the bidder to superintend the work. This person shall have managed projects of similar complexity and similar size, and successfully completed the project within the last three (3) years. Superintendent and/or Project Manager shall not be replaced on the project without full consent of the Owner.
❒	Equipment	Submit affidavit that firm has equipment necessary to perform all phases of work, including HMA pavers, planning or grinding machines, asphalt saws, etc.

3. Ability to Perform Within Time Specified

	Category	Required Information / Criteria
❒	Contractor's Ability to Meet the Project Schedule	On a separate sheet, list the project titles, original contract time, and change order time extensions for three specific projects. Bidder shall document that it achieved substantial completion of three previous projects of similar size and scope within no more than 105% of the final contracted time for completion (including change ordered adjustments).

4. References

	Category	Required Information / Criteria
❒	References from Owners of Previous Projects	Owner will check references by contacting owners of previous projects on bidder's performance over the last five years. On average, such references shall be satisfactory or better on a five category scale with "satisfactory" at mid scale. A reference score sheet will be utilized for rating completed projects of similar scope and value.
❒	Public Agency Debarment	Bidder shall not have been debarred by any Public agency within the last two (2) years.

The apparent low bidder must provide the above required information within two (2) working days of receiving Owner notification. Failure to submit such information to the satisfaction of the Owner within the time provided shall render the bid non-responsive.

If the Owner determines that the apparent low bidder is not responsible, the Owner will notify the bidder of its preliminary determination in writing. Within three (3) days after receipt of the preliminary determination, the bidder may withdraw its bid or may request a hearing. The Owner will schedule a hearing within three (3) working days of receipt of the bidder's request. The Owner will issue a Final Determination after reviewing information presented at the hearing. The Owner's Final Determination is specific to this project and will have no effect on other or future projects.

Bidder Responsibility
Form 1 - Contractor Experience Detail
Project: Lewis County Community Development Tenant Improvements

Business Contact Information

Contractor Name:		Total years in Business:
Mailing Address:		
Business Phone:		Former business name(s) & Dates:
Contact Name and Title:		
Contact Phone:	Contact Email:	Reason for name change(s):

*List Projects Completed Within The Time Specified By Division 00, or Are In Progress

* Project Name & Location:	Description Of Project:	Owner:	Architect:	Project Manager Name:	Original Contract Amount:	$	Is this project relevant to proposed project?
					Final Contract Amount:	$	
		Address:	Address:		Original Contract Days		**Yes** ☐
				Superintendent Name:	Time Extensions Granted Days		**No** ☐
		Phone:	Phone:		Completion Date:		
	As Prime ☐ Or Sub: ☐	Email:	Email:				

1. Did this project require Apprenticeship Participation?
Yes ☐ **No** ☐ **(If NO, stop here).**
2. If yes, what was the Apprenticeship %? ☐ **%**
3. What was the actual % achieved? ☐ **%**
4. Was the apprenticeship requirement met?
Yes ☐ **No** ☐

If **NO** to question 4 attach separate sheet to explain **Why**.

Bidder Responsibility
Form 2 - Resume of Key Personnel for Proposed Contract
Project: Lewis County Community Development Tenant Improvements

Name:	Role in this Contract:	Years Experience	
		Total	With Current Firm
Firm Name and Location (City and State):			
Training/Education/Specialization:			
Years of Experience in the Proposed Role:			

RELEVANT PROJECTS		
Project Title:		Year Completed
Project Owner:		
Brief Description (Brief scope, size, cost, etc.) and specific role:		Check if project performed with current firm. ☐ If performed with different firm list the firm name
Reference Name & Contact Information:		
Project Owner:	Project Architect:	
Name:	Name:	
Phone:	Phone:	
E-mail	E-mail:	

RELEVANT PROJECTS		
Project Title:		Year Completed
Project Owner:		
Brief Description (Brief scope, size, cost, etc.) and specific role:		Check if project performed with current firm. ☐ If performed with different firm list the firm name
Reference Name & Contact Information:		
Project Owner:	Project Architect:	
Name:	Name:	
Phone:	Phone:	
E-mail	E-mail:	

RELEVANT PROJECTS	
Project Title:	Year Completed
Project Owner:	
Brief Description (Brief scope, size, cost, etc.) and specific role:	Check if project performed with current firm. ☐ If performed with different firm list the firm Name
Reference Name & Contact Information:	
Project Owner:	Project Architect:
Name:	Name:
Phone:	Phone:
E-mail	E-mail:

RELEVANT PROJECTS	
Project Title:	Year Completed
Project Owner:	
Brief Description (Brief scope, size, cost, etc.) and specific role:	Check if project performed with current firm. ☐ If performed with different firm list the firm Name
Reference Name & Contact Information:	
Project Owner:	Project Architect:
Name:	Name:
Phone:	Phone:
E-mail	E-mail:

RELEVANT PROJECTS	
Project Title:	Year Completed
Project Owner:	
Brief Description (Brief scope, size, cost, etc.) and specific role:	Check if project performed with current firm. ☐ If performed with different firm list the firm Name
Reference Name & Contact Information:	
Project Owner:	Project Architect:
Name:	Name:
Phone:	Phone:
E-mail	E-mail:

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PART 1 - GENERAL PROVISIONS

1.01 DEFINITIONS

A. “Application for Payment” means a written request submitted by Contractor to A/E for payment of Work completed in accordance with the Contract Documents and approved Schedule of Values, supported by such substantiating data as Owner or A/E may require.

B. “Architect,” “Engineer,” or “A/E” means a person or entity lawfully entitled to practice architecture or engineering, representing Owner within the limits of its delegated authority.

C. “Change Order” means a written instrument signed by Owner and Contractor stating their agreement upon all of the following: (1) a change in the Work; (2) the amount of the adjustment in the Contract Sum, if any, and (3) the extent of the adjustment in the Contract Time, if any.

D. “Claim” means Contractor’s exclusive remedy for resolving disputes with Owner regarding the terms of a Change Order or a request for equitable adjustment, as more fully set forth in Part 8.

E. “Contract Award Amount” is the sum of the Base Bid and any accepted Alternates**.**

F. “Contract Documents” means the Advertisement for Bids, Instructions for Bidders, completed Bid Form, General Conditions, Modifications to the General Conditions, Supplemental Conditions, Public Works Contract, other Special Forms, Drawings and Specifications, and all addenda and modifications thereof.

G. “Contract Sum” is the total amount payable by Owner to Contractor, for performance of the Work in accordance with the Contract Documents, including all taxes imposed by law and properly chargeable to the Work, except Washington State sales tax.

H. “Contract Time” is the number of calendar days allotted in the Contract Documents for achieving Substantial Completion of the Work.

I. “Contractor” means the person or entity who has agreed with Owner to perform the Work in accordance with the Contract Documents.

J. “Day(s): Unless otherwise specified, day(s) shall mean calendar day(s).”

K. “Drawings” are the graphic and pictorial portions of the Contract Documents showing the design, location, and dimensions of the Work, and may include plans, elevations, sections, details, schedules, and diagrams.

L. “Final Acceptance” means the written acceptance issued to Contractor by Owner after Contractor has completed the requirements of the Contract Documents, as more fully set forth in Section 6.09 B.

M. “Final Completion” means that the Work is fully and finally complete in accordance with the Contract Documents, as more fully set forth in Section 6.09 A.

N. “Force Majeure” means those acts entitling Contractor to request an equitable adjustment in the Contract Time, as more fully set forth in paragraph 3.05A.

O. “Notice” means a written notice that has been delivered to the authorized representative or officer of the addressed party by registered or certified mail, or by email as a PDF attachment. Notices should clearly identify the project number and date of notice.

P. “Notice to Proceed” means a notice from Owner to Contractor that defines the date on which the Contract Time begins to run.

Q. “Owner” means the state agency, institution, or its authorized representative with the authority to enter into, administer, and/or terminate the Work in accordance with the Contract Documents and make related determinations and findings.

R. "Person" means a corporation, partnership, business association of any kind, trust, company, or individual.

S. "Prior Occupancy" means Owner's use of all or parts of the Project before Substantial Completion, as more fully set forth in Section 6.08 A.

T. "Progress Schedule" means a schedule of the Work, in a form satisfactory to Owner, as further set forth in Section 3.02.

U. "Project" means the total construction of which the Work performed in accordance with the Contract Documents may be the whole or a part and which may include construction by Owner or by separate contractors.

V. "Project Record" means the separate set of Drawings and Specifications as further set forth in paragraph 4.02A.

W. "Schedule of Values" means a written breakdown allocating the total Contract Sum to each principal category of Work, in such detail as requested by Owner.

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

Y. "Subcontract" means a contract entered into by Subcontractor for the purpose of obtaining supplies, materials, equipment, or services of any kind for or in connection with the Work.

Z. "Subcontractor" means any person, other than Contractor, who agrees to furnish or furnishes any supplies, materials, equipment, or services of any kind in connection with the Work.

AA. "Substantial Completion" means that stage in the progress of the Work when the construction is sufficiently complete, as more fully set forth in Section 6.07.

AB. "Work" means the construction and services required by the Contract Documents, and includes, but is not limited to, labor, materials, supplies, equipment, services, permits, and the manufacture and fabrication of components, performed, furnished, or provided in accordance with the Contract Documents.

1.02 ORDER OF PRECEDENCE

Any conflict or inconsistency in the Contract Documents shall be resolved by giving the documents precedence in the following order:

1. Signed Public Works Contract, including any Change Orders.
2. Supplemental Conditions.
3. Modifications to the General Conditions.
4. General Conditions.
5. Specifications. Provisions in Division 1 shall take precedence over provisions of any other Division.
6. Drawings. In case of conflict within the Drawings, large-scale drawings shall take precedence over small-scale drawings.
7. Signed and Completed Bid Form.
8. Instructions to Bidders.
9. Advertisement for Bids.

1.03 EXECUTION AND INTENT

Contractor Representations: Contractor makes the following representations to Owner:

1. Contract Sum reasonable: The Contract Sum is reasonable compensation for the Work and the Contract Time is adequate for the performance of the Work, as represented by the Contract Documents;

2. Contractor familiar with project: Contractor has carefully reviewed the Contract Documents, visited and examined the Project site, become familiar with the local conditions in which the Work is to be performed, and satisfied itself as to the nature, location, character, quality and quantity of the Work, the labor, materials, equipment, goods, supplies, work, services and other items to be furnished and all other requirements of the Contract Documents, as well as the surface and subsurface conditions and other matters that may be encountered at the Project site or affect performance of the Work or the cost or difficulty thereof;
3. Contractor financially capable: Contractor is financially solvent, able to pay its debts as they mature, and possesses sufficient working capital to complete the Work and perform Contractor's obligations required by the Contract Documents; and
4. Contractor can complete Work: Contractor is able to furnish the plant, tools, materials, supplies, equipment and labor required to complete the Work and perform the obligations required by the Contract Documents and has sufficient experience and competence to do so.

PART 2 – INSURANCE AND BONDS

2.01 CONTRACTOR'S LIABILITY INSURANCE

General insurance requirements: Prior to commencement of the Work, Contractor shall obtain all the insurance required by the Contract Documents and provide evidence satisfactory to Owner that such insurance has been procured. Review of the Contractor's insurance by Owner shall not relieve or decrease the liability of Contractor. Companies writing the insurance to be obtained by this part shall be licensed to do business under Chapter 48 RCW or comply with the Surplus Lines Law of the State of Washington. Contractor shall include in its bid the cost of all insurance and bond costs required to complete the base bid work and accepted alternates. Insurance carriers providing insurance in accordance with the Contract Documents shall be acceptable to Owner, and its A.M. Best rating shall be indicated on the insurance certificates.

A. Term of insurance coverage: Contractor shall maintain the following insurance coverage during the Work and for one year after Final Acceptance. Contractor shall also maintain the following insurance coverage during the performance of any corrective Work required by Section 5.16.

    1. General Liability Insurance: Commercial General Liability (CGL) on an Occurrence Form. Coverage shall include, but not be limited to:

        a. Completed operations/products liability;
        b. Explosion, collapse, and underground; and
        c. Employer's liability coverage.

    2. Automobile Liability Insurance: Automobile liability

B. Industrial Insurance compliance: Contractor shall comply with the Washington State Industrial Insurance Act and, if applicable, the Federal Longshoremen's and Harbor Workers' Act and the Jones Act.

C. Insurance to protect for the following: All insurance coverages shall protect against claims for damages for personal and bodily injury or death, as well as claims for property damage, which may arise from operations in connection with the Work whether such operations are by Contractor or any Subcontractor.

D. Owner as Additional Insured: All insurance coverages shall be endorsed to include Owner as an additional named insured for Work performed in accordance with the Contract Documents, and all insurance certificates shall evidence the Owner as an additional insured.

2.02 COVERAGE LIMITS

A. Insurance Coverage Certificates and Policies

The Contractor shall furnish acceptable proof of insurance coverage on the state of Washington Certificate of Insurance form SF500A, dated 07/02/92 or ACORD form, as well as copies of insurance policies.

B. Required Insurance Coverages

1. For a contract less than $100,000.00, the coverage required is:

   a. Comprehensive General Liability Insurance – The Contractor shall at all times during the term of this contract, at its cost and expense, carry and maintain general public liability insurance, including contractual liability, against claims for bodily injury, personal injury, death or property damage occurring or arising out of services provided under this contract. This insurance shall cover claims caused by any act, omission, or negligence of the Contractor or its officers, agents, representatives, assigns or servants. The limits of liability insurance, which may be increased as deemed necessary by the contracting parties, shall be:

Each Occurrence	$1,000,000.00
General Aggregate Limits (other than products – commercial operations)	$1,000,000.00
Products – Commercial Operations Limit	$1,000,000.00
Personal and Advertising Injury Limit	$1,000,000.00
Fire Damage Limit (any one fire)	$50,000.00
Medical Expense Limit (any one person)	$5,000.00

   b. If the contract is for underground utility work, then the Contractor shall provide proof of insurance for that above in the form of Explosion, Collapse and Underground (XCU) coverage.

   c. Employers Liability on an occurrence basis in an amount not less than $1,000,000.00 per occurrence.

2. For contracts over $100,000.00 but less than $5,000,000.00 the contractor shall obtain the coverage limits as listed for contracts below $100,000.00 and General Aggregate and Products – Commercial Operations Limit of not less than $2,000,000.00.

3. Coverage for Comprehensive General Bodily Injury Liability Insurance for a contract over $5,000,000.00 is:

Each Occurrence	$2,000,000.00
General Aggregate Limits (other than products – commercial operations)	$4,000,000.00
Products – Commercial Operations limit	$4,000,000.00
Personal and Advertising Injury Limit	$2,000,000.00
Fire Damage Limit (any one fire)	$50,000.00
Medical Expense Limit (any one Person)	$5,000.00

4. For all Contracts – Automobile Liability: in the event that services delivered pursuant to this contract involve the use of vehicles or the transportation of clients, automobile liability insurance shall be required. If Contractor-owned personal vehicles are used, a Business Automobile Policy covering at a minimum Code 2 “owned autos only” must be secured. If Contractor employee’s vehicles are used, the Contractor must also include under the Business Automobile Policy Code 9, coverage for non-owned autos. The minimum limits for automobile liability is: $1,000,000.00 per occurrence, using a combined single limit for bodily injury and property damage.

5. For Contracts for Hazardous Substance Removal (Asbestos Abatement, PCB Abatement, etc.)

   a. In addition to providing insurance coverage for the project as outlined above, the Contractor shall provide Pollution Liability insurance for the hazardous substance removal as follows:

EACH OCCURRENCE	AGGREGATE
$500,000.00	$1,000,000.00

   or $1,000,000.00 each occurrence/aggregate bodily injury and property damage combined single limit.

      i. Insurance certificate must state that the insurer is covering hazardous substance removal.

      ii. Should this insurance be secured on a “claims made” basis, the coverage must be continuously maintained for one year following the project’s “final completion” through official completion of the project, plus one year following.

   For Contracts where hazardous substance removal is a subcomponent of contracted work, the general contractor shall provide to the Owner a certificate of insurance for coverage as defined in 5a. above. Lewis County must be listed as an additional insured. This certificate of insurance must be provided to the Owner prior to commencing work.

2.03 INSURANCE COVERAGE CERTIFICATES

A. Certificate required: Prior to commencement of the Work, Contractor shall furnish to Owner a completed certificate of insurance coverage.

B. List Project info: All insurance certificates shall name Owner’s Project number and Project title.

C. Cancellation provisions: All insurance certificates shall specifically require 45 Days prior notice to Owner of cancellation or any material change, except 30 Days for surplus line insurance.

2.04 PAYMENT AND PERFORMANCE BONDS

Conditions for bonds: Payment and performance bonds for 100% of the Contract Award Amount, plus state sales tax, shall be furnished for the Work, using the Payment Bond and Performance Bond form published by and available from the American Institute of Architects (AIA) – form A312. Prior to execution of a Change Order that, cumulatively with previous Change Orders, increases the Contract Award Amount by 15% or more, the Contractor shall provide either new payment and performance bonds for the revised Contract Sum, or riders to the existing payment and performance bonds increasing the amount of the bonds. The Contractor shall likewise provide additional bonds or riders when subsequent Change Orders increase the Contract Sum by 15% or more.

No payment or performance bond is required if the Contract Sum is $150,000 or less and the Contractor or General Contractor/Construction Manager agrees that Owner may, in lieu of the bond, retain 10% of the Contract Sum for the period allowed by RCW 39.08.010.

2.05 ALTERNATIVE SURETY

When alternative surety required: Contractor shall promptly furnish payment and performance bonds from an alternative surety as required to protect Owner and persons supplying labor or materials required by the Contract Documents if:

A. Owner has a reasonable objection to the surety; or

B. Any surety fails to furnish reports on its financial condition if required by Owner.

2.06 BUILDER'S RISK

A. Contractor to buy Property Insurance: Contractor shall purchase and maintain property insurance in the amount of the Contract Sum including all Change Orders for the Work on a replacement cost basis until Substantial Completion. For projects not involving New Building Construction, "Installation Floater" is an acceptable substitute for the Builder's Risk Insurance. The insurance shall cover the interest of Owner, Contractor, and any Subcontractors, as their interests may appear.

B. Losses covered: Contractor property insurance shall be placed on an "all risk" basis and insure against the perils of fire and extended coverage and physical loss or damage including theft, vandalism, malicious mischief, collapse, false work, temporary buildings, debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for A/E's services and expenses required as a result of an insured loss.

C. Waiver of subrogation rights: Owner and Contractor waive all subrogation rights against each other, any Subcontractors, A/E, A/E's sub-consultants, separate contractors described in Section 5.20, if any, and any of their subcontractors, for damages caused by fire or other perils to the extent covered by property insurance obtained pursuant to this section or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by Owner as fiduciary. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

PART 3 – TIME AND SCHEDULE

3.01 PROGRESS AND COMPLETION

Contractor to meet schedule: Contractor shall diligently prosecute the Work, with adequate forces, achieve Substantial Completion within the Contract Time, and achieve Final Completion within a reasonable period thereafter.

3.02 CONSTRUCTION SCHEDULE

A. Preliminary Progress Schedule: Unless otherwise provided in Division 1, Contractor shall, within 14 Days after issuance of the Notice to Proceed, submit a preliminary Progress Schedule. The Progress Schedule shall show the sequence in which Contractor proposes to perform the Work, and the dates on which Contractor plans to start and finish major portions of the Work, including dates for shop drawings and other submittals, and for acquiring materials and equipment.

B. Form of Progress Schedule: The Progress Schedule shall be in the form of a Critical Path Method (CPM) logic network or, with the approval of the Owner, a bar chart schedule may be submitted. The scheduling of construction is the responsibility of the Contractor and is included in the contract to assure adequate planning and execution of the work. The schedule will be used to evaluate progress of the work for payment based on the Schedule of Values. The schedule shall show the Contractor's planned order and interdependence of activities, and sequence of work. As a minimum the schedule shall include:

1. Date of Notice to Proceed;

2. Activities (resources, durations, individual responsible for activity, early starts, late starts, early finishes, late finishes, etc.);
3. Utility Shutdowns;
4. Interrelationships and dependence of activities;
5. Planned vs. actual status for each activity;
6. Substantial completion;
7. Punch list;
8. Final inspection;
9. Final completion, and
10. Float time

The Schedule Duration shall be based on the Contract Time of Completion listed on the Bid Form. The Owner shall not be obligated to accept any Early Completion Schedule suggested by the Contractor. The Contract Time for Completion shall establish the Schedule Completion Date.

If the Contractor feels that the work can be completed in less than the Specified Contract Time, then the Surplus Time shall be considered Project Float. This Float time shall be shown on the Project Schedule. It shall be available to accommodate changes in the work and unforeseen conditions.

Neither the Contractor nor the Owner have exclusive right to this Float Time. It belongs to the project.

C. Owner comments on Progress Schedule: Owner shall return comments on the preliminary Progress Schedule to Contractor within 14 Days of receipt. Review by Owner of Contractor's schedule does not constitute an approval or acceptance of Contractor's construction means, methods, or sequencing, or its ability to complete the Work within the Contract Time. Contractor shall revise and resubmit its schedule, as necessary. Owner may withhold a portion of progress payments until a Progress Schedule has been submitted which meets the requirements of this section.

D. Monthly updates and compliance with Progress Schedule: Contractor shall utilize and comply with the Progress Schedule. On a monthly basis, or as otherwise directed by Owner, Contractor shall submit an updated Progress Schedule at its own expense to Owner indicating actual progress. If, in the opinion of Owner, Contractor is not in conformance with the Progress Schedule for reasons other than acts of Force Majeure as identified in Section 3.05, Contractor shall take such steps as are necessary to bring the actual completion dates of its work activities into conformance with the Progress Schedule, and if directed by Owner, Contractor shall submit a corrective action plan or revise the Progress Schedule to reconcile with the actual progress of the Work.

E. Contractor to notify Owner of delays: Contractor shall promptly notify Owner in writing of any actual or anticipated event which is delaying or could delay achievement of any milestone or performance of any critical path activity of the Work. Contractor shall indicate the expected duration of the delay, the anticipated effect of the delay on the Progress Schedule, and the action being or to be taken to correct the problem. Provision of such notice does not relieve Contractor of its obligation to complete the Work within the Contract Time.

3.03 OWNER'S RIGHT TO SUSPEND THE WORK FOR CONVENIENCE

A. Owner may suspend Work: Owner may, at its sole discretion, order Contractor, in writing, to suspend all or any part of the Work for up to 90 Days, or for such longer period as mutually agreed.

B. Compliance with suspension; Owner's options: Upon receipt of a written notice suspending the Work, Contractor shall immediately comply with its terms and take all reasonable steps to minimize the incurrence of cost of performance directly attributable to such suspension.

Within a period up to 90 Days after the notice is delivered to Contractor, or within any extension of that period to which the parties shall have agreed, Owner shall either:

1. Cancel the written notice suspending the Work; or
2. Terminate the Work covered by the notice as provided in the termination provisions of Part 9.

C. Resumption of Work: If a written notice suspending the Work is cancelled or the period of the notice or any extension thereof expires, Contractor shall resume Work.

D. Equitable Adjustment for suspensions: Contractor shall be entitled to an equitable adjustment in the Contract Time, or Contract Sum, or both, for increases in the time or cost of performance directly attributable to such suspension, provided Contractor complies with all requirements set forth in Part 7.

3.04 OWNER'S RIGHT TO STOP THE WORK FOR CAUSE

A. Owner may stop Work for Contractor's failure to perform: If Contractor fails or refuses to perform its obligations in accordance with the Contract Documents, Owner may order Contractor, in writing, to stop the Work, or any portion thereof, until satisfactory corrective action has been taken.

B. No Equitable Adjustment for Contractor's failure to perform: Contractor shall not be entitled to an equitable adjustment in the Contract Time or Contract Sum for any increased cost or time of performance attributable to Contractor's failure or refusal to perform or from any reasonable remedial action taken by Owner based upon such failure.

3.05 DELAY

A. Force Majeure actions not a default; Force Majeure defined: Any delay in or failure of performance by Owner or Contractor, other than the payment of money, shall not constitute a default hereunder if and to the extent the cause for such delay or failure of performance was unforeseeable and beyond the control of the party ("Force Majeure"). Acts of Force Majeure include, but are not limited to:

1. Acts of God or the public enemy;
2. Acts or omissions of any non-Owner government entity;
3. Fire or other casualty for which Contractor is not responsible;
4. Quarantine or epidemic;
5. Strike or defensive lockout;
6. Unusually severe weather conditions which could not have been reasonably anticipated; and
7. Unusual delay in receipt of supplies or products which were ordered and expedited and for which no substitute reasonably acceptable to Owner was available.

B. Contract Time adjustment for Force Majeure: Contractor shall be entitled to an equitable adjustment in the Contract Time for changes in the time of performance directly attributable to an act of Force Majeure, provided it makes a request for equitable adjustment according to Section 7.03. Contractor shall not be entitled to an adjustment in the Contract Sum resulting from an act of Force Majeure.

C. Contract Time or Contract Sum adjustment if Owner at fault: Contractor shall be entitled to an equitable adjustment in Contract Time, and may be entitled to an equitable adjustment in Contract Sum, if the cost or time of Contractor's performance is changed due to the fault or negligence of Owner, provided the Contractor makes a request according to Sections 7.02 and 7.03.

D. No Contract Time or Contract Sum adjustment if Contractor at fault: Contractor shall not be entitled to an adjustment in Contract Time or in the Contract Sum for any delay or failure of performance to the extent such delay or failure was caused by Contractor or anyone for whose acts Contractor is responsible.

E. Contract Time adjustment only for concurrent fault: To the extent any delay or failure of performance was concurrently caused by the Owner and Contractor, Contractor shall be entitled to an adjustment in the Contract Time for that portion of the delay or failure of performance that was concurrently caused, provided it makes a request for equitable adjustment according to Section 7.03, but shall not be entitled to an adjustment in Contract Sum.

F. Contractor to mitigate delay impacts: Contractor shall make all reasonable efforts to prevent and mitigate the effects of any delay, whether occasioned by an act of Force Majeure or otherwise.

3.06 NOTICE TO OWNER OF LABOR DISPUTES

A. Contractor to notify Owner of labor disputes: If Contractor has knowledge that any actual or potential labor dispute is delaying or threatens to delay timely performance in accordance with the Contract Documents, Contractor shall immediately give notice, including all relevant information, to Owner.

B. Pass through notification provisions to Subcontractors: Contractor agrees to insert a provision in its Subcontracts and to require insertion in all sub-subcontracts, that in the event timely performance of any such contract is delayed or threatened by delay by any actual or potential labor dispute, the Subcontractor or Sub-subcontractor shall immediately notify the next higher tier Subcontractor or Contractor, as the case may be, of all relevant information concerning the dispute.

3.07 DAMAGES FOR FAILURE TO ACHIEVE TIMELY COMPLETION

A. Liquidated Damages

1. Reason for Liquidated Damages: Timely performance and completion of the Work is essential to Owner and time limits stated in the Contract Documents are of the essence. Owner will incur serious and substantial damages if Substantial Completion of the Work does not occur within the Contract Time. However, it would be difficult if not impossible to determine the exact amount of such damages. Consequently, provisions for liquidated damages are included in the Contract Documents.
2. Calculation of Liquidated Damages amount: The liquidated damage amounts set forth in the Contract Documents will be assessed not as a penalty, but as liquidated damages for breach of the Contract Documents. This amount is fixed and agreed upon by and between the Contractor and Owner because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the Owner would in such event sustain. This amount shall be construed as the actual amount of damages sustained by the Owner, and may be retained by the Owner and deducted from periodic payments to the Contractor.
3. Contractor responsible even if Liquidated Damages assessed: Assessment of liquidated damages shall not release Contractor from any further obligations or liabilities pursuant to the Contract Documents.

B. Actual Damages

Calculation of Actual Damages: Actual damages will be assessed for failure to achieve Final Completion within the time provided. Actual damages will be calculated on the basis of direct architectural, administrative, and other related costs attributable to the Project from the date when Final Completion should have been achieved, based on the date Substantial Completion is actually achieved, to the date Final Completion is actually achieved. Owner may offset these costs against any payment due Contractor.

PART 4 – SPECIFICATIONS, DRAWINGS, AND OTHER DOCUMENTS

4.01 DISCREPANCIES AND CONTRACT DOCUMENT REVIEW

A. Specifications and Drawings are basis of the Work: The intent of the Specifications and Drawings is to describe a complete Project to be constructed in accordance with the Contract Documents. Contractor shall furnish all labor, materials, equipment, tools, transportation, permits, and supplies, and perform the Work required in accordance with the Drawings, Specifications, and other provisions of the Contract Documents.

B. Parts of the Contract Documents are complementary: The Contract Documents are complementary. What is required by one part of the Contract Documents shall be binding as if required by all. 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.

C. Contractor to report discrepancies in Contract Documents: Contractor shall carefully study and compare the Contract Documents with each other and with information furnished by Owner. If, during the performance of the Work, Contractor finds a conflict, error, inconsistency, or omission in the Contract Documents, it shall promptly and before proceeding with the Work affected thereby, report such conflict, error, inconsistency, or omission to A/E in writing.

D. Contractor knowledge of discrepancy in documents – responsibility: Contractor shall do no Work without applicable Drawings, Specifications, or written modifications, or Shop Drawings where required, unless instructed to do so in writing by Owner. If Contractor performs any construction activity, and it knows or reasonably should have known that any of the Contract Documents contain a conflict, error, inconsistency, or omission, Contractor shall be responsible for the performance and shall bear the cost for its correction.

E. Contractor to perform Work implied by Contract Documents: Contractor shall provide any work or materials the provision of which is clearly implied and is within the scope of the Contract Documents even if the Contract Documents do not mention them specifically.

F. Interpretation questions referred to A/E: Questions regarding interpretation of the requirements of the Contract Documents shall be referred to the A/E.

4.02 PROJECT RECORD

A. Contractor to maintain Project Record Drawings and Specifications: Contractor shall legibly mark in ink on a separate set of the Drawings and Specifications all actual construction, including depths of foundations, horizontal and vertical locations of internal and underground utilities and appurtenances referenced to permanent visible and accessible surface improvements, field changes of dimensions and details, actual suppliers, manufacturers and trade names, models of installed equipment, and Change Order Proposals (COP). This separate set of Drawings and Specifications shall be the “Project Record.”

B. Update Project Record weekly and keep on site: The Project Record shall be maintained on the project site throughout the construction and shall be clearly labeled “PROJECT RECORD.” The Project Record shall be updated at least weekly noting all changes and shall be available to Owner at all times.

C. Final Project Record to A/E before Final Acceptance: Contractor shall submit the completed and finalized Project Record to A/E prior to Final Acceptance.

4.03 SHOP DRAWINGS

A. Definition of Shop Drawings: “Shop Drawings” means documents and other information required to be submitted to A/E by Contractor pursuant to the Contract Documents, showing in detail: the proposed fabrication and assembly of structural elements; and the installation (i.e. form, fit, and attachment details) of materials and equipment. Shop

Drawings include, but are not limited to, drawings, diagrams, layouts, schematics, descriptive literature, illustrations, schedules, performance and test data, samples, and similar materials furnished by Contractor to explain in detail specific portions of the Work required by the Contract Documents. For materials and equipment to be incorporated into the Work, Contractor submittal shall include the name of the manufacturer, the model number, and other information concerning the performance, capacity, nature, and rating of the item. When directed, Contractor shall submit all samples at its own expense. Owner may duplicate, use, and disclose Shop Drawings provided in accordance with the Contract Documents.

B. Approval of Shop Drawings by Contractor and A/E: Contractor shall coordinate all Shop Drawings, and review them for accuracy, completeness, and compliance with the Contract Documents and shall indicate its approval thereon as evidence of such coordination and review. Where required by law, Shop Drawings shall be stamped by an appropriate professional licensed by the state of Washington. Shop Drawings submitted to A/E without evidence of Contractor's approval shall be returned for resubmission. Contractor shall review, approve, and submit Shop Drawings with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of Owner or separate contractors. Contractor's submittal schedule shall allow a reasonable time for A/E review. A/E will review, approve, or take other appropriate action on the Shop Drawings. Contractor shall perform no portion of the Work requiring submittal and eview of Shop Drawings until the respective submittal has been reviewed and the A/E has approved or taken other appropriate action. Owner and A/E shall respond to Shop Drawing submittals with reasonable promptness. Any Work by Contractor shall be in accordance with reviewed Shop Drawings. Submittals made by Contractor which are not required by the Contract Documents may be returned without action.

C. Contractor not relieved of responsibility when Shop Drawings approved: Approval, or other appropriate action with regard to Shop Drawings, by Owner or A/E shall not relieve Contractor of responsibility for any errors or omissions in such Shop Drawings, nor from responsibility for compliance with the requirements of the Contract Documents. Unless specified in the Contract Documents, review by Owner or A/E shall not constitute an approval of the safety precautions employed by Contractor during construction, or constitute an approval of Contractor's means or methods of construction. If Contractor fails to obtain approval before installation and the item or work is subsequently rejected, Contractor shall be responsible for all costs of correction.

D. Variations between Shop Drawings and Contract Documents: If Shop Drawings show variations from the requirements of the Contract Documents, Contractor shall describe such variations in writing, separate from the Shop Drawings, at the time it submits the Shop Drawings containing such variations. If A/E approves any such variation, an appropriate Change Order will be issued. If the variation is minor and does not involve an adjustment in the Contract Sum or Contract Time, a Change Order need not be issued; however, the modification shall be recorded upon the Project Record.

E. Contractor to submit 5 copies of Shop Drawings: Unless otherwise provided in Division 1, Contractor shall submit to A/E for approval 5 copies of all Shop Drawings. Unless otherwise indicated, 3 sets of all Shop Drawings shall be retained by A/E and 2 sets shall be returned to Contractor.

4.04 ORGANIZATION OF SPECIFICATIONS

Specification organization by trade: Specifications are prepared in sections which conform generally with trade practices. These sections are for Owner and Contractor convenience and shall not control Contractor in dividing the Work among the Subcontractors or in establishing the extent of the Work to be performed by any trade.

4.05 OWNERSHIP AND USE OF DRAWINGS, SPECIFICATIONS, AND OTHER DOCUMENTS

A. A/E, not Contractor, owns Copyright of Drawings and Specifications: The Drawings, Specifications, and other documents prepared by A/E are instruments of A/E's service through which the Work to be executed by Contractor is described. Neither Contractor nor any Subcontractor shall own or claim a copyright in the Drawings, Specifications, and other documents prepared by A/E, and A/E shall be deemed the author of them and will, along with any rights of Owner, retain all common law, statutory, and other reserved rights, in addition to the copyright. All copies of these documents, except Contractor's set, shall be returned or suitably accounted for to A/E, on request, upon completion of the Work.

B. Drawings and Specifications to be used only for this Project: The Drawings, Specifications, and other documents prepared by the A/E, and copies thereof furnished to Contractor, are for use solely with respect to this Project. They are not to be used by Contractor or any Subcontractor on other projects or for additions to this Project outside the scope of the Work without the specific written consent of Owner and A/E. Contractor and Subcontractors are granted a limited license to use and reproduce applicable portions of the Drawings, Specifications, and other documents prepared by A/E appropriate to and for use in the execution of their Work.

C. Shop Drawing license granted to Owner: Contractor and all Subcontractors grant a non-exclusive license to Owner, without additional cost or royalty, to use for its own purposes (including reproduction) all Shop Drawings, together with the information and diagrams contained therein, prepared by Contractor or any Subcontractor. In providing Shop Drawings, Contractor and all Subcontractors warrant that they have authority to grant to Owner a license to use the Shop Drawings, and that such license is not in violation of any copyright or other intellectual property right. Contractor agrees to defend and indemnify Owner pursuant to the indemnity provisions in Section 5.03 and 5.22 from any violations of copyright or other intellectual property rights arising out of Owner's use of the Shop Drawings hereunder, or to secure for Owner, at Contractor's own cost, licenses in conformity with this section.

D. Shop Drawings to be used only for this Project: The Shop Drawings and other submittals prepared by Contractor, Subcontractors of any tier, or its or their equipment or material suppliers, and copies thereof furnished to Contractor, are for use solely with respect to this Project. They are not to be used by Contractor or any Subcontractor of any tier, or material or equipment supplier, on other projects or for additions to this Project outside the scope of the Work without the specific written consent of Owner. The Contractor, Subcontractors of any tier, and material or equipment suppliers are granted a limited license to use and reproduce applicable portions of the Shop Drawings and other submittals appropriate to and for use in the execution of their Work under the Contract Documents.

PART 5 – PERFORMANCE

5.01 CONTRACTOR CONTROL AND SUPERVISION

A. Contractor responsible for Means and Methods of construction: Contractor shall supervise and direct the Work, using its best skill and attention, and shall perform the Work in a skillful manner. Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences, and procedures and for coordinating all portions of the Work, unless the Contract Documents give other specific instructions concerning these matters. Contractor shall disclose its means and methods of construction when requested by Owner.

B. Competent Superintendent required: Performance of the Work shall be directly supervised by a competent superintendent who has authority to act for Contractor. The superintendent must be satisfactory to the Owner and shall not be changed without the prior written consent of Owner. Owner may require Contractor to remove the superintendent from the

Work or Project site, at no cost to the Owner for delay or any other claim, if Owner reasonably deems the superintendent incompetent, negligent, or otherwise objectionable, provided Owner has first notified Contractor in writing and allowed a reasonable period for transition. Noncompliance with the Owner's request to remove and replace the superintendent for a material reason shall also be grounds for terminating the Contract for cause.

C. Contractor responsible for acts and omissions of self and agents: Contractor shall be responsible to Owner for acts and omissions of Contractor, Subcontractors, and their employees and agents.

D. Contractor to employ competent and disciplined workforce: Contractor shall enforce strict discipline and good order among all of the Contractor's employees and other persons performing the Work. Contractor shall not permit employment of persons not skilled in tasks assigned to them. Contractor's employees shall at all times conduct business in a manner which assures fair, equal, and nondiscriminatory treatment of all persons. Owner may, by written notice, require Contractor to remove from the Work or Project site, at no cost to the Owner for delay or any other claim, any employee Owner reasonably deems incompetent, negligent, or otherwise objectionable. Noncompliance with the Owner's request to remove and replace personnel at any level for a material reason shall also be grounds for terminating the Contract for cause.

E. Contractor to keep project documents on site: Contractor shall keep on the Project site a copy of the Drawings, Specifications, addenda, reviewed Shop Drawings, and permits and permit drawings.

F. Contractor to comply with ethical standards: Contractor shall ensure that its owner(s) and employees, and those of its Subcontractors, comply with the Ethics in Public Service Act RCW 42.52, which, among other things, prohibits state employees from having an economic interest in any public works contract that was made by, or supervised by, that employee. Contractor shall remove, at its sole cost and expense, any of its, or its Subcontractors' employees, if they are in violation of this act.

5.02 PERMITS, FEES, AND NOTICES

A. Contractor to obtain and pay for permits: Unless otherwise provided in the Contract Documents, Contractor shall pay for and obtain all permits, licenses, and inspections necessary for proper execution and completion of the Work. Prior to Final Acceptance, the approved, signed permits shall be delivered to Owner.

B. Allowances for permit fees: The actual cost of the general building permit (only) and the public utility hook-up fees will be a direct reimbursement to the Contractor or paid directly to the permitting agency by the Owner. ***Fees for these permits should not be included by the Contractor in his bid amount.***

C. Contractor to comply with all applicable laws: Contractor shall comply with and give notices required by all federal, state, and local laws, ordinances, rules, regulations, and lawful orders of public authorities applicable to performance of the Work.

D. Contractor to submit copies: The General Contractor shall submit copies of each valid permit required on the project to the Owner's representative. Nothing in this part shall be construed as imposing a duty upon the Owner or A/E to secure permits.

5.03 PATENTS AND ROYALTIES

Payment, indemnification, and notice: Contractor is responsible for, and shall pay, all royalties and license fees. Contractor shall defend, indemnify, and hold Owner harmless from any costs, expenses, and liabilities arising out of the infringement by Contractor of any patent, copyright, or other intellectual property right used in the Work; however, provided that Contractor gives prompt notice, Contractor shall not be responsible for such defense or indemnity when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents. If Contractor has reason to believe that use of the required design, process,

or product constitutes an infringement of a patent or copyright, it shall promptly notify Owner of such potential infringement.

5.04 PREVAILING WAGES

A. Contractor to pay Prevailing Wages or applicable Federal Wages: Contractor shall pay the prevailing rate of wages to all workers, laborers, or mechanics employed in the performance of any part of the Work in accordance with RCW 39.12 and the rules and regulations of the Department of Labor and Industries (L&I). The schedule of prevailing wage rates for the locality or localities of the Work, is determined by the Industrial Statistician of the Department of Labor and Industries. It is the Contractor's responsibility to verify the applicable prevailing wage rate. If applicable, the Contractor shall comply with all Federal Funding requirements of the Davis Bacon Act that will be addressed in a separate "DIVISION 00 SPECIAL CONDITIONS" specification section that will be based on the specific requirements of the funding source.

B. Statement of Intent to Pay Prevailing Wages: Before payment is made by the Owner to the Contractor for any work performed by the Contractor and subcontractors whose work is included in the application for payment, the Contractor shall submit, or shall have previously submitted to the Owner for the Project, a Statement of Intent to Pay Prevailing Wages, approved by the L&I, certifying the rate of hourly wage paid and to be paid each classification of laborers, workers, or mechanics employed upon the Work by Contractor and Subcontractors. Such rates of hourly wage shall not be less than the prevailing wage rate.

C. Affidavit of Wages Paid: Prior to release of retainage, the Contractor shall submit to the Owner an Affidavit of Wages Paid, approved by the L&I, for the Contractor and every subcontractor, of any tier, that performed work on the Project.

D. Disputes: Disputes regarding prevailing wage rates shall be referred for arbitration to the Director of the L&I. The arbitration decision shall be final and conclusive and binding on all parties involved in the dispute as provided for by RCW 39.12.060.

E. Statement with pay application; Post Statements of Intent at job site: Each Application for Payment submitted by Contractor shall state that prevailing wages have been paid in accordance with the prefiled statement(s) of intent, as approved. Copies of the approved intent statement(s) shall be posted on the job site with the address and telephone number of the Industrial Statistician of the L&I where a complaint or inquiry concerning prevailing wages may be made.

F. Contractor to pay for Statements of Intent and Affidavits: In compliance with chapter 296-127 WAC, Contractor shall pay to the L&I the currently established fee(s) for each statement of intent and/or affidavit of wages paid submitted to the L&I for certification.

G. Certified Payrolls: Consistent with RCW 31.12.120, contractors, subcontractors, or employers shall file a copy of its certified payroll records using the L&I' online system at least once per month. If the L&I' online system is not used, a contractor, subcontractor, or employer shall file a copy of its certified payroll records directly with the L&I in a format approved by the L&I at least once per month. A contractor, subcontractor, or employer's noncompliance with this section constitutes a violation of RCW 39.12.050.

H. Compliance with Federal Funding requirements: If applicable, the Contractor shall comply with all Federal Funding requirements of the Davis Bacon Act that will be addressed in a separate "DIVISION 00 SPECIAL CONDITIONS" specification section that will be based on the specific requirements of the funding source.

5.05 HOURS OF LABOR

A. Overtime: Contractor shall comply with all applicable provisions of RCW 49.28 and they are incorporated herein by reference. Pursuant to that statute, no laborer, worker, or mechanic employed by Contractor, any Subcontractor, or any other person performing or contracting to do the whole or any part of the Work, shall be permitted or required to work more than

eight hours in any one calendar day, provided, that in cases of extraordinary emergency, such as danger to life or property, the hours of work may be extended, but in such cases the rate of pay for time employed in excess of eight hours of each calendar day shall be not less than one and one-half times the rate allowed for this same amount of time during eight hours of service.

B. 4-10 Agreements: Notwithstanding the preceding paragraph, RCW 49.28 permits a contractor or subcontractor in any public works contract subject to those provisions, to enter into an agreement with its employees in which the employees work up to ten hours in a calendar day. No such agreement may provide that the employees work ten-hour days for more than four calendar days a week. Any such agreement is subject to approval by the employees. The overtime provisions of RCW 49.28 shall not apply to the hours, up to forty hours per week, worked pursuant to any such agreement.

5.06 NONDISCRIMINATION

A. Discrimination prohibited by applicable laws: The Contractor and all Subcontractors shall comply with all applicable federal and state non-discrimination laws, regulations, and policies. No person shall, on the grounds of age, race, creed, color, sex, sexual orientation, religion, national origin, marital status, honorably discharged veteran or military status, or disability (physical, mental, or sensory) be denied the benefits of, or otherwise be subjected to discrimination under any project, program, or activity, funded, in whole or in part, under this Agreement

B. During performance of the Work:

1. Protected Classes: Contractor shall not discriminate against any employee or applicant for employment because of race, creed, color, national origin, sex, age, marital status, or the presence of any physical, sensory, or mental disability, Vietnam era veteran status, or disabled veteran status, nor commit any other unfair practices as defined in RCW 49.60.
2. Advertisements to state nondiscrimination: Contractor shall, in all solicitations or advertisements for employees placed by or for it, state that all qualified applicants will be considered for employment, without regard to race, creed, color, national origin, sex, age, marital status, or the presence of any physical, sensory, or mental disability.
3. Contractor to notify unions and others of nondiscrimination: Contractor shall send to each labor union, employment agency, or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice advising the labor union, employment agency, or workers' representative of Contractor's obligations according to the Contract Documents and RCW 49.60.
4. Owner and State access to Contractor records: Contractor shall permit access to its books, records, and accounts, and to its premises by Owner, and by the Washington State Human Rights Commission, for the purpose of investigation to ascertain compliance with this section of the Contract Documents.
5. Pass through provisions to Subcontractors: Contractor shall include the provisions of this section in every Subcontract.

5.07 SAFETY PRECAUTIONS

A. In performing this contract, the Contractor shall provide for protecting the lives and health of employees and other persons; preventing damage to property, materials, supplies, and equipment; and avoid work interruptions. For these purposes, the Contractor shall:

1. Follow Washington Industrial Safety and Health Act (WISHA) regional directives and provide a site-specific safety program that will require an accident prevention and hazard analysis plan for the contractor and each subcontractor on the work site. The Contractor shall submit a site-specific safety plan to the Owner's representative prior to the initial scheduled construction meeting.

2. Provide adequate safety devices and measures including, but not limited to, the appropriate safety literature, notice, training, permits, placement and use of barricades, signs, signal lights, ladders, scaffolding, staging, runways, hoist, construction elevators, shoring, temporary lighting, grounded outlets, wiring, hazardous materials, vehicles, construction processes, and equipment required by all applicable state, federal, and local laws and regulations.
3. Comply with the State Environmental Policy Act (SEPA), Clean Air Act, Shoreline Management Act, and other applicable federal, state, and local statutes and regulations dealing with the prevention of environmental pollution and the preservation of public natural resources.
4. Post all permits, notices, and/or approvals in a conspicuous location at the construction site.
5. Provide any additional measures that the Owner determines to be reasonable and necessary for ensuring a safe environment in areas open to the public. Nothing in this part shall be construed as imposing a duty upon the Owner or A/E to prescribe safety conditions relating to employees, public, or agents of the Contractors.

B. Contractor safety responsibilities: In carrying out its responsibilities according to the Contract Documents, Contractor shall protect the lives and health of employees performing the Work and other persons who may be affected by the Work; prevent damage to materials, supplies, and equipment whether on site or stored off-site; and prevent damage to other property at the site or adjacent thereto. Contractor shall comply with all applicable laws, ordinances, rules, regulations, and orders of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury, or loss; shall erect and maintain all necessary safeguards for such safety and protection; and shall notify owners of adjacent property and utilities when prosecution of the Work may affect them.

C. Contractor to maintain safety records: Contractor shall maintain an accurate record of exposure data on all incidents relating to the Work resulting in death, traumatic injury, occupational disease, or damage to property, materials, supplies, or equipment. Contractor shall immediately report any such incident to Owner. Owner shall, at all times, have a right of access to all records of exposure.

D. Contractor to provide HazMat training: Contractor shall provide all persons working on the Project site with information and training on hazardous chemicals in their work at the time of their initial assignment, and whenever a new hazard is introduced into their work area.

1. Information. At a minimum, Contractor shall inform persons working on the Project site of:

    a. WAC: The requirements of chapter 296-62 WAC, General Occupational Health Standards;
    b. Presence of hazardous chemicals: Any operations in their work area where hazardous chemicals are present; and
    c. Hazard communications program: The location and availability of written hazard communication programs, including the required list(s) of hazardous chemicals and material safety data sheets required by chapter 296-62 WAC.

2. Training. At a minimum, Contractor shall provide training for persons working on the Project site which includes:

    a. Detecting hazardous chemicals: Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area (such as monitoring conducted by the employer, continuous monitoring devices, visual appearance or odor of hazardous chemicals when being released, etc.);
    b. Hazards of chemicals: The physical and health hazards of the chemicals in the work area;
    c. Protection from hazards: The measures such persons can take to protect themselves from these hazards, including specific procedures Contractor, or its

Subcontractors, or others have implemented to protect those on the Project site from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures, and personal protective equipment to be used; and

d. Hazard communications program: The details of the hazard communications program developed by Contractor, or its Subcontractors, including an explanation of the labeling system and the material safety data sheet, and how employees can obtain and use the appropriate hazard information.

E. Hazardous, toxic or harmful substances: Contractor's responsibility for hazardous, toxic, or harmful substances shall include the following duties:

1. Illegal use of dangerous substances: Contractor shall not keep, use, dispose, transport, generate, or sell on or about the Project site, any substances now or hereafter designated as, or which are subject to regulation as, hazardous, toxic, dangerous, or harmful by any federal, state or local law, regulation, statute or ordinance (hereinafter collectively referred to as "hazardous substances"), in violation of any such law, regulation, statute, or ordinance, but in no case shall any such hazardous substance be stored more than 90 Days on the Project site.
2. Contractor notifications of spills, failures, inspections, and fines: Contractor shall promptly notify Owner of all spills or releases of any hazardous substances which are otherwise required to be reported to any regulatory agency and pay the cost of cleanup. Contractor shall promptly notify Owner of all failures to comply with any federal, state, or local law, regulation, or ordinance; all inspections of the Project site by any regulatory entity concerning the same; all regulatory orders or fines; and all responses or interim cleanup actions taken by or proposed to be taken by any government entity or private party on the Project site.

F. Public safety and traffic: All Work shall be performed with due regard for the safety of the public. Contractor shall perform the Work so as to cause a minimum of interruption of vehicular traffic or inconvenience to pedestrians. All arrangements to care for such traffic shall be Contractor's responsibilities. All expenses involved in the maintenance of traffic by way of detours shall be borne by Contractor.

G. Contractor to act in an emergency: In an emergency affecting the safety of life or the Work or of adjoining property, Contractor is permitted to act, at its discretion, to prevent such threatened loss or injury, and Contractor shall so act if so authorized or instructed.

H. No duty of safety by Owner or A/E: Nothing provided in this section shall be construed as imposing any duty upon Owner or A/E with regard to, or as constituting any express or implied assumption of control or responsibility over, Project site safety, or over any other safety conditions relating to employees or agents of Contractor or any of its Subcontractors, or the public.

5.08 OPERATIONS, MATERIAL HANDLING, AND STORAGE AREAS

A. Limited storage areas: Contractor shall confine all operations, including storage of materials, to Owner-approved areas.

B. Temporary buildings and utilities at Contractor expense: Temporary buildings (e.g., storage sheds, shops, offices) and utilities may be provided by Contractor only with the consent of Owner and without expense to Owner. The temporary buildings and utilities shall be removed by Contractor at its expense upon completion of the Work.

C. Roads and vehicle loads: Contractor shall use only established roadways or temporary roadways authorized by Owner. 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 federal, state, or local law or regulation.

D. Ownership and reporting by Contractor of demolished materials: Ownership and control of all materials or facility components to be demolished or removed from the Project site by

Contractor shall immediately vest in Contractor upon severance of the component from the facility or severance of the material from the Project site. Contractor shall be responsible for compliance with all laws governing the storage and ultimate disposal. Contractor shall provide Owner with a copy of all manifests and receipts evidencing proper disposal when required by Owner or applicable law.

E. Contractor responsible for care of materials and equipment on-site: Contractor shall be responsible for the proper care and protection of its materials and equipment delivered to the Project site. Materials and equipment may be stored on the premises subject to approval of Owner. When Contractor uses any portion of the Project site as a shop, Contractor shall be responsible for any repairs, patching, or cleaning arising from such use.

F. Contractor responsible for loss of materials and equipment: Contractor shall protect and be responsible for any damage or loss to the Work, or to the materials or equipment until the date of Substantial Completion, and shall repair or replace without cost to Owner any damage or loss that may occur, except damages or loss caused by the acts or omissions of Owner. Contractor shall also protect and be responsible for any damage or loss to the Work, or to the materials or equipment, after the date of Substantial Completion, and shall repair or replace without cost to Owner any such damage or loss that might occur, to the extent such damages or loss are caused by the acts or omissions of Contractor, or any Subcontractor.

5.09 PRIOR NOTICE OF EXCAVATION

A. Excavation defined; Use of locator services: “Excavation” means an operation in which earth, rock, or other material on or below the ground is moved or otherwise displaced by any means, except the tilling of soil less than 12 inches in depth for agricultural purposes, or road ditch maintenance that does not change the original road grade or ditch flow line. Before commencing any excavation, Contractor shall provide notice of the scheduled commencement of excavation to all owners of underground facilities or utilities, through locator services.

5.10 UNFORESEEN PHYSICAL CONDITIONS

A. Notice requirement for concealed or unknown conditions: If Contractor encounters conditions at the site which are subsurface or otherwise concealed physical conditions which differ materially from those indicated in the Contract Documents, or unknown physical conditions of an unusual nature which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, then Contractor shall give written notice to Owner promptly and in no event later than 7 Days after the first observance of the conditions. Conditions shall not be disturbed prior to such notice.

B. Adjustment in Contract Time and Contract Sum: If such conditions differ materially and cause a change in Contractor’s cost of, or time required for, performance of any part of the Work, the Contractor may be entitled to an equitable adjustment in the Contract Time or Contract Sum, or both, provided it makes a request therefore as provided in Part 7.

5.11 PROTECTION OF EXISTING STRUCTURES, EQUIPMENT, VEGETATION, UTILITIES AND IMPROVEMENTS

A. Contractor to protect and repair property: Contractor shall protect from damage all existing structures, equipment, improvements, utilities, and vegetation: at or near the Project site; and on adjacent property of a third party, the locations of which are made known to or should be known by Contractor. Contractor shall repair any damage, including that to the property of a third party, resulting from failure to comply with the requirements of the Contract Documents or failure to exercise reasonable care in performing the Work. If Contractor fails or refuses to repair the damage promptly, Owner may have the necessary work performed and charge the cost to Contractor.

B. Tree and vegetation protection: Contractor shall only remove trees when specifically authorized to do so, and shall protect vegetation that will remain in place.

5.12 LAYOUT OF WORK

A. Advanced planning of the Work: Contractor shall plan and lay out the Work in advance of operations so as to coordinate all work without delay or revision.

B. Layout responsibilities: Contractor shall lay out the Work from Owner-established baselines and bench marks indicated on the Drawings, and shall be responsible for all field measurements in connection with the layout. Contractor shall furnish, at its own expense, all stakes, templates, platforms, equipment, tools, materials, and labor required to lay out any part of the Work. Contractor shall be responsible for executing the Work to the lines and grades that may be established. Contractor shall be responsible for maintaining or restoring all stakes and other marks established.

5.13 MATERIAL AND EQUIPMENT

A. Contractor to provide new and equivalent equipment and materials: All equipment, material, and articles incorporated into the Work shall be new and of the most suitable grade for the purpose intended, unless otherwise specifically provided in the Contract Documents. References in the Specifications to equipment, material, articles, or patented processes by trade name, make, or catalog number, shall be regarded as establishing a standard quality and shall not be construed as limiting competition. Contractor may, at its option, use any equipment, material, article, or process that, in the judgment of A/E, is equal to that named in the specifications, unless otherwise specifically provided in the Contract Documents.

B. Use of asbestos-containing building materials: The use of asbestos-containing building materials in new construction or renovation work is strictly prohibited. For the determination of asbestos containing building materials, the following shall apply:

1. Until January 1, 2025, asbestos deliberately added in any concentration that contains more than one percent asbestos by weight or area as determined using the United States environmental protection agency method for the determination of asbestos in bulk building materials, EPA/600/R-93/116, July 1993.
2. Following January 1, 2025, asbestos building material deliberately added in any concentration that contains more than 1/10th of one percent asbestos by weight or area for the determination of asbestos in bulk building materials, EPA/600/R-93/116, July 1993.

C. Contractor responsible for fitting parts together: Contractor shall do all cutting, fitting, or patching that may be required to make its several parts fit together properly, or receive or be received by work of others set forth in, or reasonably implied by, the Contract Documents. Contractor shall not endanger any work by cutting, excavating, or otherwise altering the Work and shall not cut or alter the work of any other contractor unless approved in advance by Owner.

D. Owner may reject defective Work: Should any of the Work be found defective, or in any way not in accordance with the Contract Documents, this work, in whatever stage of completion, may be rejected by Owner.

5.14 AVAILABILITY AND USE OF UTILITY SERVICES

A. Owner to provide and charge for utilities: Owner shall make all reasonable utilities available to Contractor from existing outlets and supplies, as specified in the Contract Documents. Unless otherwise provided in the Contract Documents, the utility service consumed shall be charged to or paid for by Contractor at prevailing rates charged to Owner or, where the utility is produced by Owner, at reasonable rates determined by Owner. Contractor will carefully conserve any utilities furnished.

B. Contractor to install temporary connections and meters: Contractor shall, at its expense and in a skillful manner satisfactory to Owner, install and maintain all necessary temporary connections and distribution lines, together with appropriate protective devices, and all meters required to measure the amount of each utility used for the purpose of determining charges. Prior to the date of Final Acceptance, Contractor shall remove all temporary connections, distribution lines, meters, and associated equipment and materials.

5.15 TESTS AND INSPECTION

A. Contractor to provide for all testing and inspection of Work: Contractor shall maintain an adequate testing and inspection program and perform such tests and inspections as are necessary or required to ensure that the Work conforms to the requirements of the Contract Documents. Contractor shall be responsible for inspection and quality surveillance of all its Work and all Work performed by any Subcontractor. Unless otherwise provided, Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. Contractor shall give Owner timely notice of when and where tests and inspections are to be made. Contractor shall maintain complete inspection records and make them available to Owner.

B. Owner may conduct tests and inspections: Owner may, at any reasonable time, conduct such inspections and tests as it deems necessary to ensure that the Work is in accordance with the Contract Documents. Owner shall promptly notify Contractor if an inspection or test reveals that the Work is not in accordance with the Contract Documents. Unless the subject items are expressly accepted by Owner, such Owner inspection and tests are for the sole benefit of Owner and do not:

1. Constitute or imply acceptance;
2. Relieve Contractor of responsibility for providing adequate quality control measures;
3. Relieve Contractor of responsibility for risk of loss or damage to the Work, materials, or equipment;
4. Relieve Contractor of its responsibility to comply with the requirements of the Contract Documents; or
5. Impair Owner's right to reject defective or nonconforming items, or to avail itself of any other remedy to which it may be entitled.

C. Inspections or inspectors do not modify Contract Documents: Neither observations by an inspector retained by Owner, the presence or absence of such inspector on the site, nor inspections, tests, or approvals by others, shall relieve Contractor from any requirement of the Contract Documents, nor is any such inspector authorized to change any term or condition of the Contract Documents.

D. Contractor responsibilities on inspections: Contractor shall promptly furnish, without additional charge, all facilities, labor, material and equipment reasonably needed for performing such safe and convenient inspections and tests as may be required by Owner. Owner may charge Contractor any additional cost of inspection or testing when Work is not ready at the time specified by Contractor for inspection or testing, or when prior rejection makes re-inspection or retest necessary. Owner shall perform its inspections and tests in a manner that will cause no undue delay in the Work.

5.16 CORRECTION OF NONCONFORMING WORK

A. Work covered by Contractor without inspection: If a portion of the Work is covered contrary to the requirements in the Contract Documents, it must, if required in writing by Owner, be uncovered for Owner's observation and be replaced at the Contractor's expense and without change in the Contract Time.

B. Payment provisions for uncovering covered Work: If, at any time prior to Final Completion, Owner desires to examine the Work, or any portion of it, which has been covered, Owner may request to see such Work and it shall be uncovered by Contractor. If such Work is in

accordance with the Contract Documents, the Contractor shall be entitled to an adjustment in the Contract Sum for the costs of uncovering and replacement, and, if completion of the Work is thereby delayed, an adjustment in the Contract Time, provided it makes such a request as provided in Part 7. If such Work is not in accordance with the Contract Documents, the Contractor shall pay the costs of examination and reconstruction.

C. Contractor to correct and pay for non-conforming Work: Contractor shall promptly correct Work found by Owner not to conform to the requirements of the Contract Documents, whether observed before or after Substantial Completion and whether or not fabricated, installed, or completed. Contractor shall bear all costs of correcting such nonconforming Work, including additional testing and inspections.

D. Contractor's compliance with warranty provisions: If, within one year after the date of Substantial Completion of the Work or designated portion thereof, or within one year after the date for commencement of any system warranties established under Section 6.08, or within the terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, Contractor shall correct it promptly after receipt of written notice from Owner to do so. Owner shall give such notice promptly after discovery of the condition. This period of one year shall be extended, with respect to portions of Work first performed after Substantial Completion, by the period of time between Substantial Completion and the actual performance of the Work. Contractor's duty to correct with respect to Work repaired or replaced shall run for one year from the date of repair or replacement. Obligations under this paragraph shall survive Final Acceptance.

E. Contractor to remove non-conforming Work: Contractor shall remove from the Project site portions of the Work which are not in accordance with the requirements of the Contract Documents and are neither corrected by Contractor nor accepted by Owner.

F. Owner may charge Contractor for non-conforming Work: If Contractor fails to correct nonconforming Work within a reasonable time after written notice to do so, Owner may replace, correct, or remove the nonconforming Work and charge the cost thereof to the Contractor.

G. Contractor to pay for damaged Work during correction: Contractor shall bear the cost of correcting destroyed or damaged Work, whether completed or partially completed, caused by Contractor's correction or removal of Work which is not in accordance with the requirements of the Contract Documents.

H. No Period of limitation on other requirements: Nothing contained in this section shall be construed to establish a period of limitation with respect to other obligations which Contractor might have according to the Contract Documents. Establishment of the time period of one year as described in Section 5.16D relates only to the specific obligation of Contractor to correct the Work, and has no relationship to the time within which the Contractor's obligation to comply with the Contract Documents may be sought to be enforced, including the time within which such proceedings may be commenced.

I. Owner may accept non-conforming Work and charge Contractor: If Owner prefers to accept Work which is not in accordance with the requirements of the Contract Documents, Owner may do so instead of requiring its removal and correction, in which case the Contract Sum may be reduced as appropriate and equitable.

5.17 CLEAN UP

Contractor to keep site clean and leave it clean: Contractor shall at all times keep the Project site, including hauling routes, infrastructures, utilities, and storage areas, free from accumulations of waste materials. Before completing the Work, Contractor shall remove from the premises its rubbish, tools, scaffolding, equipment, and materials. Upon completing the Work, Contractor shall leave the Project site in a clean, neat, and orderly condition satisfactory to Owner. If Contractor

fails to clean up as provided herein, and after reasonable notice from Owner, Owner may do so and the cost thereof shall be charged to Contractor.

5.18 ACCESS TO WORK

Owner and A/E access to Work site: Contractor shall provide Owner and A/E access to the Work in progress wherever located.

5.19 OTHER CONTRACTS

Owner may award other contracts; Contractor to cooperate: Owner may undertake or award other contracts for additional work at or near the Project site. Contractor shall reasonably cooperate with the other contractors and with Owner's employees and shall carefully adapt scheduling and perform the Work in accordance with these Contract Documents to reasonably accommodate the other work.

5.20 SUBCONTRACTORS AND SUPPLIERS

A. Subcontractor Responsibility: The Contractor shall include the language of this paragraph in each of its first tier subcontracts, and shall require each of its subcontractors to include the same language of this section in each of their subcontracts, adjusting only as necessary the terms used for the contracting parties. Upon request of the Owner, the Contractor shall promptly provide documentation to the Owner demonstrating that the subcontractor meets the subcontractor responsibility criteria below. The requirements of this paragraph apply to all subcontractors regardless of tier. At the time of subcontract execution, the Contractor shall verify that each of its first tier subcontractors meets the following bidder responsibility criteria:

1. Have a current certificate of registration as a contractor in compliance with chapter 18.27 RCW, which must have been in effect at the time of subcontract bid submittal;
2. Have a current Washington Unified Business Identifier (UBI) number;
3. If applicable, have:
    a. Industrial Insurance (workers' compensation) coverage for the subcontractor's employees working in Washington, as required in Title 51 RCW;
    b. A Washington Employment Security Department number, as required in Title 50 RCW;
    c. A Washington Department of Revenue state excise tax registration number, as required in Title 82 RCW;
    d. An electrical contractor license, if required by Chapter 19.28 RCW;
    e. An elevator contractor license, if required by Chapter 70.87 RCW.
4. Not be disqualified from bidding on any public works contract under RCW 39.06.010 or 39.12.065 (3).
5. On a project subject to the apprenticeship utilization requirements in RCW 39.04.320, not have been found out of compliance by the Washington state apprenticeship and training council for working apprentices out of ratio, without appropriate supervision, or outside their approved work processes as outlined in their standards of apprenticeship under chapter 49.04 RCW for the one-year period immediately preceding the date of the Owner's first advertisement of the project.
6. Within the three-year period immediately preceding the date of the bid solicitation, not have been determined by a final and binding citation and notice of assessment issued by the L&I or through a civil judgment entered by a court of limited or general jurisdiction to have willfully violated, as defined in RCW 49.48.082, any provision of chapter 49.46, 49.48, or 49.52 RCW.

B. Provide names of Subcontractors and use qualified firms: Contractor shall utilize Subcontractors and suppliers which are experienced and qualified, and meet the requirements of the Contract Documents, if any. Contractor shall not utilize any Subcontractor or supplier to whom the Owner has a reasonable objection, and shall obtain

Owner's written consent before making any substitutions or additions. Substitutions of subcontractors listed on Forms A and B are only allowable according to RCW 39.30.060.

C. Subcontracts in writing and pass through provision: All Subcontracts must be in writing. By appropriate written agreement, Contractor shall require each Subcontractor, so far as applicable to the Work to be performed by the Subcontractor, to be bound to Contractor by terms of the Contract Documents, and to assume toward Contractor all the obligations and responsibilities which Contractor assumes toward Owner in accordance with the Contract Documents. Each Subcontract shall preserve and protect the rights of Owner in accordance with the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights. Where appropriate, Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. However, nothing in this paragraph shall be construed to alter the contractual relations between Contractor and its Subcontractors with respect to insurance or bonds.

D. Coordination of Subcontractors; Contractor responsible for Work: Contractor shall schedule, supervise, and coordinate the operations of all Subcontractors. No Subcontracting of any of the Work shall relieve Contractor from its responsibility for the performance of the Work in accordance with the Contract Documents or any other obligations of the Contract Documents.

E. Automatic assignment of subcontracts: Each subcontract agreement for a portion of the Work is hereby assigned by Contractor to Owner provided that:

1. Effective only after termination and Owner approval: The assignment is effective only after termination by Owner for cause pursuant to Section 9.01 and only for those Subcontracts which Owner accepts by notifying the Subcontractor in writing; and
2. Owner assumes Contractor's responsibilities: After the assignment is effective, Owner will assume all future duties and obligations toward the Subcontractor which Contractor assumed in the Subcontract.
3. Impact of bond: The assignment is subject to the prior rights of the surety, if any, obligated under any bond provided in accordance with the Contract Documents.

5.21 WARRANTY OF CONSTRUCTION

A. Contractor warranty of Work: In addition to any special warranties provided elsewhere in the Contract Documents, Contractor warrants that all Work conforms to the requirements of the Contract Documents and is free of any defect in equipment, material, or design furnished, or workmanship performed by Contractor.

B. Contractor responsibilities: With respect to all warranties, express or implied, for Work performed or materials furnished according to the Contract Documents, Contractor shall:

1. Obtain warranties: Obtain all warranties that would be given in normal commercial practice;
2. Warranties for benefit of Owner: Require all warranties to be executed, in writing, for the benefit of Owner;
3. Enforcement of warranties: Enforce all warranties for the benefit of Owner, if directed by Owner; and
4. Contractor responsibility for subcontractor warranties: Be responsible to enforce any subcontractor's, manufacturer's, or supplier's warranties should they extend beyond the period specified in the Contract Documents.

C. Warranties beyond Final Acceptance: The obligations under this section shall survive Final Acceptance.

5.22 INDEMNIFICATION

A. Contractor to indemnify Owner: Contractor shall defend, indemnify, and hold Owner and A/E harmless from and against all claims, demands, losses, damages, and costs, including

but not limited to damages arising out of bodily injury or death to persons and damage to property, caused by or resulting from:

1. Sole negligence of Contractor: The sole negligence of Contractor or any of its Subcontractors;
2. Concurrent negligence: The concurrent negligence of Contractor, or any of its Subcontractors, but only to the extent of the negligence of Contractor or such Subcontractor; and
3. Patent infringement: The use of any design, process, or equipment which constitutes an infringement of any United States patent presently issued, or violates any other proprietary interest, including copyright, trademark, and trade secret.

B. Employee action and RCW Title 51: In any action against Owner and any other entity indemnified in accordance with this section, by any employee of Contractor, its Subcontractors, agents, or anyone directly or indirectly employed by any of them, the indemnification obligation of this section shall not be limited by a limit on the amount or type of damages, compensation, or benefits payable by or for Contractor or any of its Subcontractor under RCW Title 51, the Industrial Insurance Act, or any other employee benefit acts. In addition, Contractor waives immunity as to Owner and A/E only, in accordance with RCW Title 51.

PART 6 – PAYMENTS AND COMPLETION

6.01 CONTRACT SUM

Owner shall pay Contract Sum: Owner shall pay Contractor the Contract Sum plus state sales tax for performance of the Work, in accordance with the Contract Documents.

6.02 SCHEDULE OF VALUES

Contractor to submit Schedule of Values: Before submitting its first Application for Payment, Contractor shall submit to Owner for approval a breakdown allocating the total Contract Sum to the completion/anticipated completion of project milestones by the Contractor (milestones are points at which significant components of the project have been completed and at which tangible project deliverables of material value to the County have been received by the County) (the “Schedule of Values”)., The Schedule of Values shall be set forth in such detail as may be reasonably requested by Owner. The approved Schedule of Values shall include appropriate amounts for demobilization, record drawings, O&M manuals, and any other requirements for Project closeout, and shall be used by Owner as the basis for progress payments. Payment for Work shall be made only for and in accordance with those items included in the Schedule of Values.

6.03 APPLICATION FOR PAYMENT

A. Monthly Application for Payment with substantiation: At monthly intervals, unless determined otherwise by Owner, Contractor shall submit to Owner an itemized Application for Payment for Work completed in accordance with the Contract Documents and the approved Schedule of Values. Each application shall be supported by such substantiating data as Owner may require.

B. Contractor certifies Subcontractors paid: By submitting an Application for Payment, Contractor is certifying that all Subcontractors have been paid, less earned retainage in accordance with RCW 60.28.011, as their interests appeared in the last preceding certificate of payment. By submitting an Application for Payment, Contractor is recertifying that the representations set forth in Section 1.03, are true and correct, to the best of Contractor’s knowledge, as of the date of the Application for Payment.

C. Reconciliation of Work with Progress Schedule: At the time it submits an Application for Payment, Contractor shall analyze and reconcile, to the satisfaction of Owner, the actual progress of the Work with the Progress Schedule.

D. Payment for material delivered to site or stored off-site: If authorized by Owner, the Application for Payment may include request for payment for material delivered to the Project site and suitably stored, or for completed preparatory work. Payment may similarly be requested for material stored off the Project site, provided Contractor complies with or furnishes satisfactory evidence of the following:

1. Suitable facility or location: The material will be placed in a facility or location that is structurally sound, dry, lighted and suitable for the materials to be stored;
2. Facility or location within 10 miles of Project: The facility or location is located within a 10-mile radius of the Project. Other locations may be utilized, if approved in writing, by Owner;
3. Facility or location exclusive to Project's materials: Only materials for the Project are stored within the facility or location (or a secure portion of a facility or location set aside for the Project);
4. Insurance provided on materials in facility or location: Contractor furnishes Owner a certificate of insurance extending Contractor's insurance coverage for damage, fire, and theft to cover the full value of all materials stored, or in transit;
5. Facility or location locked and secure: The facility or location (or secure portion thereof) is continuously under lock and key, and only Contractor's authorized personnel shall have access;
6. Owner right of access to facility or location: Owner shall at all times have the right of access in company of Contractor;
7. Contractor assumes total responsibility for stored materials: Contractor and its surety assume total responsibility for the stored materials; and
8. Contractor provides documentation and Notice when materials moved to site: Contractor furnishes to Owner certified lists of materials stored, bills of lading, invoices, and other information as may be required, and shall also furnish Notice to Owner when materials are moved from storage to the Project site.

6.04 PROGRESS PAYMENTS

A. Owner to pay within 30 Days: Owner shall make progress payments, in such amounts as Owner determines are properly due, within 30 Days after receipt of a properly executed Application for Payment. Owner shall notify Contractor in accordance with chapter 39.76 RCW if the Application for Payment does not comply with the requirements of the Contract Documents.

B. Withholding retainage; Options for retainage: Owner shall retain 5% of the amount of each progress payment until 45 Days after Final Acceptance and receipt of all documents required by law or the Contract Documents, including, at Owner's request, consent of surety to release of the retainage. In accordance with chapter 60.28 RCW, Contractor may request that monies reserved be retained in a fund by Owner, deposited by Owner in a bank or savings and loan, or placed in escrow with a bank or trust company to be converted into bonds and securities to be held in escrow with interest to be paid to Contractor. Owner may permit Contractor to provide an appropriate bond in lieu of the retained funds.

C. Title passes to Owner upon payment: Title to all Work and materials covered by a progress payment shall pass to Owner at the time of such payment free and clear of all liens, claims, security interests, and encumbrances. Passage of title shall not, however, relieve Contractor from any of its duties and responsibilities for the Work or materials, or waive any rights of Owner to insist on full compliance by Contractor with the Contract Documents.

D. Interest on unpaid balances: Payments due and unpaid in accordance with the Contract Documents shall bear interest as specified in chapter 39.76 RCW.

6.05 PAYMENTS WITHHELD

A. Owner's right to withhold payment: Owner may withhold or, on account of subsequently discovered evidence, nullify the whole or part of any payment to such extent as may be necessary to protect Owner from loss or damage for reasons including but not limited to:

1. Non-compliant Work: Work not in accordance with the Contract Documents;
2. Remaining Work to cost more than unpaid balance: Reasonable evidence that the Work required by the Contract Documents cannot be completed for the unpaid balance of the Contract Sum;
3. Owner correction or completion Work: Work by Owner to correct defective Work or complete the Work in accordance with Section 5.16;
4. Contractor's failure to perform: Contractor's failure to perform in accordance with the Contract Documents; or
5. Contractor's negligent acts or omissions: Cost or liability that may occur to Owner as the result of Contractor's fault or negligent acts or omissions.

B. Owner to notify Contractor of withholding for unsatisfactory performance: In any case where part or all of a payment is going to be withheld for unsatisfactory performance, Owner shall notify Contractor in accordance with chapter 39.76 RCW.

6.06 RETAINAGE AND BOND CLAIM RIGHTS

Chapters 39.08 RCW and 60.28 RCW incorporated by reference: Chapters 39.08 RCW and 60.28 RCW, concerning the rights and responsibilities of Contractor and Owner with regard to the performance and payment bonds and retainage, are made a part of the Contract Documents by reference as though fully set forth herein.

6.07 SUBSTANTIAL COMPLETION

Substantial Completion defined: Substantial Completion is the stage in the progress of the Work (or portion thereof designated and approved by Owner) when the construction is sufficiently complete, in accordance with the Contract Documents, so Owner has full and unrestricted use and benefit of the facilities (or portion thereof designated and approved by Owner) for the use for which it is intended. All Work other than incidental corrective or punch list work shall be completed. Substantial Completion shall not have been achieved if all systems and parts are not functional, if utilities are not connected and operating normally, if all required occupancy permits have not been issued, or if the Work is not accessible by normal vehicular and pedestrian traffic routes. The date Substantial Completion is achieved shall be established in writing by Owner. Contractor may request an early date of Substantial Completion which must be approved by Change Order. Owner's occupancy of the Work or designated portion thereof does not necessarily indicate that Substantial Completion has been achieved.

6.08 PRIOR OCCUPANCY

A. Prior Occupancy defined; Restrictions: Owner may, upon written notice thereof to Contractor, take possession of or use any completed or partially completed portion of the Work ("Prior Occupancy") at any time prior to Substantial Completion. Unless otherwise agreed in writing, Prior Occupancy shall not: be deemed an acceptance of any portion of the Work; accelerate the time for any payment to Contractor; prejudice any rights of Owner provided by any insurance, bond, guaranty, or the Contract Documents; relieve Contractor of the risk of loss or any of the obligations established by the Contract Documents; establish a date for termination or partial termination of the assessment of liquidated damages; or constitute a waiver of claims.

B. Damage; Duty to repair and warranties: Notwithstanding anything in the preceding paragraph, Owner shall be responsible for loss of or damage to the Work resulting from Prior Occupancy. Contractor's one year duty to repair any system warranties shall begin on building systems activated and used by Owner as agreed in writing by Owner and Contractor.

6.09 FINAL COMPLETION, ACCEPTANCE, AND PAYMENT

A. Final Completion defined: Final Completion shall be achieved when the Work is fully and finally complete in accordance with the Contract Documents. The date Final Completion is achieved shall be established by Owner in writing, but in no case shall constitute Final Acceptance which is a subsequent, separate, and distinct action.

B. Final Acceptance defined: Final Acceptance shall be achieved when the Contractor has completed the requirements of the Contract Documents. The date Final Acceptance is achieved shall be established by Owner in writing. Prior to Final Acceptance, Contractor shall, in addition to all other requirements in the Contract Documents, submit to Owner a written notice of any outstanding disputes or claims between Contractor and any of its Subcontractors, including the amounts and other details thereof. Neither Final Acceptance, nor final payment, shall release Contractor or its sureties from any obligations of these Contract Documents or the payment and performance bonds, or constitute a waiver of any claims by Owner arising from Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Final payment waives Claim rights: Acceptance of final payment by Contractor, or any Subcontractor, shall constitute a waiver and release to Owner of all claims by Contractor, or any such Subcontractor, for an increase in the Contract Sum or the Contract Time, and for every act or omission of Owner relating to or arising out of the Work, except for those Claims made in accordance with the procedures, including the time limits, set forth in Part 8.

PART 7 – CHANGES

7.01 CHANGE IN THE WORK

A. Changes in Work, Contract Sum, and Contract Time by Change Order: Owner may, at any time and without notice to Contractor's surety, order additions, deletions, revisions, or other changes in the Work. These changes in the Work shall be incorporated into the Contract Documents through the execution of Change Orders. If any change in the Work ordered by Owner causes an increase or decrease in the Contract Sum or the Contract Time, an equitable adjustment shall be made as provided in Section 7.02 or 7.03, respectively, and such adjustment(s) shall be incorporated into a Change Order.

B. Owner may request COP from Contractor: If Owner desires to order a change in the Work, it may request a written Change Order Proposal (COP) from Contractor. Contractor shall submit a Change Order Proposal within 14 Days of the request from Owner, or within such other period as mutually agreed. Contractor's Change Order Proposal shall be full compensation for implementing the proposed change in the Work, including any adjustment in the Contract Sum or Contract Time, and including compensation for all delays in connection with such change in the Work and for any expense or inconvenience, disruption of schedule, or loss of efficiency or productivity occasioned by the change in the Work.

C. COP negotiations: Upon receipt of the Change Order Proposal, or a request for equitable adjustment in the Contract Sum or Contract Time, or both, as provided in Sections 7.02 and 7.03, Owner may accept or reject the proposal, request further documentation, or negotiate acceptable terms with Contractor. Pending agreement on the terms of the Change Order, Owner may direct Contractor to proceed immediately with the Change Order Work. Contractor shall not proceed with any change in the Work until it has obtained Owner's approval. All Work done pursuant to any Owner-directed change in the Work shall be executed in accordance with the Contract Documents.

D. Change Order as full payment and final settlement: If Owner and Contractor reach agreement on the terms of any change in the Work, including any adjustment in the Contract Sum or Contract Time, such agreement shall be incorporated in a Change Order. The Change Order shall constitute full payment and final settlement of all claims for time and for direct, indirect, and consequential costs, including costs of delays, inconvenience, disruption of schedule, or loss of efficiency or productivity, related to any Work either covered or affected by the Change Order, or related to the events giving rise to the request for equitable adjustment.

E. Failure to agree upon terms of Change Order; Final offer and Claims: If Owner and Contractor are unable to reach agreement on the terms of any change in the Work,

including any adjustment in the Contract Sum or Contract Time, Contractor may at any time in writing, request a final offer from Owner. Owner shall provide Contractor with its written response within 30 Days of Contractor's request. Owner may also provide Contractor with a final offer at any time. If Contractor rejects Owner's final offer, or the parties are otherwise unable to reach agreement, Contractor's only remedy shall be to file a Claim as provided in Part 8.

F. Field Authorizations: The Owner may direct the Contractor to proceed with a change in the work through a written Field Authorization (also referred to as a Field Order) when the time required to price and execute a Change Order would impact the Project. The Field Authorization shall describe and include the following:

1. The scope of work
2. An agreed upon maximum not-to-exceed amount
3. Any estimated change to the Contract Time
4. The method of final cost determination in accordance with the requirements of Part 7 of the General Conditions
5. The supporting cost data to be submitted in accordance with the requirements of Part 7 of the General Conditions

Upon satisfactory submittal by the Contractor and approval by the Owner of supporting cost data, a Change Order will be executed. The Owner will not make payment to the Contractor for Field Authorization work until that work has been incorporated into an executed Change Order.

7.02 CHANGE IN THE CONTRACT SUM

A. General Application

1. Contract Sum changes only by Change Order: The Contract Sum shall only be changed by a Change Order. Contractor shall include any request for a change in the Contract Sum in its Change Order Proposal.
2. Owner fault or negligence as basis for change in Contract Sum: If the cost of Contractor's performance is changed due to the fault or negligence of Owner, or anyone for whose acts Owner is responsible, Contractor shall be entitled to make a request for an equitable adjustment in the Contract Sum in accordance with the following procedure. No change in the Contract Sum shall be allowed to the extent: Contractor's changed cost of performance is due to the fault or negligence of Contractor, or anyone for whose acts Contractor is responsible; the change is concurrently caused by Contractor and Owner; or the change is caused by an act of Force Majeure as defined in Section 3.05.
    (a) Notice and record keeping for equitable adjustment: A request for an equitable adjustment in the Contract Sum shall be based on written notice delivered to Owner within 7 Days of the occurrence of the event giving rise to the request. For purposes of this part, "occurrence" means when Contractor knew, or in its diligent prosecution of the Work should have known, of the event giving rise to the request. If Contractor believes it is entitled to an adjustment in the Contract Sum, Contractor shall immediately notify Owner and begin to keep and maintain complete, accurate, and specific daily records. Contractor shall give Owner access to any such records and, if requested shall promptly furnish copies of such records to Owner.
    (b) Content of notice for equitable adjustment; Failure to comply: Contractor shall not be entitled to any adjustment in the Contract Sum for any occurrence of events or costs that occurred more than 7 Days before Contractor's written notice to Owner. The written notice shall set forth, at a minimum, a description of: the event giving rise to the request for an equitable adjustment in the Contract Sum; the nature of the impacts to Contractor and its Subcontractors of any tier, if any; and to the extent possible the amount of the adjustment in

Contract Sum requested. Failure to properly give such written notice shall, to the extent Owner's interests are prejudiced, constitute a waiver of Contractor's right to an equitable adjustment.

(c) Contractor to provide supplemental information: Within 30 Days of the occurrence of the event giving rise to the request, unless Owner agrees in writing to allow an additional period of time to ascertain more accurate data, Contractor shall supplement the written notice provided in accordance with subparagraph a. above with additional supporting data. Such additional data shall include, at a minimum: the amount of compensation requested, itemized in accordance with the procedure set forth herein; specific facts, circumstances, and analysis that confirms not only that Contractor suffered the damages claimed, but that the damages claimed were actually a result of the act, event, or condition complained of and that the Contract Documents provide entitlement to an equitable adjustment to Contractor for such act, event, or condition; and documentation sufficiently detailed to permit an informed analysis of the request by Owner. When the request for compensation relates to a delay, or other change in Contract Time, Contractor shall demonstrate the impact on the critical path, in accordance with Section 7.03C. Failure to provide such additional information and documentation within the time allowed or within the format required shall, to the extent Owner's interests are prejudiced, constitute a waiver of Contractor's right to an equitable adjustment.

(d) Contractor to proceed with Work as directed: Pending final resolution of any request made in accordance with this paragraph, unless otherwise agreed in writing, Contractor shall proceed diligently with performance of the Work.

(e) Contractor to combine requests for same event together: Any requests by Contractor for an equitable adjustment in the Contract Sum and in the Contract Time that arise out of the same event(s) shall be submitted together.

3. Methods for calculating Change Order amount: The value of any Work covered by a Change Order, or of any request for an equitable adjustment in the Contract Sum, shall be determined by one of the following methods:

   (a) Fixed Price: On the basis of a fixed price as determined in paragraph 7.02B.
   (b) Unit Prices: By application of unit prices to the quantities of the items involved as determined in paragraph 7.02C.
   (c) Time and Materials: On the basis of time and material as determined in paragraph 7.02D.

4. Fixed price method is default; Owner may direct otherwise: When Owner has requested Contractor to submit a Change Order Proposal, Owner may direct Contractor as to which method in subparagraph 3 above to use when submitting its proposal. Otherwise, Contractor shall determine the value of the Work, or of a request for an equitable adjustment, on the basis of the fixed price method.

B. Change Order Pricing – Fixed Price Procedures: When the fixed price method is used to determine the value of any Work covered by a Change Order, or of a request for an equitable adjustment in the Contract Sum, the following procedures shall apply:

1. Breakdown and itemization of details on COP: Contractor's Change Order Proposal, or request for adjustment in the Contract Sum, shall be accompanied by a complete itemization of the costs, including labor, material, subcontractor costs, and overhead and profit. The costs shall be itemized in the manner set forth below, and shall be submitted on breakdown sheets in a form approved by Owner.
2. Use of industry standards in calculating costs: All costs shall be calculated based upon appropriate industry standard methods of calculating labor, material quantities, and equipment costs.
3. Costs contingent on Owner's actions: If any of Contractor's pricing assumptions are contingent upon anticipated actions of Owner, Contractor shall clearly state them in the proposal or request for an equitable adjustment.

4. Markups on additive and deductive Work: The cost of any additive or deductive changes in the Work shall be calculated as set forth below, except that overhead and profit shall not be included on deductive changes in the Work. Where a change in the Work involves additive and deductive work by the same Contractor or Subcontractor, small tools, overhead, profit, bond and insurance markups will apply to the net difference.
5. Breakdown not required if change less than $1,000: If the total cost of the change in the Work or request for equitable adjustment does not exceed $1,000, Contractor shall not be required to submit a breakdown if the description of the change in the Work or request for equitable adjustment is sufficiently definitive for Owner to determine fair value.
6. Breakdown required if change between $1,000 and $2,500: If the total cost of the change in the Work or request for equitable adjustment is between $1,000 and $2,500, Contractor may submit a breakdown in the following level of detail if the description of the change in the Work or if the request for equitable adjustment is sufficiently definitive to permit the Owner to determine fair value:

    a. lump sum labor;
    b. lump sum material;
    c. lump sum equipment usage;
    d. overhead and profit as set forth below; and
    e. insurance and bond costs as set forth below.

7. Components of increased cost: Any request for adjustment of Contract Sum based upon the fixed price method shall include only the following items:

    a. Craft labor costs: These are the labor costs determined by multiplying the estimated or actual additional number of craft hours needed to perform the change in the Work by the hourly labor costs. Craft hours should cover direct labor, as well as indirect labor due to trade inefficiencies. The hourly costs shall be based on the following:

        (1) Basic wages and benefits: Hourly rates and benefits as stated on the L&I approved “statement of intent to pay prevailing wages” or a higher amount if approved by the Owner. Direct supervision shall be a reasonable percentage not to exceed 15% of the cost of direct labor. No supervision markup shall be allowed for a working supervisor’s hours.
        (2) Worker’s insurance: Direct contributions to the state of Washington for industrial insurance; medical aid; and supplemental pension, by the class and rates established by the L&I.
        (3) Federal insurance: Direct contributions required by the Federal Insurance Compensation Act; Federal Unemployment Tax Act; and the State Unemployment Compensation Act.
        (4) Travel allowance: Travel allowance and/or subsistence, if applicable, not exceeding those allowances established by regional labor union agreements, which are itemized and identified separately.
        (5) Safety: Cost incurred due to the Washington Industrial Safety and Health Act, which shall be a reasonable percentage not to exceed 2% of the sum of the amounts calculated in (1), (2), and (3) above.

    b. Material costs: This is an itemization of the quantity and cost of materials needed to perform the change in the Work. Material costs shall be developed first from actual known costs, second from supplier quotations or if these are not available, from standard industry pricing guides. Material costs shall consider all available discounts. Freight costs, express charges, or special delivery charges, shall be itemized.
    c. Equipment costs: This is an itemization of the type of equipment and the estimated or actual length of time the construction equipment appropriate for the Work is or will be used on the change in the Work. Costs will be allowed for

construction equipment only if used solely for the changed Work, or for additional rental costs actually incurred by the Contractor. Equipment charges shall be computed on the basis of actual invoice costs or if owned, from the current edition of one of the following sources:

(1) The National Electrical Contractors Association for equipment used on electrical work.
(2) The Mechanical Contractors Association of America for equipment used on mechanical work.
(3) The EquipmentWatch Fleet Manager Estimator Package (digital). The maximum rate for standby equipment shall not exceed that shown in the Associated General Contractors Washington State Department of Transportation (AGC WSDOT) Equipment Rental Agreement, current edition on the Contract execution date. The EquipmentWatch Rental Rate Blue Book shall be used as a basis for establishing rental rates of equipment not listed in the above sources. The maximum rate for standby equipment shall not exceed that shown in the AGC WSDOT Equipment Rental Agreement, current edition on the Contract execution date.

d. Allowance for small tools, expendables & consumable supplies: Small tools consist of tools which cost $250 or less and are normally furnished by the performing contractor. The maximum rate for small tools shall not exceed the following:

(1) 3% for Contractor: For Contractor, 3% of direct labor costs.
(2) 5% for Subcontractors: For Subcontractors, 5% of direct labor costs. Expendables and consumables supplies directly associated with the change in Work must be itemized.

e. Subcontractor costs: This is defined as payments Contractor makes to Subcontractors for changed Work performed by Subcontractors of any tier. The Subcontractors' cost of Work shall be calculated and itemized in the same manner as prescribed herein for Contractor.

f. Allowance for overhead: This is defined as costs of any kind attributable to direct and indirect delay, acceleration, or impact, added to the total cost to Owner of any change in the Contract Sum. If the Contractor is compensated under Section 7.03D, the amount of such compensation shall be reduced by the amount Contractor is otherwise entitled to under this subsection (f). This allowance shall compensate Contractor for all noncraft labor, temporary construction facilities, field engineering, schedule updating, as-built drawings, home office cost, B&O taxes, office engineering, estimating costs, additional overhead because of extended time, and any other cost incidental to the change in the Work. It shall be strictly limited in all cases to a reasonable amount, mutually acceptable, or if none can be agreed upon to an amount not to exceed the rates below:

(1). Projects less than $3 million: For projects where the Contract Award Amount is under $3 million, the following shall apply:

(a) Contractor markup on Contractor Work: For Contractor, for any Work actually performed by Contractor's own forces, 16% of the first $50,000 of the cost, and 4% of the remaining cost, if any.
(b) Subcontractor markup for Subcontractor Work: For each Subcontractor (including lower tier subcontractors), for any Work actually performed by its own forces, 16% of the first $50,000 of the cost, and 4% of the remaining cost, if any.
(c) Contractor markup for Subcontractor Work: For Contractor, for any work performed by its Subcontractor(s) 6% of the first $50,000 of the amount due each Subcontractor, and 4% of the remaining amount if any.

(d) Subcontractor markup for lower tier Subcontractor Work: For each Subcontractor, for any Work performed by its Subcontractor(s) of any lower tier, 4% of the first $50,000 of the amount due the sub-Subcontractor, and 2% of the remaining amount if any.

(e) Basis of cost applicable for markup: The cost to which overhead is to be applied shall be developed in accordance with Section 7.02B 7a. – e.

(2). Projects more than $3 million: For projects where the Contract Award Amount is equal to or exceeds $3 million, the following shall apply:

(a) Contractor markup on Contractor Work: For Contractor, for any Work actually performed by Contractor's own forces, 12% of the first $50,000 of the cost, and 4% of the remaining cost, if any.

(b) Subcontractor markup for Subcontractor Work: For each Subcontractor (including lower tier subcontractors), for any Work actually performed by its own forces, 12% of the first $50,000 of the cost, and 4% of the remaining cost, if any.

(c) Contractor markup for Subcontractor Work: For Contractor, for any Work performed by its Subcontractor(s), 4% of the first $50,000 of the amount due each Subcontractor, and 2% of the remaining amount if any.

(d) Subcontractor markup for lower tier Subcontractor Work: For each Subcontractor, for any Work performed by its Subcontractor(s) of any lower tier, 4% of the first $50,000 of the amount due the sub-Subcontractor, and 2% of the remaining amount if any.

(e) Basis of cost applicable for markup: The cost to which overhead is to be applied shall be developed in accordance with Section 7.02B 7a. – e.

g. Allowance for profit: Allowance for profit is an amount to be added to the cost of any change in contract sum, but not to the cost of change in Contract Time for which contractor has been compensated pursuant to the conditions set forth in Section 7.03. It shall be limited to a reasonable amount, mutually acceptable, or if none can be agreed upon, to an amount not to exceed the rates below:

(1) Contractor / Subcontractor markup for self-performed Work: For Contractor or Subcontractor of any tier for work performed by their forces, 6% of the cost developed in accordance with Section 7.02B 7a. – e.

(2) Contractor / Subcontractor markup for Work performed at lower tier: For Contractor or Subcontractor of any tier for work performed by a subcontractor of a lower tier, 4% of the subcontract cost developed in accordance with Section 7.02B 7a. – h.

h. Insurance and bond premiums: Cost of change in insurance or bond premium: This is defined as:

(1) Contractor's liability insurance: The cost of any changes in Contractor's liability insurance arising directly from execution of the Change Order; and

(2) Payment and Performance Bond: The cost of the additional premium for Contractor's bond arising directly from the changed Work. The cost of any change in insurance or bond premium shall be added after overhead and allowance for profit are calculated in accordance with subparagraph f. and g above.

C. Change Order Pricing – Unit Prices

1. Content of Owner authorization: Whenever Owner authorizes Contractor to perform Work on a unit-price basis, Owner's authorization shall clearly state:

   a. Scope: Scope of work to be performed;
   b. Reimbursement basis: Type of reimbursement including pre-agreed rates for material quantities; and
   c. Reimbursement limit: Cost limit of reimbursement.

2. Contractor responsibilities: Contractor shall:

   a. Cooperate with Owner and assist in monitoring the Work being performed. As requested by Owner, Contractor shall identify workers assigned to the Change Order Work and areas in which they are working;
   b. Leave access as appropriate for quantity measurement; and
   c. Not exceed any cost limit(s) without Owner's prior written approval.

3. Cost breakdown consistent with Fixed Price requirements: Contractor shall submit costs in accordance with paragraph 7.02B and satisfy the following requirements:

   a. Unit prices must include overhead, profit, bond and insurance premiums: Unit prices shall include reimbursement for all direct and indirect costs of the Work, including overhead, profit, bond, and insurance costs; and
   b. Owner verification of quantities: Quantities must be supported by field measurement statements signed by Owner.

D. Change Order Pricing – Time-and-Material Prices

1. Content of Owner authorization: Whenever Owner authorizes Contractor to perform Work on a time-and-material basis, Owner's authorization shall clearly state:

   a. Scope: Scope of Work to be performed;
   b. Reimbursement basis: Type of reimbursement including pre-agreed rates, if any, for material quantities or labor; and
   c. Reimbursement limit: Cost limit of reimbursement.

2. Contractor responsibilities: Contractor shall:

   a. Identify workers assigned: Cooperate with Owner and assist in monitoring the Work being performed. As requested by Owner, identify workers assigned to the Change Order Work and areas in which they are working;
   b. Provide daily timesheets: Identify on daily time sheets all labor performed in accordance with this authorization. Submit copies of daily time sheets within 2 working days for Owner's review.
   c. Allow Owner to measure quantities: Leave access as appropriate for quantity measurement;
   d. Perform Work efficiently: Perform all Work in accordance with this section as efficiently as possible; and
   e. Not exceed Owner's cost limit: Not exceed any cost limit(s) without Owner's prior written approval.

3. Cost breakdown consistent with Fixed Price requirements: Contractor shall submit costs in accordance with paragraph 7.02B and additional verification supported by:

   a. Timesheets: Labor detailed on daily time sheets; and
   b. Invoices: Invoices for material.

7.03 CHANGE IN THE CONTRACT TIME

A. COP requests for Contract Time: The Contract Time shall only be changed by a Change Order. Contractor shall include any request for a change in the Contract Time in its Change Order Proposal.

B. Time extension permitted if not Contractor's fault: If the time of Contractor's performance is changed due to an act of Force Majeure, or due to the fault or negligence of Owner or anyone for whose acts Owner is responsible, Contractor shall be entitled to make a request for an equitable adjustment in the Contract Time in accordance with the following procedure. No adjustment in the Contract Time shall be allowed to the extent Contractor's changed time of performance is due to the fault or negligence of Contractor, or anyone for whose acts Contractor is responsible.

1. Notice and record keeping for Contract Time request: A request for an equitable adjustment in the Contract Time shall be based on written notice delivered within 7 Days of the occurrence of the event giving rise to the request. If Contractor believes it is entitled to adjustment of Contract Time, Contractor shall immediately notify Owner and begin to keep and maintain complete, accurate, and specific daily records. Contractor shall give Owner access to any such record and if requested, shall promptly furnish copies of such record to Owner.
2. Timing and content of Contractor's Notice: Contractor shall not be entitled to an adjustment in the Contract Time for any events that occurred more than 7 Days before Contractor's written notice to Owner. The written notice shall set forth, at a minimum, a description of: the event giving rise to the request for an equitable adjustment in the Contract Time; the nature of the impacts to Contractor and its Subcontractors of any tier, if any; and to the extent possible the amount of the adjustment in Contract Time requested. Failure to properly give such written notice shall, to the extent Owner's interests are prejudiced, constitute a waiver of Contractor's right to an equitable adjustment.
3. Contractor to provide supplemental information: Within 30 Days of the occurrence of the event giving rise to the request, unless Owner agrees in writing to allow an additional period of time to ascertain more accurate data, Contractor shall supplement the written notice provided in accordance with subparagraph 7.03B.2 with additional supporting data. Such additional data shall include, at a minimum: the amount of delay claimed, itemized in accordance with the procedure set forth herein; specific facts, circumstances, and analysis that confirms not only that Contractor suffered the delay claimed, but that the delay claimed was actually a result of the act, event, or condition complained of, and that the Contract Documents provide entitlement to an equitable adjustment in Contract Time for such act, event, or condition; and supporting documentation sufficiently detailed to permit an informed analysis of the request by Owner. Failure to provide such additional information and documentation within the time allowed or within the format required shall, to the extent Owner's interests are prejudiced, constitute a waiver of Contractor's right to an equitable adjustment.
4. Contractor to proceed with Work as directed: Pending final resolution of any request in accordance with this paragraph, unless otherwise agreed in writing, Contractor shall proceed diligently with performance of the Work.

C. Contractor to demonstrate impact on critical path of schedule: Any change in the Contract Time covered by a Change Order, or based on a request for an equitable adjustment in the Contract Time, shall be limited to the change in the critical path of Contractor's schedule attributable to the change of Work or event(s) giving rise to the request for equitable adjustment. Any Change Order Proposal or request for an adjustment in the Contract Time shall demonstrate the impact on the critical path of the schedule. Contractor shall be responsible for showing clearly on the Progress Schedule that the change or event: had a specific impact on the critical path, and except in case of concurrent delay, was the sole cause of such impact; and could not have been avoided by resequencing of the Work or other reasonable alternatives.

D. Cost of change in Contract Time: Contractor may request compensation for the cost of a change in Contract Time in accordance with this paragraph, 7.03D, subject to the following conditions:

1. Must be solely fault of Owner or A/E: The change in Contract Time shall solely be caused by the fault or negligence of Owner or A/E;
2. Procedures: Contractor shall follow the procedure set forth in paragraph 7.03B;
3. Demonstrate impact on critical path: Contractor shall establish the extent of the change in Contract Time in accordance with paragraph 7.03C; and
4. Limitations on daily costs: The daily cost of any change in Contract Time shall be limited to the items below, less the amount of any change in the Contract Sum the Contractor may otherwise be entitled to pursuant to Section 7.02B 7f for any change in the Work that contributed to this change in Contract Time:
    a. Non-productive supervision or labor: cost of nonproductive field supervision or labor extended because of delay;
    b. Weekly meetings and indirect activities: cost of weekly meetings or similar indirect activities extended because of the delay;
    c. Temporary facilities or equipment rental: cost of temporary facilities or equipment rental extended because of the delay;
    d. Insurance premiums: cost of insurance extended because of the delay;
    e. Overhead: general and administrative overhead in an amount to be agreed upon, but not to exceed 3% of the Contract Award Amount divided by the originally specified Contract Time for each Day of the delay.

PART 8 – CLAIMS AND DISPUTE RESOLUTION

8.01 CLAIMS PROCEDURE

A. Claim is Contractor's remedy: If the parties fail to reach agreement on the terms of any Change Order for Owner-directed Work as provided in Section 7.01, or on the resolution of any request for an equitable adjustment in the Contract Sum as provided in Section 7.02 or the Contract Time as provided in Section 7.03, Contractor's only remedy shall be to file a Claim with Owner as provided in this section.

B. Claim filing deadline for Contractor: Contractor shall file its Claim within 120 Days from Owner's final offer made in accordance with paragraph 7.01E, or by the date of Final Acceptance, whichever occurs first.

C. Claim must cover all costs and be documented: The Claim shall be deemed to cover all changes in cost and time (including direct, indirect, impact, and consequential) to which Contractor may be entitled. It shall be fully substantiated and documented. At a minimum, the Claim shall contain the following information:

1. Factual statement of Claim: A detailed factual statement of the Claim for additional compensation and time, if any, providing all necessary dates, locations, and items of Work affected by the Claim;
2. Dates: The date on which facts arose which gave rise to the Claim;
3. Owner and A/E employee's knowledgeable about Claim: The name of each employee of Owner or A/E knowledgeable about the Claim;
4. Support from Contract Documents: The specific provisions of the Contract Documents which support the Claim;
5. Identification of other supporting information: The identification of any documents and the substance of any oral communications that support the Claim;
6. Copies of supporting documentation: Copies of any identified documents, other than the Contract Documents, that support the Claim;
7. Details on Claim for Contract Time: If an adjustment in the Contract Time is sought: the specific days and dates for which it is sought; the specific reasons Contractor believes an extension in the Contract Time should be granted; and Contractor's analysis of its Progress Schedule to demonstrate the reason for the extension in Contract Time;

8. Details on Claim for adjustment of Contract Sum: If an adjustment in the Contract Sum is sought, the exact amount sought and a breakdown of that amount into the categories set forth in, and in the detail as required by Section 7.02; and
9. Statement certifying Claim: A statement certifying, under penalty of perjury, that the Claim is made in good faith, that the supporting cost and pricing data are true and accurate to the best of Contractor's knowledge and belief, that the Claim is fully supported by the accompanying data, and that the amount requested accurately reflects the adjustment in the Contract Sum or Contract Time for which Contractor believes Owner is liable.

D. Owner's response to Claim filed: After Contractor has submitted a fully documented Claim that complies with all applicable provisions of Parts 7 and 8, Owner shall respond, in writing, to Contractor as follows:

1. Response time for Claim less than $50,000: If the Claim amount is less than $50,000, with a decision within 60 Days from the date the Claim is received; or
2. Response time for Claim of $50,000 or more: If the Claim amount is $50,000 or more, with a decision within 60 Days from the date the Claim is received, or with notice to Contractor of the date by which it will render its decision. Owner will then respond with a written decision in such additional time.

E. Owner's review of Claim and finality of decision: To assist in the review of Contractor's Claim, Owner may visit the Project site, or request additional information, in order to fully evaluate the issues raised by the Claim. Contractor shall proceed with performance of the Work pending final resolution of any Claim. Owner's written decision as set forth above shall be final and conclusive as to all matters set forth in the Claim, unless Contractor follows the procedure set forth in Section 8.02.

F. Waiver of Contractor rights for failure to comply with this Section: Any Claim of the Contractor against the Owner for damages, additional compensation, or additional time, shall be conclusively deemed to have been waived by the Contractor unless made in accordance with the requirements of this Section.

8.02 ARBITRATION

A. Timing of Contractor's demand for arbitration: If Contractor disagrees with Owner's decision rendered in accordance with paragraph 8.01D, Contractor shall provide Owner with a written demand for arbitration. No demand for arbitration of any such Claim shall be made later than 30 Days after the date of Owner's decision on such Claim; failure to demand arbitration within said 30 Day period shall result in Owner's decision being final and binding upon Contractor and its Subcontractors.

B. Filing of Notice for arbitration: Notice of the demand for arbitration shall be filed with the American Arbitration Association (AAA), with a copy provided to Owner. The parties shall seek arbitration in accordance with the Construction Industry Arbitration Rules of AAA as follows:

1. Claims less than $30,000: Disputes involving $30,000 or less shall be conducted in accordance with the Northwest Region Expedited Commercial Arbitration Rules; or
2. Claims greater than $30,000: Disputes over $30,000 shall be conducted in accordance with the Construction Industry Arbitration Rules of the AAA, unless the parties agree to use the expedited rules.

C. Arbitration is forum for resolving Claims: All of Contractor's Claims arising out of the Work shall be resolved by arbitration. The judgment upon the arbitration award may be entered, or review of the award may occur, in the superior court having jurisdiction thereof. No independent legal action relating to or arising from the Work shall be maintained.

D. Owner may combine Claims into same arbitration: Claims between Owner and Contractor, Contractor and its Subcontractors, Contractor and A/E, and Owner and A/E shall, upon demand by Owner, be submitted in the same arbitration or mediation.

E. Settlement outside of arbitration to be documented in Change Order: If the parties resolve the Claim prior to arbitration judgment, the terms of the resolution shall be incorporated in a Change Order. The Change Order shall constitute full payment and final settlement of the Claim, including all claims for time and for direct, indirect, or consequential costs, including costs of delays, inconvenience, disruption of schedule, or loss of efficiency or productivity.

8.03 CLAIMS AUDITS

A. Owner may audit Claims: All Claims filed against Owner shall be subject to audit at any time following the filing of the Claim. Failure of Contractor, or Subcontractors of any tier, to maintain and retain sufficient records to allow Owner to verify all or a portion of the Claim or to permit Owner access to the books and records of Contractor, or Subcontractors of any tier, shall constitute a waiver of the Claim and shall bar any recovery.

B. Contractor to make documents available: In support of Owner audit of any Claim, Contractor shall, upon request, promptly make available to Owner the following documents:

1. Daily time sheets and supervisor's daily reports;
2. Collective bargaining agreements;
3. Insurance, welfare, and benefits records;
4. Payroll registers;
5. Earnings records;
6. Payroll tax forms;
7. Material invoices, requisitions, and delivery confirmations;
8. Material cost distribution worksheet;
9. Equipment records (list of company equipment, rates, etc.);
10. Vendors', rental agencies', Subcontractors', and agents' invoices;
11. Contracts between Contractor and each of its Subcontractors, and all lower-tier Subcontractor contracts and supplier contracts;
12. Subcontractors' and agents' payment certificates;
13. Cancelled checks (payroll and vendors);
14. Job cost report, including monthly totals;
15. Job payroll ledger;
16. Planned resource loading schedules and summaries;
17. General ledger;
18. Cash disbursements journal;
19. Financial statements for all years reflecting the operations on the Work. In addition, the Owner may require, if it deems it appropriate, additional financial statements for 3 years preceding execution of the Work;
20. Depreciation records on all company equipment whether these records are maintained by the company involved, its accountant, or others;
21. If a source other than depreciation records is used to develop costs for Contractor's internal purposes in establishing the actual cost of owning and operating equipment, all such other source documents;
22. All nonprivileged documents which relate to each and every Claim together with all documents which support the amount of any adjustment in Contract Sum or Contract Time sought by each Claim;
23. Work sheets or software used to prepare the Claim establishing the cost components for items of the Claim including but not limited to labor, benefits and insurance, materials, equipment, Subcontractors, all documents which establish

the time periods, individuals involved, the hours for the individuals, and the rates for the individuals; and

24. Work sheets, software, and all other documents used by Contractor to prepare its bid.

C. Contractor to provide facilities for audit and shall cooperate: The audit may be performed by employees of Owner or a representative of Owner. Contractor, and its Subcontractors, shall provide adequate facilities acceptable to Owner, for the audit during normal business hours. Contractor, and all Subcontractors, shall make a good faith effort to cooperate with Owner's auditors.

PART 9 – TERMINATION OF THE WORK

9.01 TERMINATION BY OWNER FOR CAUSE

A. 7 Day Notice to Terminate for Cause: Owner may, upon 7 Days written notice to Contractor and to its surety, terminate (without prejudice to any right or remedy of Owner) the Work, or any part of it, for cause upon the occurrence of any one or more of the following events:

1. Contractor fails to prosecute Work: Contractor fails to prosecute the Work or any portion thereof with sufficient diligence to ensure Substantial Completion of the Work within the Contract Time;
2. Contractor bankrupt: Contractor is adjudged bankrupt, makes a general assignment for the benefit of its creditors, or a receiver is appointed on account of its insolvency;
3. Contractor fails to correct Work: Contractor fails in a material way to replace or correct Work not in conformance with the Contract Documents;
4. Contractor fails to supply workers or materials: Contractor repeatedly fails to supply skilled workers or proper materials or equipment;
5. Contractor failure to pay Subcontractors or labor: Contractor repeatedly fails to make prompt payment due to Subcontractors or for labor;
6. Contractor violates laws: Contractor materially disregards or fails to comply with laws, ordinances, rules, regulations, or orders of any public authority having jurisdiction; or
7. Contractor in material breach of Contract: Contractor is otherwise in material breach of any provision of the Contract Documents.

B. Owner's actions upon termination: Upon termination, Owner may at its option:

1. Take possession of Project site: Take possession of the Project site and take possession of or use all materials, equipment, tools, and construction equipment and machinery thereon owned by Contractor to maintain the orderly progress of, and to finish, the Work;
2. Accept assignment of Subcontracts: Accept assignment of subcontracts pursuant to Section 5.20; and
3. Finish the Work: Finish the Work by whatever other reasonable method it deems expedient.

C. Surety's role: Owner's rights and duties upon termination are subject to the prior rights and duties of the surety, if any, obligated under any bond provided in accordance with the Contract Documents.

D. Contractor's required actions: When Owner terminates the Work in accordance with this section, Contractor shall take the actions set forth in paragraph 9.02B, and shall not be entitled to receive further payment until the Work is accepted.

E. Contractor to pay for unfinished Work: If the unpaid balance of the Contract Sum exceeds the cost of finishing the Work, including compensation for A/E's services and expenses made necessary thereby and any other extra costs or damages incurred by Owner in

completing the Work, or as a result of Contractor's actions, such excess shall be paid to Contractor. If such costs exceed the unpaid balance, Contractor shall pay the difference to Owner. These obligations for payment shall survive termination.

F. Contractor and Surety still responsible for Work performed: Termination of the Work in accordance with this section shall not relieve Contractor or its surety of any responsibilities for Work performed.

G. Conversion of "Termination for Cause" to "Termination for Convenience": If Owner terminates Contractor for cause and it is later determined that none of the circumstances set forth in paragraph 9.01A exist, then such termination shall be deemed a termination for convenience pursuant to Section 9.02.

9.02 TERMINATION BY OWNER FOR CONVENIENCE

A. Owner Notice of Termination for Convenience: Owner may, upon written notice, terminate (without prejudice to any right or remedy of Owner) the Work, or any part of it, for the convenience of Owner.

B. Contractor response to termination Notice: Unless Owner directs otherwise, after receipt of a written notice of termination for either cause or convenience, Contractor shall promptly:

1. Cease Work: Stop performing Work on the date and as specified in the notice of termination;
2. No further orders or Subcontracts: Place no further orders or subcontracts for materials, equipment, services or facilities, except as may be necessary for completion of such portion of the Work as is not terminated;
3. Cancel orders and Subcontracts: Cancel all orders and subcontracts, upon terms acceptable to Owner, to the extent that they relate to the performance of Work terminated;
4. Assign orders and Subcontracts to Owner: Assign to Owner all of the right, title, and interest of Contractor in all orders and subcontracts;
5. Take action to protect the Work: Take such action as may be necessary or as directed by Owner to preserve and protect the Work, Project site, and any other property related to this Project in the possession of Contractor in which Owner has an interest; and
6. Continue performance not terminated: Continue performance only to the extent not terminated

C. Terms of adjustment in Contract Sum if Contract terminated: If Owner terminates the Work or any portion thereof for convenience, Contractor shall be entitled to make a request for an equitable adjustment for its reasonable direct costs incurred prior to the effective date of the termination, plus reasonable allowance for overhead and profit on Work performed prior to termination, plus the reasonable administrative costs of the termination, but shall not be entitled to any other costs or damages, whatsoever, provided however, the total sum payable upon termination shall not exceed the Contract Sum reduced by prior payments. Contractor shall be required to make its request in accordance with the provisions of Part 7.

D. Owner to determine whether to adjust Contract Time: If Owner terminates the Work or any portion thereof for convenience, the Contract Time shall be adjusted as determined by Owner.

PART 10 – MISCELLANEOUS PROVISIONS

10.01 GOVERNING LAW

Applicable law and venue: The Contract Documents and the rights of the parties herein shall be governed by the laws of the state of Washington. Venue shall be in the county in which Owner's principal place of business is located, unless otherwise specified.

10.02 SUCCESSORS AND ASSIGNS

Bound to successors; Assignment of Contract: Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to the other party hereto and to partners, successors, assigns, and legal representatives of such other party in respect to covenants, agreements, and obligations contained in the Contract Documents. Neither party shall assign the Work without written consent of the other, except that Contractor may assign the Work for security purposes, to a bank or lending institution authorized to do business in the state of Washington. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations set forth in the Contract Documents.

10.03 MEANING OF WORDS

Meaning of words used in Specifications: Unless otherwise stated in the Contract Documents, words which have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings. Reference to standard specifications, manuals, or codes of any technical society, organization, or association, or to the code of any governmental authority, whether such reference be specific or by implication, shall be to the latest standard specification, manual, or code in effect on the date for submission of bids, except as may be otherwise specifically stated. Wherever in these Drawings and Specifications an article, device, or piece of equipment is referred to in the singular manner, such reference shall apply to as many such articles as are shown on the drawings, or required to complete the installation.

10.04 RIGHTS AND REMEDIES

No waiver of rights: No action or failure to act by Owner or A/E shall constitute a waiver of a right or duty afforded them under the Contract Documents, nor shall action or failure to act constitute approval or an acquiescence in a breach therein, except as may be specifically agreed in writing.

10.05 CONTRACTOR REGISTRATION

Contractor must be registered or licensed: Pursuant to RCW 39.06, Contractor shall be registered or licensed as required by the laws of the State of Washington, including but not limited to RCW 18.27.

10.06 TIME COMPUTATIONS

Computing time: When computing any period of time, the day of the event from which the period of time begins shall not be counted. The last day is counted unless it falls on a weekend or legal holiday, in which event the period runs until the end of the next day that is not a weekend or holiday. When the period of time allowed is less than 7 days, intermediate Saturdays, Sundays, and legal holidays are excluded from the computation.

10.07 RECORDS RETENTION

Six year records retention period: The wage, payroll, and cost records of Contractor, and its Subcontractors, and all records subject to audit in accordance with Section 8.03, shall be retained for a period of not less than 6 years after the date of Final Acceptance.

10.08 THIRD-PARTY AGREEMENTS

No third party relationships created: Except as otherwise set forth herein, the Contract Documents shall not be construed to create a contractual relationship of any kind between: A/E and Contractor; Owner and any Subcontractor; or any persons other than Owner and Contractor.

10.09 ANTITRUST ASSIGNMENT

Contractor assigns overcharge amounts to Owner: Owner and Contractor recognize that in actual economic practice, overcharges resulting from antitrust violations are in fact usually borne by the purchaser. Therefore, Contractor hereby assigns to Owner any and all claims for such overcharges as to goods, materials, and equipment purchased in connection with the Work performed in accordance with the Contract Documents, except as to overcharges which result from antitrust violations commencing after the Contract Sum is established and which are not passed on to Owner under a Change Order. Contractor shall put a similar clause in its Subcontracts, and require a similar clause in its sub-Subcontracts, such that all claims for such overcharges on the Work are passed to Owner by Contractor.

10.10 HEADINGS AND CAPTIONS

Headings for convenience only: All headings and captions used in these General Conditions are only for convenience of reference, and shall not be used in any way in connection with the meaning, effect, interpretation, construction, or enforcement of the General Conditions, and do not define the limit or describe the scope or intent of any provision of these General Conditions.

10.11 SPECIAL CONDITIONS

The Owner may have Federal Funding or other special requirements for this project. If applicable, the Contractor will be required to comply with the “DIVISION 00 SPECIAL CONDITIONS” section in the specifications that will be based on the specific requirements of the funding source.

PART 1 - GENERAL

1.01 DESCRIPTION

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

1.02 WORK COVERED BY THE CONTRACT DOCUMENTS

A. This project may include various trades. Coordinating of construction activities by the Contractor will be required to ensure that the project will not affect the operation of Owner's personnel throughout the entire construction process. Site access is limited and adjacent areas will remain occupied during construction.

1. Each trade is governed by General and Supplemental Conditions of the Contract and all provisions of Division 01, General Requirements, whether or not specifically referenced for its particular work.

B. Base & Alternate Bids

1. The Base Bid work includes all work indicated in the drawings or specified which is not specifically noted as By Owner, Not-in-Contract (NIC), or designated to be a Bid Alternate. Briefly and without force and effect upon the contract documents, the work of the contract can be summarized as follows: This project is a renovation to two existing adjacent buildings in downtown Chehalis, Washington. The building are designated as Building No. 1 and Building No. 2, located at 125 and 185 NW Chehalis Avenue, respectively. In general, the work consists of:
    a. Replacement of existing exterior window and door assemblies with new aluminum entrance and storefront framing assemblies as well as certain hollow metal door and frame assemblies.
    b. Modifications to certain exterior wall assemblies to add insulation as well as new exterior finishes.
    c. Cleaning and sealing exterior brick veneer finish at Building No. 2 including removal of existing paint finish where it occurs.
    d. Infill existing open space at southeast corner of Building No. 1 including new roof structure with single-ply roofing over rigid insulation. Work also includes modifications/ repairs to portions of existing single-ply roofing assemblies at perimeter of of both buildings as designated on Roof Plans.
    e. Interior tenant improvements at Building No. 1. No interior improvements included in Building No. 2
2. Bid Alternates: None.

C. Contractor's Storage/Set-Up Areas

1. The Owner shall instruct the Contractor as to the location to be used by the Contractor for storage and set-up of material and equipment to be used in the work. Cooperate with other on-site contractors for access.
2. Use of the Site: Drawings generally indicate the location to be used by the Contractor for storage and set-up of material and equipment to be used in the work. Portions of the site beyond areas on which work is indicated are not to be disturbed. Conform to site rules and regulations affecting the work while engaged in project construction. Ultimately contractor access throughout the entire campus shall be only be as permitted by the Owner.
    a. Keep existing driveways and entrances serving the premises clear and available to the Owner and their employees at all times. Do not use these areas for parking or storage or materials.

b. Do not unreasonably encumber the site with materials or equipment. Confine stockpiling of materials and location of storage sheds to the areas indicated. If additional storage is necessary, obtain and pay for such storage off-site.

1.03 CONTRACTOR USE OF THE PREMISES

A. During the construction period the Contractor shall have use of the premises in areas containing project work as indicated in the Contract Documents.

B. Monitor and secure portions of the buildings and site under Contractor's control to prevent unauthorized access. Inspect premises at end of each work day to ensure all doors are locked and exterior openings are closed and secure.

C. Keep existing driveways and entrances serving the premises clear at all times. Do not use these areas for parking or storage of materials, except upon prior written approval of Owner.

D. Do not unreasonably encumber the sites with materials or equipment. Confine stockpiling of materials and location of storage sheds to the areas indicated or otherwise directed by Owner. If additional storage is necessary, obtain and pay for such storage off-site.

E. Limit construction access to only those areas that require work under this Contract.

F. Contractor is fully responsible for damage or loss that occurs to existing facilities, occupants and public as a result of the work performed. Take precautions to protect existing facilities, occupants and public. Immediately repair or replace items damaged or lost as a result of work under the Contract.

G. Assume full responsibility for protection and safekeeping of products stored on-site.

1.04 CONTRACTOR'S RESPONSIBILITY

A. All work that is required for a complete and orderly provision of a fully operational facility system as described in the Drawings and Project Manual, and which is not specifically indicated as "not in contract" (NIC) or "Owner-furnished, Owner-installed" (OFOI) shall be a part of this contract for construction.

B. The Contractor will be responsible for all aspects of transport, receiving, and any temporary storage of materials, tools, equipment, and the transport and facilities required by the contractor's personnel to, from, and at the worksite.

C. It is the Contractor's responsibility to verify all information made available through the project documents, review of the Owner's files and records, or from any other form of communication. Measurements and site conditions are to be field verified by the Contractor. No allowance will be made for any items incorrectly ordered, fabricated, or installed due to failure to perform such verification prior to commencing the work.

1.05 MISCELLANEOUS PROVISIONS

A. Stored Products

1. Assume full responsibility for the protection and safekeeping of products under this Contract, stored on and off the site.
2. Move any stored products, under Contractor's control, interfering with operations of the Owner or separate contractors.
3. Obtain and pay for the use of additional storage or work areas needed for operations.
4. Refer to Section 01 61 00, Common Product Requirements, for additional requirements relating to storage of products and equipment.

B. Subcontractor Instructions: Notify subcontractors to become familiar with requirements of Division 00, Division 01 and the work of Sections related to their own work. Instruct them that these conditions and requirements apply to their work in each Section of the technical specifications.

C. Mechanical/Electrical Requirements Of General Work

1. General: Except as otherwise indicated, comply with applicable requirements of Divisions 22 and 23 sections for plumbing and mechanical provisions within units of general (Division 2-14) Work and with applicable requirements of Division 26 sections for electrical provisions within units of general (Division 2-14) Work.
2. Service Connections: Refer to Division 22, 23 and 26 sections for the characteristics of the respective mechanical and electrical services to be connected to units of general work. Provide units manufactured or fabricated for proper connection to and utilization of available services, as indicated. Except as otherwise indicated, final connection of mechanical service to general work is defined as being mechanical work, and final connection of electrical service to general and mechanical work is defined as being electrical work.
3. Electrical Requirements: Except as otherwise indicated, comply with applicable provisions of the National Electrical Code (NEC) and standards by National Electrical Manufacturer's Association (NEMA), for electrical components of General Work. Provide Underwriters Laboratories listed and labeled products where applicable.

D. Field Verification: It is the Contractor's responsibility to verify all field measurements and site conditions. No allowance will be made for any items incorrectly fabricated or installed due to failure to perform such verification prior to commencing the work.

E. Coordination Of Utility Service Requirements: Coordinate all utility service requirements with serving utility companies including, but not limited to, power, telephone, water and sanitary sewer service. Observe specification standards, written details, and sketches showing equipment locations and dimensions as indicated by the utility company. Coordinate scheduling of utility company work with all other trades.

1.06 WORK NOT INCLUDED IN CONTRACT

A. Work Not Included In Contract

1. Items of work noted on Drawings and/or described in the Project Manual as "NIC" (Not In Contract) or "FIO" (Furnished and Installed by Owner) will be performed under other contracts operating concurrently with the work of this contract, and are not included in this contract.
2. Contractor is responsible for scheduling the work, storing such equipment if requested, and coordinating related work in the Contract with installation of NIC and FIO equipment. Contractor shall provide all preparatory work necessary for proper installation including blocking and backing, and finish work including caulking, grouting, furring, and painting adjacent surfaces as required for NIC and FIO equipment.

B. Owner Furnished Items: FOIC Equipment: Items designated by the abbreviation "FOIC", meaning Furnished by Owner but Installed by Contractor, will be delivered to the jobsite for consignment to the Contractor. Contractor shall assume custody and responsibility for same after inspecting and determining that they are complete and in acceptable condition for installation. Installation of such items includes receiving, unloading, uncrating, storing, and all preparatory work necessary for proper installation including blocking and backing, rough-ins, setting in place, building-in, leveling and attaching to building elements, making all mechanical and electrical connections required, and finish work including caulking, grouting, furring, and painting adjacent surfaces, leaving same in completely installed and operable condition satisfactory to Consultant. Contractor shall provide all equipment necessary for proper unloading and handling of FOIC items.

END OF SECTION

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Included

1. Requirements for Changes are also included in Part 7 of the General Conditions For Construction. This Section specifies additional detail regarding administrative and procedural requirements for handling and processing contract modifications. In the event of conflicts between this specification and Part 7, the General Conditions shall supersede any requirements identified herein.
2. Owner's written approval authorizing Contractor to undertake additional work does not authorize automatic extension of Contract Completion time.
3. Coordinate related requirements specified in other parts of the Project Manual, as supplemented.

B. Forms / Definitions

1. Change Order: AIA Document G701, 2017 Edition, as issued by Architect.
2. Proposal Request: AIA Document G709, 2018 Edition, as issued by Architect. This form is a written request for a cost/credit proposal from the Contractor for changes described in the proposal request form. This form does not authorize the Contractor to proceed with the changes described. The Contractor is to submit their response to the requested cost/credit proposal within 15 days after issuance of the Proposal Request, or advise in writing why their response will not be available by then.
3. Construction Change Directive: AIA Document G714, 2017 Edition, as issued by Architect. A written order to the Contractor, signed by the Architect and Owner, amending Contract Documents as described. This Order directs Contractor to proceed with a change altering Contract Sum and/or Contract Time, and is to be included in a subsequent Change Order.
4. Clarification. Form as issued by the Architect. This form is a written order, comprising instructions, or interpretations, signed by Architect making minor changes in the work not involving a change in Contract Sum or Contract Time. The Contractor is to sign the form, indicate acceptance or not, and return the form to the Architect.

1.02 CHANGES IN THE WORK

A. General: Changes to the work can be by:

1. Change Order Proposal Request (AIA Document G709) issued by the Architect to the Contractor on the Owner's behalf.
2. Construction Change Directive (AIA Document G714) issued by the Architect to the Contractor on the Owner's behalf.
3. Request (AIA Document G709) initiated by the Contractor and submitted to the Architect.

B. Change Order Procedures

1. Preliminary Owner Initiated Changes: The Architect will issue a detailed description of proposed Owner initiated changes in the Work through a Proposal Request (AIA Document G709) form that may require adjustment to the Contract Sum or Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications Changes may be initiated by Architect or Owner
    a. Proposal Requests issued by the Architect are for information only. Do not consider them as an instruction either to stop work in progress or to execute the proposed change.
    b. Within 14 calendar days of receipt of a proposal request, or quicker if the project schedule necessitates, submit an estimate of cost necessary to execute the change to the Architect for the Owner's review.

2. Contractor Initiated Changes: When latent, unforeseen, or other conditions require modifications to the Contract, the Contractor may propose changes by submitting a written request for a change to the Architect, including:
    a. Description of proposed changes.
    b. Reasons for making changes.
    c. Effect on Contract Sum and Contract Time.
    d. Effect on work of separate Subcontractors.
    e. Documentation supporting any change in Contract Sum or Contract Time, as appropriate.

C. Construction Change Directive
1. Architect may issue, in behalf of the Owner, a Construction Change Directive (AIA Document G714).
2. Directive describes Work change additions or deletions, with attachments of revised Contract Documents to define details and designate any change in Contract Price or Contract Time.
3. Owner will sign and date as directive to proceed with changes.
4. Contractor signs and dates to indicate agreement with terms.
5. Distribution:
    a. Architect transmits three (3) copies to Contractor.
    b. Contractor returns two (2) copies to Architect.
        1) Architect retains one copy for his files.
        2) Architect transmits one copy to Owner.

D. Approval Or Rejection Of Proposal
1. When Change is Initiated by Architect or Owner Through Proposal Request (AIA Document G709):
    a. Contractor to submit in writing within fourteen (14) days of date on Proposal Request:
        1) All direct and indirect costs.
        2) Schedule of Values and Unit Prices including basis for costs.
        3) Impact on other work not described. Describe and include all direct and indirect costs of changes to other work not specified in Proposal Request.
        4) Quotation will be guaranteed for period specified in Proposal Request beginning from signing of proposal. If no period specified, guarantee quotation for Sixty (60) days from signing.
        5) Proposal to be signed by authorized person.
    b. Owner reviews proposal and responds in writing by one of the following:
        1) Authorizing.
        2) Requesting additional information. Contractor is to respond with the additional information within 15 days of request.
        3) Rejecting.
    c. Authorization to proceed with change permits Contractor to undertake work but billing by Contractor can be processed only after a Change Order has been signed and dated by Owner.
2. When Change is Initiated by Contractor:
    a. Owner reviews and responds in writing by one of the following:
        1) Processing a Proposal Request (AIA Document G709).
        2) Requesting additional information.
        3) Rejecting.

b. If Owner responds by processing a Proposal Request, follow procedure outlined in Par. D.1 above.
c. If additional information is requested by Owner, respond in writing within fourteen (14) days of Owner's request.

E. Documentation Of Proposals & Claims
1. Support each lump sum proposal quotation, and each unit price (not previously established) with sufficient substantiating data.
2. On request, provide additional data to support time and cost computations:
a. Labor required.
b. Equipment required.
c. Products required.
1) Recommended source of purchase and unit cost.
2) Quantities required.
d. Taxes, insurance, and bonds.
e. Documented credit for work deleted form Contract.
f. Overhead and profit.
g. Justification for any change in Contract Time.
3. Support each claim for additional costs from Contractor with documentation, as required for lump sum proposal. Include additional information as follows :
a. Name of Architect or Owner's authorized agent who ordered work, and date of order.
b. Dates and times work was performed, and by whom.
c. Time record, summary of hours worked, and hourly rates paid.
d. Receipts and invoices for:
1) Equipment used, listing dates and times of use.
2) Products used, listing of quantities.
3) Subcontracts.
4. When additional costs are to be based upon time-and-materials/force account work, support each claim with the following information:
a. Heading:
1) Project name.
2) Proposal Request or Construction Change Directive number.
3) Report number.
4) Date of Report.
5) Work performed description.
6) Submitted by : (name of submitter).
7) Verified by : (name of reviewer).
8) Weather conditions for day that work was performed.
9) Low and high temperatures for day that work was performed.
b. Labor Listing:
1) Name of workman.
2) Trade of workman.
3) Classification (foreman, journeyman, apprentice, laborer, etc.).
4) Description of work performed by workman.
5) Hours worked, separated by straight time, time + 1/2, and double time.
c. Material Listing:
1) Description of material (itemized).
2) Quantity of each item.

3) Also required prior to acceptance of material costs are:
4) Supplier of material.
5) Unit cost of each item.
6) Total cost for each item and grand total of material cost for report.

d. Equipment Listing:
1) Description of equipment used.
2) Supplier (Identify if rented. If contractor owned, write in company name).
3) Quantity of each line item and/or time used.
4) Unit cost of piece of equipment used (rental rate).
5) Total cost for each line item and grand total of equipment cost for report.

e. NOTE: Material and equipment costs must be supported by invoices with legible prices marked on them, from each supplier and/or vendor.

a. This information is to be submitted daily in a report form. Failure to submit all of the requested information in each of the daily reports will result in rejection of that report. Contractor will be responsible for providing suitable identification devices (different colored armbands, hard-hats, shirts, or similar) for workmen intended to perform work per the time-and-materials/force account claim. The different colored identification devices shall be easily visible to the Owner's observer at all times during the performance of that work. Failure of a trade/workman to wear/use the different colored identification devices will result in the rejection of labor costs associated with that trade/workman.

5. Document requests for substitutions for Products as specified in Section 01 61 00

F. Preparation Of Change Orders
1. Architect will prepare Change Orders.
2. Change Order Form: AIA Document G701.
3. Change Order describes Work changes, additions, and deletions, with attachments of revised Contract Documents to define change details.
4. Change Order provides accounting of any Contract Sum and Contract Time adjustment.

G. Lump Sum /Fixed Price Change Order
1. Content of Change Orders will be based on one or more of the following:
a. Architect's or Owner's Proposal Request and Contractor's responsive Proposal as mutually agreed between Owner and Contractor.
b. Contractor's Change Proposal, as recommended by Architect.
c. Clarifications, as agreed upon by Architect and Contractor.
d. Request For Information forms
2. Proper signatures (dated) authorize Contractor to proceed with changes.
3. Sign and date Change Order if Contractor agrees with terms.

H. Unit Price Change Order
1. Content of Change Orders will be based on, either:
a. Definition of extent of required changes.
b. Contractor's Proposal for change, as approved with appropriate signatures.
c. Survey of completed work.
2. The amount of unit prices is to be:
a. Any stated in the Bid Form / Agreement.
b. Those mutually agreed upon between Owner and Contractor.
3. When Change Order quantities can be determined prior to start of work:
a. Appropriate listed persons will sign and date as authorization for you to proceed.
b. Sign and date Change Order to indicate your agreement with terms.

4. When quantities cannot be determined prior to start of work, the following procedures shall be followed:
    a. Appropriately signed instructions will be issued by Owner authorizing Contractor to proceed on unit price basis, citing applicable unit prices, approximate total cost, and maximum amount approved for work. Maximum amount cannot be exceeded without further written authorization whether or not work is completed.
    b. At completion of change, Contractor shall determine cost of work based on unit prices and quantities used.
        1) Submit documentation establishing any claims for Contract Time change.
5. All pertinent listed parties sign and date Change Order indicating their agreement to change in Contract Sum and Contract Time.

I. Correlation With Contractor's Submittals
1. Contractor to periodically revise Schedule of Values and Request for Payment forms to record each change as a separate item of Work. Record adjusted Contract Sum.
2. Contractor to periodically revise Construction Schedule reflecting each change in Contract Time. Revise sub schedules to show changes for other items of work affected by changes.
3. Upon completion of work under Change Order, enter pertinent changes in Record Documents.

J. Distribution
1. Copies in quadruplicate to Owner.
2. Change Orders: Upon authorization, Owner to transmit two (2) signed copies to Architect.
    a. Architect retains one copy for his files.
    b. Architect transmits one copy to Contractor.

END OF SECTION

PART 1 - GENERAL

1.01 DESCRIPTION

A. Application For Payment

1. General:
   a. Submit itemized payment request as required in General Conditions together with Schedule of Values and other submittals as listed herein.
   b. Except as otherwise indicated, 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 initial application, application at times of substantial completion, and finial payment application.
   c. The Contractor certifies that to the best of his knowledge, information, and belief, the work covered by each Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by him for work for which previous Applications for Payment were issued and payments received from the Owner, and that current payment is not due.
   d. Contractor shall not "project" work completed beyond the date of Application for Payment submittal for the purpose of payment request.
2. Payment Application Times: The "date" for each progress payment is as indicated in Owner-Contractor Agreement. The period of construction work covered by each payment request is the period indicated on Owner-Contractor Agreement.
3. Payment Application Forms: Submit applications for payment using AIA Document G702 Application and Certificate for Payment, and G703 Continuation Sheet, samples of which are bound hereinafter. Follow line items set forth on the Schedule of Values for format and breakdown of costs.
   a. Contractor may provide a detailed spreadsheet in lieu of G703 Continuation Sheet, subject to approval by Owner's Representative for spreadsheet layout and content.
4. Application Preparation:
   a. Except as otherwise indicated, complete every entry provided for on the various forms, including execution by authorized persons; incomplete applications will be returned by Architect without action.
   b. Entries shall match current data of schedule of values and progress schedule and report.
   c. Listing shall include amounts of change orders issued prior to first day of the "period of construction" covered by application.
   d. Round off dollar amounts to nearest whole dollar.
5. Initial Payment Application: The principal administrative actions and submittals which must precede or coincide with submittal of first payment application can be summarized as follows, but not necessarily by way of limitation:
   a. Statement of Intent to Pay Prevailing Wages on Public Works Contract.
   b. Schedule of Values, allocated to the various portions of the work; the schedule shall be used as a basis for the Contractor's Application for Payment.
   c. List of Subcontractors and major material suppliers.
   d. Schedule of Unit Prices, as applicable.
   e. Construction Progress Schedule (preliminary if not final).
   f. Schedule of Submittals (preliminary if not final).
   g. Listing of Contractor's staff assignments and principal consultants.
   h. Copies of acquired building permits and similar authorizations and licenses from governing authorities for current performance of the work.

6. Applications Each Month During Construction: Submit itemized applications, AIA Document G702 and G703 in number of copies as specified below.
7. Construction Schedule Updates: Submit with applications for payment a revised updated project schedule for evaluation and measurement of actual work-in-place with said applications for payment.
8. Application at Time of Substantial Completion: See Section 01 77 00 for principal administrative actions and submittals which must precede or coincide with such special applications.
9. Final Payment Application: See Section 01 77 00 for administrative actions and submittals which must precede or coincide with submittal of final payment application.
10. Application Transmittal:
    a. Submit three (3) executed copies of each payment application, one copy of which is completed with waivers of lien and similar attachments.
    b. Transmit each copy with a transmittal form listing those attachments, and recording appropriate information related to application in a manner acceptable to Architect.
    c. Transmit to Architect by means ensuring receipt within 24 hours.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

A. Coordinate scheduling, submittals and work identified in the Contract to assure efficient and orderly sequence of installation of construction elements.

B. Responsibility

1. The Contractor shall be in charge of this Contract and the site, as well as the directing and scheduling of all Work. Contractor shall be on site at all times work of this Contract is in progress. Do not delegate responsibility for coordination to any subcontractor.
2. Anticipate interrelationship of all subcontractors and their relationship with the total Work.
3. Resolve differences or disputes between subcontractors and materials suppliers concerning coordination, interference, or extent of Work between Sections. Contractor's decisions, if consistent with Contract Document requirements, shall be final.
4. Final responsibility for the performance, interface, and completion of the Work and the Project in accordance with the Contract Documents shall be with the Contractor.

1.02 PROJECT PHASING & MILESTONES

A. Prior to any work beginning on the site, the Contractor shall submit, and receive final approval on:

1. Construction schedule;
2. All required plans, such as, but not limited to, safety, demolition, quality control, and waste management;
3. On all materials to be used on the project in accordance with Section 01 33 00.

1.03 SPECIAL COORDINATION

A. There are occupied spaces outside of the limits of construction. These spaces will not be vacated for construction during this contract. Any work in these surrounding areas must be coordinated with the Owner.

B. Additional special requirements and conditions apply to the work of this contract. Refer to Section 01 50 00 for detailed description of these additional requirements and conditions.

1.04 CONSTRUCTION ORGANIZATION

A. On-Site Lines Of Authority & Communications: Refer to Section 01 31 15.

B. Intra-Project Communications: Comply with procedures for intra-project communications including:

1. Submittals.
2. Recommendations.
3. Coordination drawings.
4. Schedules.
5. Resolution of conflicts.

C. Construction Mobilization

1. Cooperate with the Site Representative in allocation of mobilization areas of site; for field offices and sheds, for access, traffic and parking facilities.
2. During construction, coordinate use of site and facilities through Site Representative.
3. Comply with Architect and Site Representative's procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.
4. Coordinate field engineering and layout work under instructions of Site Representative.

D. Coordination Of Submittals
   1. Schedule and coordinate submittals specified in the Contract Documents.
   2. Coordinate work of various Sections having interdependent responsibilities for installing, connecting to and placing equipment in service.
   3. Coordinate request for substitutions to assure compatibility of space, operating elements, and effect on work of other Sections.

E. Coordination & Pre-Installation Meetings: Refer to Section 01 31 19, Project Meetings.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 COOPERATION & COORDINATION OF WORK

A. The Contractor is responsible for the coordination of the work of all trades; coordinating the installation of their work and that of all subcontractors to ensure compliance with the Contract Documents and to expedite the progress of the Project. Contractor shall check specifications, addenda, and drawings covering all trades as the work progresses. Contractor shall promptly report to the Architect what they consider omissions, conflicts or points requiring clarification.

B. Contractor shall prepare and distribute to each entity performing work at project site, a written memorandum of instructions on required coordination activities, including required notices, reports and attendance at meetings.

C. It is the responsibility of the Contractor to ensure that the work of subcontractors complies with Conditions of the Contract, Division 01 - General Requirements, and the work of other Sections related to their own work. No additional payments or time extensions will be authorized for failure on the part of subcontractors to be familiar with and in compliance with the aforementioned specification divisions and sections.

D. Inclusion of portions of the work under particular divisions of the specifications or sections of the drawings does not in every case conform to the categories of work customarily subcontracted to particular crafts or trades. In such cases, the Contractor shall be responsible to inform bidders, subcontractors, crafts and trades, that work assigned to them is contained in sections other than the usual. In every case, the General Contractor shall be responsible to provide at its cost, all work required in the Contract Documents.
   1. Provide project interface and coordination as required to properly and accurately bring together the several parts, components, systems, and assemblies and as required to complete the Work and the Project, pursuant to General Conditions for Washington State Facility Construction, Part 4 and Part 5.
   2. Provide interface and coordination of all trades, crafts, and subcontracts as required to provide correct and accurate connection of abutting, adjoining, overlapping, and related Work, and provide all anchors, fasteners, accessories, appurtenances, and incidental items as required to complete the Work properly, fully, and correctly in accordance with the Contract Documents.
   3. Materials, equipment, component parts, accessories, incidental items, connections, and services required to complete the Work which are not provided by subcontractors shall be provided by the Contractor.

3.02 PROJECT COORDINATION & SCHEDULING CONTROL

A. The Contractor shall schedule and coordinate the work of all subcontractors on the project including their use of the site. Responsibility for coordination and close adherence to time schedules rests solely with the Contractor who shall maintain coordination and scheduling control at all times.

B. Each subcontractor responsible to the Contractor shall cooperate diligently with the Contractor in the execution of their work so as to cause no delay in the completion of the Project. This responsibility includes the completion of all work in a timely manner. All Contractors, Prime Contractor and Subcontractors, shall diligently comply with the following requirements:
   1. Cooperate in planning and layout of the work well in advance of operations.
   2. Inform other contractors of requirements at proper time to prevent delay or revisions.
   3. Be informed on the requirements of other contractors and check own work for conflicts with the work of other contractors.
   4. Insure delivery of materials and performance of work on coordinated schedule with other contractors.
   5. Contractor shall ensure subcontractors and equipment suppliers are responsible for compatibility and completeness of the installation and operation of the equipment in their respective Specification Sections including conformance with code requirements.
   6. Contractor shall be represented on the job site by his superintendent at all times when there is construction going on, including the work of his subcontractors, as well as his own.

C. Changing Subcontractors: The General Contractor shall be responsible for all the additional expenses incurred by changing subcontractors during the course of this project. These additional expenses include, but are not limited to, the engineering expenses for revised submittal, request for information, or any clarification or duplication that might occur due to the fact that the initial documents have been revised.

3.03 MECHANICAL AND ELECTRICAL COORDINATION

A. All mechanical subcontract work (insulation, plumbing, fire sprinkler, air distribution, sheet metal, steam, balancing and controls, etc.) on this project, shall be the sole responsibility of one Mechanical Subcontractor. In turn, this Mechanical Subcontractor shall answer to the General Contractor. This Mechanical Subcontractor shall be responsible for coordination between the trades above to make sure that all the interface between the different mechanical subs are in place, assuring that all the above systems are in proper working condition.

B. Coordination Of Space
   1. Coordinate use of Project space, including structural and architectural elements, and sequence of installation of fire suppression, plumbing, HVAC, communications, security and all other electrical work which is indicated diagrammatically on Drawings. Follow routings shown for pipes, ducts and conduits as closely as practicable, with due allowance for available physical space; make runs parallel with lines of building. Utilize space efficiently to maximize accessibility for other installations, for maintenance and for repairs.
   2. In finished areas, except as otherwise shown, conceal pipes, ducts, wiring and the like in the construction. Coordinate locations of fixtures and outlets with finish elements.

C. Resolve all “tight” or restricted conditions involving work of various sections in advance of installation of mechanical and electrical work.
   1. Where conflicts occur, architectural and structural has right-of-way over mechanical and electrical work; concealed mechanical work has right-of-way over concealed electrical work; exposed electrical fixtures have right-of-way over mechanical fixtures.
   2. Submit conflicts which cannot be resolved by right-of-way to the A/E for direction.
   3. Submit reflected ceiling coordination plans showing work by all applicable trades for review and approval by the Architect.

D. Prior to proceeding with work in these areas, Contractor shall be responsible for preparing supplementary drawings for review showing all Work in “tight” areas, and provide minor adjustments and additional work necessary to overcome “tight” conditions, at no increase in Contract Sum. “Tight” areas shall be identified by the Contractor, however, the Owner reserves the right to require supplementary drawings for any areas affected by the construction activity

whether or not identified as “tight” by the Contractor. (“tight” shall be defined here as “a condition so close in structure as to prevent passage; allowing little or no room for free motion or movement.”)

E. Equipment Connections: Refer to Section 01 11 00 and to General Requirements in the various Mechanical and Electrical Divisions. Work includes but is not limited to:
   1. Provide motors and equipment for current characteristics as shown on Electrical drawings:
      a. Electrical Contractor:
         1) Electrical Contractor shall furnish and install all wiring except:
            a) Temperature control wiring.
            b) Equipment control wiring.
            c) Interlock wiring.
         2) The Electrical Contractor shall furnish and install all power wiring complete from power source to motor or equipment junction box, including power wiring through starters. After all circuits are completed, Electrical Contractor shall be responsible for all power wiring.
      b. Mechanical Contractor: Mechanical Contractor shall, regardless of voltage, furnish and install all temperature control wiring, all starters not factory mounted on equipment, and all interlock wiring and equipment control wiring for the equipment that the Mechanical Contractor furnishes.

3.04 JOB SITE FIELD MEASUREMENTS AND TEMPLATES

A. Obtain field measurements required for accurate fabrication and installation of Work included in this Contract. Exact measurements are the Contractor's responsibility.

B. Contractor shall be responsible for field verifying actual dimensions where “+/-“ dimensions are indicated.

C. Furnish or obtain templates, patterns, and setting instructions as required for installation of all Work. Verify all dimensions in the field.

3.05 NOTIFICATION & CORRECTION OF DEFECTIVE WORK

A. Coordinate the Work of all subcontractors and make certain that, where the work of one trade is dependent upon the work of another trade, the work first installed is properly placed, installed, aligned and finished as specified or required to properly receive subsequent materials applied or attached thereto.

B. Direct subcontractors to correct defects in substrates they install when subcontracts of subsequent materials have a reasonable and justifiable objection to such surfaces. Promptly notify the Owner's Representative and Architect of any defects or imperfections in preparatory work which will in any way affect satisfactory completion of the work.

C. Under no condition shall a section of work proceed prior to preparatory work having been completed, cured, dried or otherwise made satisfactory to receive such related work. Do not force subcontractors to apply or install products to improperly finished product.

D. Correction of defective work shall be the responsibility of the Contractor or subcontractor providing the defective work. Correction of work due to underlying defects shall be the responsibility of the Contractor or subcontractor providing overlying work.

3.06 COORDINATION DRAWINGS

A. Coordination Drawings - General
   1. The purpose of coordination drawings is to resolve potential interdisciplinary dimensional interferences and conflicts prior to shop fabrication or field installation of components and systems. While the A/E has exercised the accepted standard of care in performing overall dimensional coordination in the preparation of the Construction Documents, additional

factors influence coordination which the Contractor must address in the coordination drawings. These factors include, but are not limited to, specific means and methods, the sequence of work, the characteristics of the specific equipment to be installed (where the documents allow multiple options), and the bidding assumptions made by each Contractor.

2. Where work by separate entities requires off-site fabrication of products and materials which must be accurately interfaced and closely intermeshed to produce required results, prepare coordination drawings consisting of plans, sections and details to indicate how the work shown by separate shop drawings will be interfaced, intermeshed, and sequenced for installation; comply with submittal requirements of Section 01 33 00.
3. The Mechanical/Electrical coordination process shall be performed on site at the Mechanical subcontractors field office. The following parties shall be directly involved and participate, under the direction of the General Contractor, on regularly scheduled weekly basis: Contractor, Plumbing subcontractor, HVAC subcontractor, Fire Protection subcontractor, Electrical subcontractor, Automatic Temperature Control System subcontractor, and Low Voltage Electrical Systems subcontractor. Additional subcontractors and vendors shall participate at various times as required: Masonry and Structural Steel subcontractors, Drywall and Ceiling subcontractors, and others as required.
4. Each trade's superintendent is expected to participate in the development of coordination drawings. All piping and equipment shall be shown, and all piping greater than 4 inches shall be indicated in double line fashion on the coordination drawings.
5. Coordination meetings shall be held on a minimum of once a week for the duration of the coordination process which shall commence immediately upon Notice to Proceed.
6. The Owner and General Contractor shall have full time onsite representation during this process, and will participate in the resolution of conflicts that may arise from indicated routings or service requirements.
7. The Contractor and each applicable subcontractor shall sign drawings to indicate their participation in the coordination process and their agreement that the individual systems and components can be installed as indicated in the drawings and in the conformance with the Contract Documents.
8. Upon completion of the Project, all coordination drawings shall be turned over to the Owner as a record document submittal.

B. Coordination Drawings - Drawing Criteria: Prepare coordination drawings per the following guidelines:

1. Sheet size same as Contract Drawings. Drawings at appropriate scale to depict necessary detail; but not less than 1/4” = 1'-0” for plans and elevations, 1/2” = 1'-0” for sections and details.
2. Drawings to contain elements of construction in their correct dimensional relationship, including but not limited to, floors, walls, ceilings including ceiling heights, roofs, columns, beams, soffits, openings, supports, hangers, equipment, fixtures, and other appurtenances. Develop drawings sequentially through Architectural, Structural, Civil, Fire Suppression, Plumbing, Mechanical, and all various Electrical trades.
3. Put signatures of Contractor and each subcontractor on each drawing to confirm their participation in coordination process and agreement that individual systems and components can be installed accordingly.

3.07 CLOSEOUT DUTIES

A. General

1. Coordinate completion and cleanup of work by the various trades in preparation for Substantial Completion.

2. After Owner occupancy of premises, coordinate access to site by the various trades involved for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.
3. Assemble and coordinate closeout submittals.

B. At Completion Of Work Of Each Subcontract: At completion of work of each subcontract, conduct inspection to assure that:
1. Work is acceptable.
2. Temporary facilities and debris have been removed from site.

C. At Substantial Completion
1. Conduct inspection and prepare list of work to be completed or corrected.
2. Assist A/E and Owner's Representative in inspection.
3. Supervise correction and copletion of Work as established in A/E's inspection reports ("punch lists").

D. At Final Completion: Assist A/E and Owner's Representative in inspection.

END OF SECTION

PART 1 GENERAL

1.01 GENERAL COMMUNICATION

A. Telephone communication and correspondence shall be between Contractor's Representative and Architect.

B. Subcontractors are not to contact members of the design team directly unless explicitly agreed to by Contractor, Architect and Owner. All such contact and discussions are to be documented in writing by the subcontractor and submitted to the Architect and Owner through the Contractor.

C. The General Contractor shall transmit problems or questions in writing using a Request for Information (RFI).

D. On-Site Lines Of Authority & Communications: Establish on-site lines of authority and communications including attendance at Pre-Construction Meeting and Progress Meetings as required by the Architect and Owner's Site Representative. All on-site lines of authority and communications shall be established through the Architect.

1.02 CORRESPONDENCE

A. All correspondence to and from Contractor will be routed through Architect with a copy to Owner.

B. Include project title and project number on all correspondence.

1.03 CORRESPONDENCE PROCEDURES

A. The following shall apply to all forms of correspondence initiated by the contractor:
   1. The project name and state project number shall appear prominently.
   2. The date of preparation and originator shall be given.
   3. Correspondence shall be directed to the Architect. If sent by facsimile, a hard copy shall promptly follow.
   4. The Contractor shall submit all required correspondence within the stipulated time.

1.04 REQUIRED CORRESPONDENCE

A. Subcontractors Listing: Two copies of a complete list of all subcontractors and major material suppliers shall be submitted prior to the start of construction.

B. "Statement of Intent to Pay Prevailing Wages" Forms: For the general contractor, and each subcontractor, submit to the Architect a copy of Washington Department of Labor & Industries form bearing the approval of the Industrial Statistician and indicating payment of fees. This must be submitted prior to application for payment for the subcontractor's work scope.

C. Construction Schedule: Within seven days of notice to proceed, submit to the Architect three copies of the CPM (Critical Path Method) construction schedule. Consultant may request updated schedules if a significant discrepancy is noted during construction. The schedule shall be reviewed at project meetings. The Contractor shall keep the actual progress updated on the schedule.

D. Schedule of Values: Within seven days of notice to proceed, submit to the Architect three copies of the Schedule of Values. The breakdown will form the basis of evaluation of the work done and for progress payments.
   1. The breakdown shall schedule the value of the work for each category of work or subcontractor and each major material supplier.
   2. General Conditions will be itemized into at least the following separate categories: Bonds and insurance, supervision, taxes, temporary services, overhead and profit.

1.05 CONTINGENT CORRESPONDENCE

A. Construction Field Authorization(s): A written order, instruction, or interpretation, making changes in the work, which may or may not involve a change in Contract Sum or Contract Time. When signed by the Architect and Owner the Contractor shall proceed as directed in the Authorization.

1.06 REQUEST FOR INFORMATION (RFI)

A. It is the Contractor's responsibility to review Contract Documents in a timely manner so that the Consultant shall have sufficient time to respond to a Request for Information prior to the start of actual construction of that part of the Work.

B. When field conditions or Contract Document contents require clarification or verification by the Architect or Architect's sub-consultants, a written RFI is to be submitted as follows:
   1. Identify the nature and location of each clarification/verification using a RFI form; provide as a minimum the following information:
      a. Project name and number;
      b. Date;
      c. Date response desired.
      d. RFI number;
      e. Subject;
      f. Initiator of the question;
      g. Indication of costs, if known;
      h. Location on site;
      i. Contract drawing reference;
      j. Contract specification section and paragraph reference;
      k. Descriptive text;
      l. Space for reply on same page as questions; and
      m. Single subject matter, 1 item each - architectural, civil, structural, mechanical, electrical
   2. Number each RFI sequentially beginning with number 001 (RFI-001). Only one question per RFI.

C. Uses
   1. The RFI form shall be used for interpretation or clarification of the Contract Documents only.
   2. Do not use the RFI form for the following; the Consultant will not reply and the RFI will be returned without action:
      a. Product or material substitution.
      b. Questions relating to construction means, methods, techniques, sequences, procedures, or safety precautions. These are the Contractor's responsibilities exclusively.
      c. Questions relating to construction schedule, coordination between trades, or division of work among subcontractors. These are Contractor's responsibilities exclusively.
      d. Questions on contract administration procedural matters, unless they require interpretation or clarifications of the Contract Documents.
      e. Dimensions or quantities which are shown on the Contract Documents, which can be measured or calculated from the information contained in the Contract Documents where such measurement or calculation is standard construction industry practice.
      f. Confirmation of interpretations or clarifications previously provided by the Architect.

g. The Contractor shall not initiate requests for interpretations or clarifications of the Contract Documents which can be reasonably derived from a review of the Contract Documents.

D. Route: RFI's in same manner as correspondence

E. Clarifications may be discussed on-site or by telephone with Architect or Architect's sub-consultant with concurrence of the Architect. The essence of these discussions are to be incorporated into a RFI form and submitted for normal RFI processing.

F. Reply
1. The Consultant will endeavor to reply to all RFI's promptly as his work schedule allows and generally no later than 7 working days from the day received. The Architect will expedite those RFI's indicated by the contractor as being critical to the construction process.
2. When an RFI involves a complex subject, extensive research or governmental agency contact, the Architect will inform the Contractor that additional time is required to prepare a reply. The Contractor shall cooperate and agree to reasonable additional time.
3. The reply shall be a clarification or an interpretation of the Contract Documents; the reply is not an authorization of change in the Contract Sum or Time.

1.07 NON-COMPLIANCE NOTICE (NCN)

A. Any work that is identified as not in compliance with the Contract Documents, either by oral discussion with the contractor, or written communication to the contractor, shall be removed and replaced without cost to the Owner, including removal of additional material necessary to confirm non-compliance. At its option, the Owner may accept written alternative solutions by the contractor and recommended by the Architect. The Contractor shall notify the Architect and Owner in writing immediately following oral discussion or receipt of any written communication if the contractor believes they are in compliance with the Contract Documents. The Architect will make a determination based on the Contract Documents. If the Architect finds the work is in non-compliance the Architect will issue a written Non-Compliance Notice (NCN). Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification. Upon receipt of the NCN, the Contractor shall take immediate action to correct work. Review corrections at progress meetings for closure.

B. If the Contractor fails or refuses to comply promptly after the final determination of the appropriate corrective action, the Owner may:
1. issue an order stopping all or part of the work until satisfactory corrective action has been taken. The Owner will not pay for non-complying work or follow on work until the non-complying work is corrected or replaced. If it becomes necessary to stop work due to non-correction or non-complying work, no delay claim, time extension, or compensation will be granted, or
2. the Owner may elect to correct the non-compliant work and back charge the Contractor by a deductive Change Order

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

A. This Section specifies administrative and procedural requirements for project meetings, including, but not limited to, the following:
   1. Preconstruction meeting;
   2. Progress meetings;
   3. Coordination meetings;
   4. Pre-installation meetings prior to starting certain work;
   5. Commissioning meetings;
   6. Project closeout meetings;
   7. Owner training meetings.

1.02 PRECONSTRUCTION MEETING

A. The Owner will schedule a preconstruction conference before starting construction, at a time convenient to the Contractor and the Architect, but no later than 15 days after the Notice To Proceed. The conference will be held at the Project Site or another convenient location as selected by Owner.

B. Attendance is required of the following:
   1. Consultant and Consultant's sub-consultants;
   2. Owner's Representatives;
   3. Project Manager;
   4. Contractor's Superintendent and Project Manager; Contractor's QC Representative if different individual than the Project Manager.
   5. Major Subcontractors;

C. Discussion will cover items of significance, including the following:
   1. Communication chain and persons authorized to direct changes;
   2. The Work;
   3. Site Representative's roles;
   4. Work hours, sequence, phasing, and occupancy;
   5. Special project procedures;
   6. Procedures and processing:
      a. Application for payments;
      b. Change Order Proposals (COP);
      c. Field Authorizations (FA);
      d. Change Orders (CO);
      e. Requests for Information (RFI);
      f. Architects Supplemental Instructions (ASI)
      g. Field decisions;
      h. Submittals;
      i. Others as appropriate.
   7. Project record documents including review of as-builts on a regular basis during construction;
   8. Temporary utilities;
   9. Security procedures;
   10. Housekeeping procedures;

11. Utility shutdowns / Outage Request Form;
12. Parking;
13. Schedule Review;
14. Hazardous material abatement procedures.
15. Use of site and premises by Owner and Contractor.
16. Others, as appropriate.

D. The Architect will:
1. Conduct the meeting to review contract administration requirements.
2. Record, produce, and distribute copies of the minutes to the Owner and General Contractor within seven (7) days of the meeting.

E. The General Contractor shall be responsible to distribute copies to all other Contractor attendees.

1.03 PROGRESS MEETINGS

A. For purposes of coordination and scheduling after start of the work, weekly Progress Meetings will be held to enable an orderly review of the construction progress and to provide for systematic discussion and analysis of concerns that may arise relative to execution of the work.

B. Contractor, and Subcontractors as required, shall incorporate attendance at these meetings as part of the Base Bid of the project - no overtime payments will be authorized for Contractor or Subcontractors to attend Progress Meetings or other special meetings if required.

C. Meeting Locations: ADA accessible Contractor's project field office or Owner provided meeting room, unless otherwise agreed.

D. Attendance: Representatives attending meetings are required to be qualified and authorized to act on behalf of their firms. Attendance shall include:
1. Architect and Architect's sub-consultants, as appropriate;
2. Owner's Representatives;
3. Contractor's Superintendent, Project Manager, and QC Representative;
4. Subcontractors, as appropriate;
5. Suppliers, as appropriate;

E. Agenda: The minimum agenda for construction progress meetings shall include:
1. State Project Number
2. State Project Title
3. Date of meeting
4. Attendees
5. Other project participants to be included on meeting minutes' distribution but not necessarily in attendance
6. Previous Minutes with action items from last meeting
7. Risk Issues
8. Construction Progress Schedule Update
9. Review pertinent portions of Site Specific Safety Plan. Address what will occur before next progress meeting and if there have been any incidents
10. Field Authorization/Change Order Proposal/Change Order Log and Status
11. Material Delivery Status
12. Requests for Information (RFI's)
13. Quality Control/Quality Assurance
14. As-built Updates

15. Construction Waste Management Update
16. Project Closeout
17. Commissioning Update
18. Field Observations
19. Inspection and Test Reports
20. Progress Payment, Apprenticeship, and Diverse Business Participation (when applicable)
21. Discussion
22. Action Items (by whom and by when)
23. Next Meeting Date & Time

F. Architect will:
1. Administer weekly Progress Meetings throughout work progress;
2. Record, produce, and distribute copies of the minutes to the Owner and General Contractor within seven (7) days of the meeting.
3. Ascertain that work is prosecuted consistently with contract documents and construction schedules.

G. Contractor shall be responsible to provide the following at each meeting:
1. Current (and updated if necessary) construction schedule which includes the past week and 2 week 'look ahead'.
2. One set of record documents (drawings, specifications, COs, COPs, RFIs, FAs, etc.).
3. Current (and updated if necessary) submittal schedule.
4. Current (updated) set of “as-built” Project Record Documents.

1.04 COORDINATION MEETINGS

A. Contractor shall hold weekly coordination meetings with his subcontractors and suppliers as deemed necessary by the Contractor for coordination of the work. Meetings shall be held on site. The Owner and the Architect will be available to attend such meetings upon request. Refer to Section 01 31 00 for additional information and requirements pertaining to coordination meetings.

B. The Contractor shall hold weekly coordination meetings with its prime subcontractors beginning the first week after the Notice To Proceed. The superintendent of the Contractor and prime subcontractors shall review the Contractor's schedule for the first three (3) months of work and thoroughly review the work required by the Contract Documents for that period. The Contractor shall submit Design Clarification Requests, Requests For Information, or any other type of information requests the Contractor may use, for the three (3) month work period during the first month after Notice To Proceed to minimize any conflicts that might occur when mobilization begins.

C. Project coordination meetings are in addition to specific meetings held for other purposes, such as regular progress meetings and special preinstallation meetings.

D. Request representation at each meeting by every trade currently involved in coordination or planning for the construction activities involved.

E. The Contractor shall continue to hold coordination meetings with its prime subcontractors on a regular weekly basis, and, beginning one month in advance of the next three (3) month work increment, review the Contractor's schedule and contract documents and submit Design Clarification Requests, Requests For Information, or any other type of information requests the Contractor may use. This process shall continue for each three (3) months, or increments of 3 month work segments until the completion of the Project.

F. Record meeting results and distribute copies to Consultant and Owner and to others affected by decisions or actions resulting from each meeting.

1.05 PRE-INSTALLATION MEETINGS

A. General: Prior to commencement of work listed below or as otherwise determined by the Consultant or Owner, the General Contractor or his general superintendent, the responsible foremen for the subcontractors performing said work, plus all associated sub-subcontractors, suppliers, fabricators, vendors, and others as appropriate, shall attend a meeting for the purpose of establishing a full understanding of the procedures and requirements for the orderly progress of the designated work.

B. Require attendance of entities directly affecting, or affected by, work of the Section including Architect, Owner's Representatives, Contractor's Project Manager and Superintendent with Lead man performing the work, and/or the appropriate Subcontractors/Suppliers/Fabricators.

C. Contractor shall notify the Architect of the Contractor's scheduled pre-installation meeting not less than seven (7) days prior to the scheduled start of any of the work listed below so that the Architect may schedule their appropriate staff. All applicable submittals as well as the Subcontractor's safety plan and insurance certificates shall have been submitted to and reviewed by the Architect prior to scheduling this meeting. Work requiring pre-installation meetings shall include, but not necessarily be limited to, the following.

1. Landscaping
2. Cast-in-place concrete.
3. Masonry cleaning/restoration
4. Structural steel.
5. Interior architectural woodwork/casework.
6. Waterproofing / water repellent treatment (each respective type).
7. Insulation.
8. Roofing; each type.
9. Joint sealers.
10. Hollow metal doors and frames.
11. Aluminum storefronts/windows
12. Gypsum board assemblies.
13. Tile.
14. Acoustical ceilings.
15. Flooring (each respective type).
16. Painting.
17. HVAC sheetmetal.
18. Plumbing
19. Fire alarm.
20. Balancing controls.

D. Work Plan: Develop a written work plan for each definable segment of work. Complete the work plan prior to the pre-installation meeting, and this shall serve as the basis for discussion and contract compliance. Include a review of contract requirements to assure that materials and equipment delivered and assembled for construction conform to contract requirements and that control testing, including procedures, are finalized. Examine work areas, upon which new work is to be placed, to verify the substrate for the new phase of work.

E. Agenda

1. Review technical contract requirements with any options. Contractor to submit any options and resolve with Owner any conflicts, interference, or compatibility problems.
2. Insurance and certifications.
3. Schedule. Include the work on the three (3) week Short Interval Schedule.

4. Review requirements as relates to:
    a. Schedule.
    b. Submittals and mock-ups - status of approval; review contract requirements. Note: All submittals pertaining to a pre-installation meeting shall have been reviewed by Architect/Engineer and returned to Contractor.
    c. Tolerances.
    d. Manufacturer's requirements.
    e. Weather limitations.
5. Materials - available and ready for use.
6. Persons responsible for work.
7. Quality control methods:
    a. Testing/Inspection requirements - required inspections and tests, who samples and how often? Criteria for performance of work.
    b. Acceptability of substrates - criteria for approving substrate.
    c. Required performance results.
    d. Recording requirements.
8. Applicable governing rules and regulations.
9. Temporary facilities and controls:
    a. Safety, environmental controls, security, noise.
    b. Space and access limitations.
10. Protection of work, curing periods and related subjects.
11. Other business

1.06 COMMISSIONING MEETINGS

A. Refer to respective sections of the various general, mechanical and electrical Divisions of the Project Manual for associated commissioning meeting requirements.

1.07 PROJECT CLOSEOUT MEETINGS

A. When the Architect determines that the construction is approximately 75% complete, a meeting dedicated to construction closeout issues shall be held at the site, at a time as established by the Architect.

B. For the purpose of attaining project closeout, commencing immediately following established date of Substantial Completion, Contractor's project manager and superintendent and all subcontractors who have outstanding punch list items associated with their work, or as otherwise requested and including all subcontractors involved in the building systems commissioning process, shall attend closeout meetings which shall be held at the jobsite.

C. Such meetings shall be held to review and discuss the resolution of all punch list items in order to attain Final Completion. Closeout meetings shall continue until all punch list items have been resolved and Final Completion is attained.

1.08 TRAINING MEETINGS FOR OPERATING INSTRUCTIONS OF OWNER'S PERSONNEL

A. Refer to Section 01 79 00 for training requirements related to operating instructions of Owner's personnel.

1.09 ADDITIONAL MEETINGS

A. As the construction progresses, additional meetings may be required. These may be called at the direction of or by the Architect.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes administrative and procedural requirements for submittals required for performance of the Work, including the following:
   1. Shop Drawings.
   2. Product Data.
   3. Samples.

B. The individual submittal requirements of certain submittals are specified in applicable sections for each unit of work.

C. Shop drawings, product data, samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate, for those portions of the Work for which submittals are required, how Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents.

1.02 DEFINITIONS

A. Shop Drawings: Shop drawings include specially prepared technical data for this project, including drawings, diagrams, performance curves, data sheets, schedules, templates, patterns, reports, calculations, instructions, measurements and similar information not in standard printed form for general application to several projects. Reproduction of Contract Document drawings are not considered to be shop drawings unless approved by the Architect.

B. Product Data: Product data includes standard printed information on materials, products and systems, not specially prepared for this project, other than the designation of selections from among available choices printed therein.

C. Samples: Samples include both fabricated and unfabricated physical examples of materials, products, and units of work; both as complete units and as smaller portions of units of work; either for limited visual inspection or (where indicated) for more detailed testing and analysis.

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

1.03 SUBMITTAL PROCEDURES

A. Provide a submittal on every product and material used in the Project. Before submittal of shop drawings, brochures, and lists, Contractor shall carefully review same for proper identification, completeness, correctness, dimensions, and technical applicability to the Contract Document requirements and note all corrections, items needing clarification, additional comments, and the like. Upon thorough review and subsequent acceptance by the Contractor, if so accepted, Contractor is to note its approval together with said notes or amendments thereto for compliance with the Contract Documents by suitable stamp, date and the signature of the Contractor or its authorized representative. Submittals will be returned to the Contractor without action by the Architect if the items submitted are not stamped, signed, and identified as approved or approved as noted or other similar language indicating approval by the Contractor, or if the submittal is obviously not thoroughly reviewed.

B. Submission of shop drawings and samples shall be accompanied by one original and one copy of a transmittal letter containing Project name, Contractor's name, number of drawings and samples, titles and other pertinent data.

C. Many products are specified by one or more named products/manufacturers. In those circumstances where Contractor submits an unnamed, non-prior approved product/manufacturer during this 'shop drawing' phase, said submittal shall be submitted in conformance with product substitution requirements of Section 01 61 00, Article 2.03.

D. Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.

E. Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block. Consecutively number each submittal beginning with the number 001.

1. Provide adequate space for the Contractor's stamp and approval, plus a space approximately 4 by 5 inches each on the label or beside the title block on Shop Drawings to record the Architect's review and approval markings and the action taken.
2. Include the following information on the label or title block for processing and recording action taken.
    a. Project name and job number.
    b. Date.
    c. Name and address of the Architect.
    d. Name and address of the Contractor, subcontractor, supplier and manufacturer as appropriate.
    e. Number and title of appropriate Specification Section.
    f. Drawing number and detail references, as appropriate.

F. Package each submittal appropriately for transmittal and handling. Transmit each submittal from the Contractor to the Architect using a transmittal form. Submittals received from sources other than the Contractor will be returned through the Contractor without action.

1. Address no more than one topic or related topics on a single transmittal (i.e. mechanical items shall not be submitted under same transmittal with electrical items).
2. Record relevant information, deviations, and requests for data, including minor variations and limitations from the Contract Documents.
3. Shop drawings, product data, samples, and mock-up as required for submissions by the technical specification sections are to be submitted for Architect's review/approval. For printed submittals, the number of submittals required is noted in the parenthesis.
    a. Shop Drawings: (4) sets.
    b. Product Data: (4) copies.
    c. Samples: (2) samples
    d. Mock-ups: As required by any technical specification section.
    e. Reference applicable electrical technical specifications' sections for additional submittal requirements.
4. Material and Color Submittal: Submit samples of actual colors of materials.
5. Number submittals as follows: Numerical Order, Spec Section, Revision Letter.
6. In the event of the need to “revise and resubmit” a submittal, resubmit same in acceptable form/content, clearly identifying deviations from previous submittal content.

G. Electronic Submittals: Should the Contractor want to use an electronic submittal process in lieu of printed submittals, the design team supports and encourages this approach. The submittal requirements for electronic submittals shall be one PDF electronic copy. Identify and incorporate information in each electronic submittal file as follows:

1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
2. Name file with submittal number or other unique identifier, including revision identifier.
    a. File name shall use project number and Specification Section number followed by a decimal point and then a sequential number (e.g., J2037C-092900.01). Resubmittals

shall include an alphabetic suffix after another decimal point (e.g., J2037C-092900.01.A).

3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Architect or their Sub-Consultant.
4. Transmittal Form for Electronic Submittals: Use form acceptable to Owner and Architect, containing the following information:
   a. Project number and name.
   b. Date.
   c. Name and address of Architect.
   d. Name of Contractor.
   e. Name of firm or entity that prepared submittal.
   f. Names of subcontractor, manufacturer, and supplier.
   g. Category and type of submittal.
   h. Submittal purpose and description.
   i. Specification Section number and title.
   j. Specification paragraph number or drawing designation and generic name for each of multiple items.
   k. Drawing number and detail references, as appropriate.
   l. Location(s) where product is to be installed, as appropriate.
   m. Related physical samples submitted directly.
   n. Indication of full or partial submittal.
   o. Transmittal number, numbered consecutively.
   p. Submittal and transmittal distribution record.
   q. Other necessary identification.
   r. Remarks.
5. Transmittal: Transmit each submittal package via e-mail to appropriate parties. When submittals are directed to parties other than Architect or Owner's Representative, Architect and Owner's Representative shall be copied on such email.

1.04 SHOP DRAWINGS

A. Submit drawings drawn to accurate scale. Do not reproduce Contract documents or copy standard information for use as Shop Drawings. Standard information prepared without specific references to the project is not a Shop Drawing.

B. Include fabrication and installation drawings, setting diagrams, schedules, patterns, templates, and similar drawings. Include the following information:
   1. Dimensions;
   2. Identification of products and materials included;
   3. Compliance with specified standards;
   4. Notation of coordination requirements;
   5. Notation of dimensions established by field measurements; and
   6. Any deviation from contract drawings or specifications;
   7. Date when review has to be finalized to meet schedule.

C. Except for templates, patterns and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2" x 11", but no larger than 24" x 36".

D. Shop drawings shall clearly indicate the correct configurations and relative sizes, materials, metal gauges, etc. of the various components and the proposed methods of fabrication, required clearances, supports and any other pertinent data.

E. All items shown on shop drawings that do not conform to plans and specifications shall be specifically noted as such (flagged) and brought to the Architect's attention. In any case, the Architect's stamp of review shall not include approval of unauthorized changes in the Contract Documents, except where specific written approval is given.

F. Contractor is responsible for obtaining and distributing required prints of shop drawings to its subcontractors and material suppliers after as well as before final review by the Consultant. Prints of reviewed shop drawings shall be made from returned transparencies which carry the Contractor's and Consultant's appropriate stamps. Architect / Owner and applicable sub-consultants and governing agencies will retain copies of each shop drawing submittal. Reproducible transparency and all remaining prints not otherwise retained will be returned to Contractor.

G. At Architect's discretion, the prints distributed by the Consultant including the one print returned to the Contractor (in addition to the original transparency) may consist of copies made from the marked-up and stamped transparencies.

1.05 PRODUCT DATA

A. Product data includes Safety Data Sheets (SDS), manufacturer's printed installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams and performance curves.
   1. Where product data must be specifically prepared because standard printed data is not suitable, submit as Shop Drawings.

B. Mark each copy to show applicable choices and options, and indicate the applicable information on selected products. Include the following information:
   1. Manufacturer's printed recommendations.
   2. Compliance with recognized trade association standards;
   3. Compliance with recognized testing agency standards;
   4. Application of testing agency labels and seals;
   5. Notation of dimensions verified by field measurement;
   6. Notation of coordination requirements; and
   7. Any deviation from Contract Drawings or Specifications;
   8. Date when review has to be finalized to meet schedule.

C. The Contractor is responsible for providing certification that all construction materials used on the Project are 100% free of asbestos and lead.

1.06 SAMPLES AND MOCK-UPS

A. Submit samples and mock-ups that are identical with the material or product proposed. Samples include partial sections of components, cuts or containers of materials, color range sets, and swatches showing color, texture and pattern.
   1. Package samples to facilitate review. Prepare samples to match the Architect's sample. Include the following:
      a. Generic description of the sample;
      b. Sample source;
      c. Product name or name of manufacturer;
      d. Compliance with recognized standards;
      e. Availability and delivery time; and
      f. Specification section.

B. Submit samples and mock-ups for review of kind, color, pattern, and texture, for a comparison of these characteristics before the actual component installation and after final submittal.

1. Where variation in color, pattern, texture or other characteristics are inherent in the material, submit not less than four (4) units to show approximate limits of the variations.

C. Where samples are for selection of appearance characteristics from a range of standard choices, submit a full set of choices for the material or products.

1.07 ARCHITECT'S ACTION

A. Except for submittals for record, information or similar purposes, Architect will review each submittal, mark to indicate action taken, and return promptly.

B. Architect review of submittals does not release Contractor from a proper installation, compliance with applicable codes, or coordination of the Work.

C. The Architect will stamp each submittal with a uniform, self-explanatory action stamp. The stamp will be marked to indicate the action taken.

D. The Architect will distribute, as a minimum, the reviewed submittals as follows:

1. (1) copy to Architect file; along with (1) sample.
2. (1) copy to Architect subconsultants. For those submittals requiring review by Architect subconsultant.
3. (1) copy to Owner; along with (1) sample.
4. Remainder of copies submitted by the Contractor.

END OF SECTION

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. This project is subject to the payment of prevailing wages to all workers. It is the Contractor's responsibility to determine and use the most recent set of rates for the appropriate area of the state, as published by the Washington State Department of Labor and Industries. These rates are available on the web at http://www.lni.wa.gov/TradesLicensing/PrevWage/WageRates/.

1. Contractor must include these provisions in all subcontracts for work performed under this Contract.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

PART 1 - GENERAL

1.01 DESCRIPTION

A. Description Of Requirements

1. Definition:
   a. This Section specifies procedural and administrative requirements for the compliance with governing regulations and imposed codes and standards, including the obtaining of permits, licenses, inspections, releases and similar documentation, and including payments, statements and similar requirements associated with regulations, codes and standards.
   b. "Regulations" is defined to include those rules, conventions and agreements within the construction industry which effectively control the performance of the work, regardless of whether lawfully imposed by governing authority.
2. Governing Regulation: Refer to the General and other Conditions for requirements related to the compliance with governing regulations.
3. Industry Standards: Refer to individual specification sections and other contract documents for names and abbreviations and for compliance with applicable industry standards.

1.02 INDUSTRY STANDARDS

A. General Applicability of Standards

1. Applicable standards of construction industry have same force and effect (and are made a part of Contract Documents by reference) as if copied directly into contract documents, or as if published copies were bound herewith.
   a. Referenced Standards: Referenced standards (referenced directly in contract documents or by governing regulations) have precedence over non-referenced standards which are recognized in industry for applicability to work.
   b. Non-Referenced Standards: Non-referenced standards recognized in the construction industry are hereby defined, except as otherwise limited in contract documents, to have direct applicability to the work, and will be so enforced for performance of the work.

B. Publication Dates

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

C. Copies of Standards

1. In connection with the general requirement (elsewhere in the contract documents) that each entity performing the actual work be expert in the portion of the work being performed, each such entity is hereby also required to be familiar with recognized industry standards applicable to that portion of work.
2. In general, copies of applicable standards have not been bound with the contract documents. Where copies of standards are needed for proper performance of the work, the Contractor is required to obtain such copies directly from the publication source. Although certain copies of standards needed for enforcement of the requirements may be specified as required submittals, the Architect reserves the right to reasonable require the Contractor to submit copies of additional applicable standards as needed for enforcement of the requirements.
3. The General Conditions, or Division 01 - General Requirements of the Project Manual shall void any of the general, but not technical, provisions of any of the referenced Standard Specifications in conflict therewith.

D. Abbreviations & Names

1. Standard data of the following organizations may be referenced in the Project Manual with the organization names abbreviated as noted; copies of standard specifications and data may be obtained from the organizations.
2.

1.03 GOVERNING REGULATION/AUTHORITIES

A. General
   1. The procedure followed by the Architect has been to contact governing authorities where necessary to obtain information needed for the purpose of preparing the contract documents, recognizing that such information may or may not be of significance in relation to the Contractor's responsibilities for performing the work.
   2. Contact- governing authorities directly for necessary information and decisions having a bearing on the performance of the work.
   3. Notwithstanding reference in these Specifications to any rule or regulation, the Architect does not assume any duty to provide supervision of construction methods or processes.

B. Trade Jurisdictions
   1. It is a procedural requirement that the Contractor maintain, and require the prime Contractors to maintain, complete current information on jurisdictional matters, regulations, actions and pending actions, as applicable to the performance of the work, and that these be discussed at appropriate project meetings at the earliest feasible dates, and that information of particular relevance be recorded along with actions agreed upon.
   2. The manner in which the contract documents have been organized and subdivided is not intended to be an indication of jurisdictional or trade agreements.
   3. Assign and subcontract the work, and employ tradesmen and labor, in a manner which will not unduly risk jurisdictional disputes of the kind which could result in conflicts, delays, claims and losses in the performance of the work.

1.04 SUBMITTALS

A. Permits, Licenses & Certificates
   1. For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence and records established in conjunction with compliance with standards and regulations bearing upon performance of the work.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

B. See other sections of the specifications for additional definitions.

1.02 DEFINITIONS

A. Definitions: The following definitions, of terms or words used in this Project Manual, are in addition to those in the General Conditions.

1. Product: The term "product" as used in the Project Manual includes materials, systems and equipment provided by the Contractor for use in the Work.
2. Project Manual: The term "Project Manual" is the volume which includes the Bidding Requirements, Conditions of the Contract, and the Specifications, Divisions 1 to 49 inclusive, as applicable, and as listed in the Table of Contents bound therein, hereinafter referred to as "Project Manual".
3. Architect or Consultant: The term "Architect" or "Consultant" as used herein, shall mean "KMB Architects, 906 Columbia St. SW, Suite 400, Olympia, Washington 98501".
4. Owner: The term "Owner": means Lewis County, acting through the Lewis County Facilities Department".
5. General Requirements: The provisions or requirements of Division 01 Sections. General Requirements apply to entire work of Contract and, where so indicated, to other elements of work which are included in the Project.
6. Indicated: The term "indicated" is a cross-reference to details, notes or schedules on the Drawings, to other paragraphs or schedules in the specifications, and to similar means of recording requirements in the contract documents. Where terms such as "shown", "noted", "scheduled", and "specified" are used in lieu of "indicated", it is for purpose of helping reader locate cross-reference, and no limitation of location is intended except as specifically noted.
7. Directed, Requested, Etc.: Where not otherwise explained, terms such as "directed", "requested", "authorized", "selected", "approved", "required", "accepted", and "permitted" mean "directed by Architect", "requested by Architect", etc. However, no such implied meaning will be interpreted to extend Architect's responsibility into Contractor's area of construction supervision.
8. Approved: Where used in conjunction with Architect's response to submittals, requests, applications, inquires, reports, and claims by Contractor, the meaning of the term "approved" will be held to limitations of Architect's responsibilities and duties as specified in General Conditions. Where the terms "or approved" or "as approved" or "for approval" are used, the Architect is the sole judge of the quality and suitability of the proposed substitutions. In no case will "approval" by Architect be interpreted as a release of Contractor from responsibilities to fulfill requirements of the Contract Documents. Whenever a material, article or piece of equipment is identified on the Drawings or in the Project Manual by reference to manufacturer's or vendor's names, trade names, catalog numbers, or the like, and followed by the wording "or approved" or "equivalent, as approved", it is so identified for the purpose of establishing a standard, and any material, article, or piece of equipment of other manufacturers or vendors which will perform adequately the duties imposed by the general design will be considered equally acceptable provided the material, article, or piece of equipment so proposed is, in the opinion of the Architect, of equivalent substance, appearance or function and has been approved by the Architect in writing prior to bid opening in conformance with the provision of the Instructions to Bidders. It shall not be purchased or installed by the Contractor without Architect's and Owner's prior written approval.

9. Furnish: Except as otherwise defined in greater detail, the term "furnish" as used herein shall mean supply and deliver to project site, ready for unloading, unpacking, assembly, installation or erection, etc., as applicable in each instance.
10. Install: Except as otherwise defined in greater detail, the term "install" is used herein to describe operations at project site including unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning and similar operations, as applicable in each instance.
11. Provide: Except as otherwise defined in greater detail, the term "provide" means furnish, coordinate and install, complete and ready for intended use, as applicable in each instance.
12. Coordinate: The term "coordinate" means satisfactorily combine the work of all trades for a complete and operating installation.
13. Selected: The term "selected" means "selected by the Architect and Owner" and is not necessarily limited to a manufacturer's standard line of colors, finishes or details.
14. Satisfactory: The term "satisfactory" means "satisfactory to the Architect and Owner"; the Architect shall be the sole judge of the acceptability of a product or an installation.
15. Trades: Except as otherwise indicated, the use of titles such as "carpentry" in specification text, implies neither that the work must be performed by an accredited or unionized tradesman of the corresponding generic name (such as "carpenter"), nor that specified requirements apply exclusively to work by tradesmen of that corresponding generic name.

1.03 SPECIFICATION AND DRAWING FORMAT AND CONTENT EXPLANATION

A. The General Conditions, Supplemental Conditions, and Division 01 of these Specifications shall be a part of technical Divisions and Sections the same as if they were specifically called for in each section.

B. Wording of these Specifications: These Specifications are of the abbreviated or streamlined type and may include incomplete sentences. Words such as “shall,” “the Contractor shall,” “shall be,” and similar mandatory phrases, are included by inference.

C. Tense, Gender, Singular, Plural: Present tense words include future tense. Words in masculine gender include feminine and neuter genders. Words in the singular include plural. Plural words include singular.

D. All, Entire, and the Like: For brevity throughout the documents, these words may be omitted. Read their implications into all work, as the following parenthetical insertion exemplifies: “Balance and adjust (all) dampers.”

E. Specification by Reference: Any material specified by reference or number, symbol or title of a specified standard, such as commercial standard, ANSI and ASTM documents, Federal Specifications, trade association standard, or the like, shall comply with the following:
   1. The latest revision requirements thereof;
   2. Any amendment or supplement thereto in effect on date of the Project Manual, except as modified;
   3. When building code requirements refer to a different issue of standards specifications, such issue governs.

F. Drawings are in part diagrammatic and do not necessarily show complete details of construction, work or materials, performance or installation. They do not necessarily show how construction details, other items or work, fixtures, and equipment may affect any particular installation. The Contractor is required to ascertain and correlate the work to bring the parts together into a satisfactory and completed whole.
   1. Where on any of the drawings a portion of the work is drawn out and the remainder is indicated in outline, the parts drawn out shall apply also to all other portions of the work.

2. Wherever a detail is referenced and developed for a specific condition, same or similar detail shall apply to identical or similar conditions elsewhere on project even though not specifically referenced.

1.04 DRAWING SYMBOLS

A. General: Except as otherwise indicated, graphic symbols used on Drawings are those symbols recognized in the construction industry for purposes indicated.

1.05 DRAWINGS, DIMENSIONS & MEASUREMENTS

A. General

1. Where on any of the drawings a portion of the work is drawn out and the remainder is indicated in outline, the parts drawn out shall apply also to all other portions of the work.
2. Wherever a detail is referenced and developed for a specific condition, same or similar detail shall apply to identical or similar conditions elsewhere on project even though not specifically referenced.
3. Where the word "similar" occurs on the Drawings, it shall be interpreted in its general sense and not as meaning identical, and all details shall be worked out in relation to their location and their connection with other parts of the work.
4. The figured dimensions on the Drawings or notes indicating dimensions shall be used instead of measurements of the Drawing by scale, and shall be strictly complied with.
5. No scale measurements shall be used as a dimension to work with except on "full size" drawings not dimensioned.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

A. Testing and Inspection Service: The Owner may select and employ one or more Independent Testing Agencies, Engineering Services or Special Inspectors, hereinafter called Owner's Testing Representative (OTR), to conduct tests and inspections as specified, requested by the Owner, or required by Authorities Having Jurisdiction (AHJ). The OTR will provide inspector(s) approved by the AHJ. For the purpose of this specification section, all references made herein to OTR shall be those tests or inspections which will be conducted by an inspector provided by the Owner.

B. Tests and inspections not explicitly assigned to Owner under this Section as well as tests and inspections which are normally associated with obtaining permit approval by AHJ shall be provided and paid for by the Contractor.

C. In general, materials, quantities and extent of tests are identified in the respective specification sections.

1.02 QUALITY ASSURANCE - INDEPENDENT TESTING AGENCY

A. Qualifications:

1. Agency employed by Owner shall be a testing laboratory qualified by the United States Bureau of Standards, to provide inspection and material testing services for the general construction quality control, and which will meet basic requirements of ASTM E329 "Standards of Recommended Practice for Inspection and Testing Agencies for Concrete and Steel as Used in Construction".
2. Meet "Recommended Requirements for Independent Laboratory Qualification" published by American Council of Independent Laboratories.
3. Authorized to operate in the State of Washington.

B. Testing Equipment: Calibrated at reasonable intervals by devices of accuracy traceable to either:

1. National Bureau of Standards.
2. Accepted values of natural physical constants.

C. Certification: The OTR will submit to Architect and Local Building Department certification of meeting the above qualifications. Inspector(s) performing welding inspection shall be AWS certified.

1.03 DUTIES OF OWNER'S TESTING AGENCY

A. The OTR will be available during Contractor's normal working hours and identified overtime, second shift and out of area activity as scheduled by the Contract Documents.

B. The OTR shall conduct testing and inspection services, interpret them, and evaluate the results for compliance with the Specifications. Testing and inspection services which are performed shall be in accordance with applicable standard methods of ASTM or other procedures specified.

C. Continuous and special inspections shall be performed by the OTR as required by Contract Documents and governing authorities.

D. The Inspectors are not authorized to do the following:

1. Release, revoke, alter or enlarge on requirements of Contract Documents.
2. Approve or accept any portion of the work, unless otherwise specifically noted.
3. Perform any duties of the Contractor.
4. Stop Work.

1.04 CONTRACTOR'S RESPONSIBILITIES

A. It is the Contractor's responsibility to initiate and coordinate all required tests and inspections including conformance with requirements of all applicable public agencies and authorities. Inspection of the work shall not relieve the Contractor from any obligation to fulfill this Contract. Contractor shall be responsible for coordinating the testing requirement with the OTR and provide the OTR no less than two (2) working days advance notification to schedule tests.

B. For the purpose of inspection, the OTR shall at all times have free access to all parts of the work and to the shops where the work is in preparation, and the Contractor shall at all times provide and maintain proper facilities and safe access for such inspection. The Contractor shall cooperate with OTR personnel, and furnish access, tools, samples, certifications, test reports, design mixes, equipment, storage, and assistance as requested by the OTR. The Contractor shall:

1. Make available to the OTR safe access and working environment, and adequate quantities of samples of materials proposed to be used which require testing.
2. Furnish copies of product test reports performed by Contractor as required by Contract Documents.
3. Furnish incidental facilities necessary for the following:
    a. To obtain and handle samples at the project site or at the source of the product to be tested.
    b. To facilitate inspections, geotechnical monitoring, and tests.
    c. For storage and curing of the test samples.
    d. Electrical power and water required for testing procedures.
4. Provide incidental labor, when requested, to facilitate testing and inspections.

C. Where defective work requires redesign of portions of construction, such redesign costs shall be back charged to the Contractor by a deductive Change Order.

D. All costs associated with Contractor scheduled testing outside its normal working hours which is not identified in the Contract Documents, insufficient advance notice to the OTR of cancellation of a test or inspection to allow rescheduling of the OTR's work load, and for re-testing of non-conforming material, will be back charged to the Contractor by a deductive Change Order.

1.05 TEST AND INSPECTION REPORTS

A. Copies of tests, special sampling operations and inspection reports shall be distributed by the OTR at weekly intervals, except as noted under NOTIFICATION OF NON-COMPLIANCE. All reports will be signed by a Registered Engineer. Such reports shall include all tests made, regardless of whether such tests indicate that the material is satisfactory or unsatisfactory. Samples taken but not tested shall also be reported.

B. The OTR will:

1. Obtain and handle samples at project site or at source of product to be tested.
2. Furnish laboratory test reports of materials and construction as required; include:
    a. Date issued.
    b. Project title and number.
    c. Testing laboratory or engineering firm name, address, and telephone number.
    d. Name and signature of representative.
    e. Description of method of test.
    f. Identification of sample and portion of the work tested.
    g. Description of location in the work of the sample.
    h. Time and date of obtaining sample.
    i. Time and date of test of sample.

j. Weather and climatic conditions.
k. Results of tests and compliance with Contract Documents.
l. Evaluation of results tests, including recommendations for action, when requested by Architect or Structural Engineer.

C. The OTR will furnish "Inspection at Site" reports for each site visit documenting activities, observations, and inspections of work being inspected include:
1. Date issued.
2. Project title and number.
3. Testing Laboratory or engineering firm name, address, and telephone number.
4. Name and signature of representative.
5. Observations on weather and climatic conditions.
6. Time and date.
7. Conditions and/or status of the work being inspected.
8. Actions taken.
9. Recommendations or evaluation of the work.

D. The OTR will distribute test and inspection reports as follows:
1. Architect: 2 copies.
2. Structural Engineer: 2 copies.
3. Soil Consultant: 1 copy;
4. Owner: 2 copies;
5. Contractor: 1 copy;
6. Building Department: 2 copies.

1.06 NON-COMPLIANCE OF WORK

A. See Section 01 31 15 Communication.

1.07 NOTIFICATION OF NON-COMPLIANCE

A. If a laboratory test result indicates material on-site did not conform to the Contract Documents, the OTR shall immediately contact the Contractor, Architect, and/or Owner's Representative.

B. Anything found by the OTR or Site Representative that is believed to be in non-compliance when they are on-site shall be immediately reported. The OTR shall notify the Contractor, Architect, and/or Owner's Representative. If the Architect believes there is a non-compliance the Architect will notify the Contractor and OTR.

PART 2 - PRODUCTS

2.01 NOT USED

PART 3 - EXECUTION

3.01 DETAILED SITEWORK INSPECTION & TESTING REQUIREMENTS

A. Special Inspection & Structural Observation Requirements - General
1. Special inspection and structural observation requirements and programs shall be in accordance with the following provisions of the IBC, as adopted and amended by the State of Washington and AHJ:
a. Section 110 - Inspections.
b. Chapter 17 - Structural Tests and Special Inspections.

2. Structural Notes may also have additional provisions pertaining to special inspection and are incorporated as if specified herein.

B. Structural Cast-In-Place Concrete: Conform to "Required Special Inspections and Tests of Concrete Construction" as set forth on Structural Drawings.

C. Welding: Conform to "Welding Inspection Tasks" as set forth on Structural Drawings.

D. Bolting: Conform to "Bolting Inspection Tasks" as set forth on Structural Drawings.

E. Metal Decking: Conform to "Metal Decking Inspection or Execution Tasks" as set forth on Structural Drawings.

F. Steel Elements of Composite Construction: Conform to "Steel Elements of Composite Construction Prior to Concrete Placement" as set forth on Structural Drawings.

G. Cold-Formed Steel Framing: Conform to "Cold-Formed Steel Structural Steel Material Verification Tasks and Inspection or Execution Tasks" as set forth on Structural Drawings.

H. Roofing & Waterproof Membranes
1. OTR to inspect and approve substrates for application of waterproofing and roofing materials, inspect all joints and flashings.
2. Furnish continuous (full time) inspection during application of waterproofing and roofing materials, including roofing related sheet metal flashings and counterflashings.

I. Water Repellent
1. Inspect and approve substrates for application of water repellent materials.
2. Furnish continuous (full time) inspection during application of water repellent.

J. Building Envelope Air Leakage Rate Test: The completed building shall be tested for air leakage rate of the building envelope. The air leakage rate shall not exceed 0.40 cfm/ft2 at a pressure differential of 0.3 inches water gauge (2.0 L/s x m2 at 75 Pa) at the upper 95 percent confidence interval in accordance with ASTM E779 or an equivalent method approved by the local code official. A report that includes the tested surface area, floor area, air by volume, stories above grade, and leakage rates shall be submitted to the Owner and the local code official. If the tested rate exceeds that defined here, a visual inspection of the air barrier shall be conducted and any leaks noted shall be sealed to the extent practicable. An additional report identifying the corrective actions taken to seal air leaks shall be submitted to the Owner and code official and any further requirement to meet the leakage air rate will be waived.
1. Test shall be accomplished using either (1) both pressurization and depressurization or (2) pressurization alone, but not depressurization alone. The test results shall be plotted against the correct P for pressurization in accordance with Section 9.4 of ASTM E779.
2. The test pressure range shall be from 25 Pa to 80 Pa per Section 8.10 of ASTM E779, but the upper limit shall not be less than 50 Pa, and the difference between the upper and lower limit shall not be less than 25 Pa.
3. If the pressure exponent n is less than 0.45 or greater than 0.85 per Section 9.6.4 of ASTM E779, the test shall be rerun with additional readings over a longer time interval.

K. Miscellaneous
1. General: Provide other special inspections required by IBC as adopted by AHJ for structural or other work, or as requested by Owner.
2. Additional Testing Services: Additional testing which may be performed by the Owner's OTR , if any, are specified elsewhere in Contract Documents.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

A. This Section includes requirements for construction facilities and temporary controls, including temporary utilities, support facilities, security and protection. Nothing in this section is intended to limit types and amounts of temporary work required, and no omission from this Section will be recognized as an indication that such temporary activity is not required for successful completion of the work and compliance with the requirements of the Contract Documents.

B. Unless otherwise noted, the temporary utilities described herein shall be provided by the Contractor. Work and requirements include, but are not necessarily limited to, the following:

1. Provide temporary devices, equipment, power and other utilities as needed for use, convenience and safety of personnel engaged in the work of the Contract. Installations of temporary utilities is to be safe, non-hazardous and sanitary; they are to be protective of persons and property, and be free of deleterious effects.
2. Locate temporary utilities where required or as directed or approved by Owner and A/E.
3. Make all service connections to existing services in approved manner, in accordance with code requirements, and with prior approval of Owner.
4. Install extensions and branches, as required.
5. Maintain and protect temporary utilities.
6. Remove from site upon completion of the Project or when directed.

1.02 QUALITY ASSURANCE

A. Comply with industry standards and applicable laws and regulations of authorities having jurisdiction.

B. Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

C. Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Relocate temporary services and facilities as the Work progresses. Do not overload facilities or permit them to interfere with progress. Take necessary fire-prevention measures. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist on-site.

1.03 EXISTING WORK

A. Existing construction and equipment not scheduled to be removed shall be kept in its original condition. If damaged, replace at no additional cost to the Owner.

B. Repair damaged surfaces to match adjacent finish.

1.04 PROTECTION OF EXISTING UTILITIES

A. Known utilities of record are shown on the Contract Drawings but are not to be considered as As-Built. The Contractor shall consider that the actual As-Built location may be within a tolerance of five (5) feet vertically or five (5) feet either side horizontally of that indicated in the documents. The Contractor shall take the following steps:

1. Notify Owner in writing, on each occasion, of the intent to work near existing utility services or structures or when a new excavation or sawcutting operation is about to begin. Submit procedure for approval to assure safe and continuous operation of the services.
2. Proceed with sufficient caution within the As-Built tolerance area to preclude damaging any known utilities. In the event unidentified utilities are encountered, notify Owner's Representative immediately.

3. In the event unknown utilities are damaged during construction, temporary services and/or repairs shall be made immediately by the Contractor to maintain continuity of services. Costs for temporary and/or permanent repairs will be accounted for through a Change Order.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 INSTALLATION

A. Use qualified personnel for installation of temporary work. Locate temporary installations where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify as required.

B. Provide each temporary installation ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until they are no longer needed or are replaced by authorized use of completed permanent installations.

3.02 TEMPORARY UTILITIES

A. If the Contractor decides to use any of the equipment or materials installed under this contract for heating, power, lighting, or any other project need while the Project is still under construction, warranty on those materials shall not begin until Substantial Completion.

B. Telephone Service: Superintendent shall carry a cellular phone capable of receiving signal at the jobsite location to allow voice communication at all times.

C. Engage the appropriate local utility company to install temporary service as needed or connect to existing service when it is on a public right-of-way, or the Owner when it will be connected to systems within the Owner's property lines. Where the utility company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with utility company recommendations.

1. Provide adequate capacity at each stage of construction. Prior to temporary utility availability, provide trucked-in services.
2. The Contractor may use existing Owner power, heat and water, and Owner will pay all consumption costs. However, Contractor's power shall be obtained through the use of a temporary construction power center installed by Contractor's electrician with connection made to an existing electrical panel with sufficient capacity for Contractor's power usage.

D. Temporary Water. The Contractor may use existing Owner water. Supplement as required. Provide additional piping, hoses, etc. as required. The contractor is to confirm the source of any existing water to be used with the Owner prior to either connecting to, or opening, any source. Failure to confirm with the Owner the proper source could cause false alarms.

E. Temporary Electric Power. The Contractor may use existing Owner power, if it is appropriate. However, Contractor's power shall be obtained through the use of a temporary construction power center installed by Contractor's electrician with connection made to an existing electrical panel with sufficient capacity for Contractor's power usage.

F. Temporary Lighting. The Contractor may use existing Owner lighting. Where lighting is inadequate, supplement as follows:

1. Install and operate temporary lighting that will fulfill security and protection requirements without operating the entire system. Provide temporary lighting that will provide adequate illumination for construction operations and traffic conditions.
2. Provide a minimum of 5 foot-candles, higher if required by codes or regulations, of illumination in all building work areas where construction work is being accomplished; increase illumination to a minimum of 50 foot-candles for painting and other interior fine finish work. Provide additional illumination as directed for proper installation and

inspection of interior finish work. Permanent lighting equipment may be used after it is installed provided that any damaged components are replaced, and that all components are cleaned prior to acceptance of the project.

3. Remove temporary lighting and power equipment and accessories and their connections at completion of the work or sooner if approved or directed.

G. Temporary Heat & Ventilation

1. Furnish by methods approved by Architect, temporary heat and ventilation including fuel and power and attendance as required for the work when no other heat or ventilation is available.
2. Provide facilities and temporary units as required to comply with requirements. Provide temporary heat and ventilation required to:
   a. Maintain adequate environmental conditions to facilitate progress of the work.
   b. Meet specified minimum conditions for installation of materials.
   c. Protect materials and finishes from damage due to temperature or humidity.
3. Provide adequate forced ventilation of enclosed areas to:
   a. Cure installed materials.
   b. Disperse humidity.
   c. Prevent hazardous accumulations of dust, fumes, vapors, or gases.
4. Portable heaters: Use standard approved units complete with controls; the use of "salamanders" will not be permitted, except in exceptional cases when prior approval of Architect is obtained and proper ventilation in conjunction with said use is provided, as approved.
5. Non-availability of temporary heat when required for said work is cause for stoppage of affected work.
6. Include all costs for temporary heat in bid items.
7. See technical divisions for temperatures required for work of the various trades.
8. Indoor Air Quality and Dust Control: Refer to Section 01 81 19, Indoor Air Quality.

H. Temporary Ventilation.

1. Ventilate enclosed areas to exterior to achieve curing of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases. Where/when toxic or volatile materials are used, Contractor shall provide containment within specific work zones and 100% ventilation in an effort to maintain indoor air quality.

I. Use Of Permanent Systems For Maintaining Proper Conditions Within Building

1. After the permanent heating system is sufficiently installed, it may be used in lieu of the temporary equipment upon approval by Mechanical Engineer and in conformance with the following requirements for said use:
   a. The responsibility for the heating system and its full operation remains with the Contractor until final acceptance of the building.
   b. Provide air filters on any building fan equipment used for temporary heat.
   c. Return air dampers to be closed; unit to run with 100% outside air.
   d. Filters for any heating or air handling equipment, or similar equipment operated during construction, shall be replaced by the Contractor before Owner occupies the space at no additional cost to Owner.
   e. Re-lubricate all equipment used.
   f. All testing, balancing and filter changes, etc., noted in mechanical specifications are still required in addition to any cleaning, changing of filters, etc., performed during temporary operations.
   g. Should the Owner determine ducts are getting too dirty during construction, Contractor shall clean inside of ducts by power vacuuming.

2. Pay all costs until final acceptance. Should Owner occupy part of facilities during construction, the cost of contractor provided utilities will be apportioned upon agreed unit costs.
3. All heating system equipment warranties shall commence at Substantial Completion, regardless of when put into operation.

J. Temporary Toilets. Contractor shall provide temporary sanitary facilities, including temporary toilets, wash facilities, and drinking water fixtures. Comply with regulations and health codes for the type, number, location, operation, and maintenance of fixtures and facilities. Install adjacent to field office facilities where facilities will best serve the Project's needs.

3.03 TEMPORARY SUPPORT FACILITIES

A. Maintain support facilities until near Substantial Completion. Remove prior to Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Owner.

B. Field Office. The Contractor shall provide a prefabricated or mobile unit to accommodate:
1. With the capability to accommodate ADA access if needed.
2. An office for the Contractor.
3. A separate area of adequate size for weekly Progress Meetings of sufficient size to accommodate table(s) and chairs for up to (12) attendees and a lay-out table of adequate size to accommodate the construction documents. Space shall be wheelchair accessible.
4. Locate field office and other temporary construction and support facilities in location as directed by Owner.

C. Temporary Enclosures. Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities.
1. The Contractor shall be responsible for the determination and maintenance of proper security measures for the job site temporary facilities for the duration of the construction Project including, but not limited to:
a. Locks on all construction equipment boxes, temporary storage and office facilities, and construction equipment (vehicles, cranes, dozers, forklifts, etc.).
b. Temporary construction cores for all exterior and storage room doors, locksets or cylinders.
c. Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism. Contractor is responsible for any theft or vandalism of its materials and equipment.
d. The Contractor shall hold the Owner harmless from all damage, vandalism, stolen equipment or supplies on the Project Site for whatever reason, or from injury to or death of unauthorized persons trespassing on Project Site because of inadequate security measures until the Owner releases the Contractor from security responsibilities in writing or at Final Completion, whichever occurs first.
2. Install tarpaulins securely, with incombustible wood framing and other materials. Close openings of 25 sq.ft. or less with plywood or similar materials.

D. Construction Aids
1. Provide construction aids and equipment required by personnel to facilitate the execution and inspection of the work.
a. Include scaffolds, staging, ladders, stairs, ramps, runways, platforms, railings, hoists, cranes, chutes, protective enclosures, and other such facilities and equipment.
b. Refer to respective Sections for particular requirements for each trade.

2. Maintain all facilities and equipment in a first-class condition.
3. Comply with all applicable requirements specified in Project Manual. Install in accordance with “Quality Assurance” provisions, Specifications and Manufacturer's instructions. Where these may be in conflict, the more stringent requirements govern.
4. Relocate construction aids as required by:
   a. Construction progress.
   b. Storage requirements.
   c. Accommodation of Owner's legitimate requirements.
   d. Accommodation of any other Contractor employed at site.
5. Completely remove temporary materials, equipment and services when construction needs can be met by use of permanent construction, or at Project completion.
6. Clean and repair damage caused by installations or by use of temporary facilities and clean site areas affected by temporary installations. Restore damaged vegetation.
7. Restore existing permanent facilities used for temporary purposes to specified or to original conditions.

E. Cleaning: Refer to Section 01 74 00 Cleaning, for cleaning during construction and final cleaning.

3.04 OPERATION, TERMINATION, AND REMOVAL

A. Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.

B. Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.
   1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
   2. Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.

C. Unless the A/E requests that it be maintained longer, remove each temporary facility when the need has ended, when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
   1. At Substantial Completion, clean and restore permanent facilities used during the construction period to its original condition.

END OF SECTION

PART 1 GENERAL

1.01 DEFINITIONS

A. Definitions used in this Section are not intended to change the meaning of other terms used in the Contract Documents.

1. Product: "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from the Contractor's previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
2. "Named Products" are items identified by the manufacturer's product name, including such items as a make or model number or other designation, shown or listed in the manufacturer's published product literature, that is current as of the date of the Contract Documents.
3. "Materials" are products that must be shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.
4. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections, such as wiring or piping.

1.02 SUBMITTALS

A. See Section 01 33 00 for submittal requirements.

B. Proposed Product List: Submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.

C. Long-Lead-Time Items

1. Provide copies of purchase orders for long-lead-time items to the Consultant within twenty (20) days after receipt of Notice to Proceed.
2. Forward copies of acknowledgment, production and shipping schedules to Architect as they are received for all required items.

1.03 QUALITY ASSURANCE

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

B. When the Contractor is given the option of selecting between two or more products for use on the Project, the product selected shall be compatible with products previously selected, even if previously selected products were also options. Compatibility is a basic general requirement of product/material selections.

C. Except for required labels and operating data, do not attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products that will be exposed to view in occupied spaces or on the exterior. Locate required product labels and stamps on a concealed surface or, where required for observation after installation, on an accessible surface that is not conspicuous.

1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products according to the manufacturer's recommendations, using means and methods that will prevent damage, deterioration, and loss, including theft.

1. Deliver products to the site in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing to prevent damage, deterioration, loss or theft. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage. Where appropriate, submit SDS for all delivered products.
2. Schedule delivery to minimize long-term storage at the site and to prevent overcrowding of construction spaces.

3. Coordinate delivery with installation time to assure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.
    a. Store with lids sealed, outside of building, all glues, adhesives, sealers, caulking, mastics, cleaners, paints, thinners and related flammable and hazardous materials.
4. Inspect products upon delivery to ensure compliance with the Contract Documents and to ensure that quantities are correct and that products are undamaged and properly protected. Reject damaged and defective items.
5. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units. Store and protect in accordance with manufacturers' instructions, with seals and labels intact and legible.
6. Store products subject to damage by the elements above ground, under cover in a weathertight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.
7. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
8. Prevent contact with material that may cause corrosion, discoloration, or staining.
9. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

PART 2 PRODUCTS

2.01 GENERAL PRODUCT REQUIREMENTS

A. Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, new at the time of installation.
    1. Provide products complete with accessories, trim, finish, safety guards, and other devices and details needed for a complete installation and the intended use and effect.
    2. Standard Products: Where available, provide standard products of types which have been produced and used previously and successfully on other projects and in similar application.
    3. Color and Appearance Consistency of Finish Materials: All finish materials of their respective kinds, in regards to construction phasing, shall be consistent in color and appearance throughout the total Project and shall be purchased out of one dye lot, production run, batch, etc., as applicable, for the total Project for each respective material.

B. Additional Requirements: Material and equipment incorporated in to the work:
    1. Shall conform to applicable specifications and standards.
    2. Shall comply with size, make, type and quality specified or as specifically approved in writing by Architect.
    3. Shall be free of ASBESTOS, FORMALDEHYDE and LEAD.
    4. Manufactured and Fabricated Products:
        a. Design, fabricate, and assemble in accordance with first-class "Workmanship" as defined in these Contract Documents.
        b. Manufacture like parts of duplicate units to standard sizes and gauges; parts to be interchangeable.
        c. Two or more items of the same kind to be identical and by same manufacturer (whether furnished under one Section or more).
        d. Products shall be suitable for service conditions.
        e. Adhere to indicated equipment capacities, sizes, and dimensions unless variations are specifically approved in writing.

f. Except where field finishing is specified or otherwise required, products and fabricated items shall be pre-finished off-site.

5. Do not use materials and equipment for other than designed or specified purposes and uses.

C. Nameplates: Except as otherwise indicated for required approval labels, and operating data, do not permanently attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products which will be exposed to view either in occupied spaces or on exterior of the work.

1. Labels: Locate required labels and stamps on a concealed surface or, where required for observation after installation, on an accessible surface which, in occupied spaces, is not conspicuous.

2. Equipment Nameplates: Provide permanent nameplate on each item of service-connected or power-operated equipment. Indicate manufacturer, product name, model number, serial number, capacity, speed, ratings and similar essential operating data. Locate nameplates on an easily accessed surface which, in occupied spaces, is not conspicuous.

2.02 PRODUCT SELECTION

A. The Contract Documents and governing regulations govern product selection. Procedures governing product selection include the following:

1. Proprietary Specification Requirements. Where only a single product or manufacturer is named, or indicates “no equals”, “no substitutions”, or “no exceptions”, provide the product indicated. Notify Consultant if it is discovered that the named product does not comply with the contract documents, or is not appropriate for the function intended.

2. Semi proprietary Specification Requirements. Where two or more products or manufacturers are named, or indicates “no equals”, “no substitutions”, or “no exceptions”, provide one of the products indicated. Notify Consultant if it is discovered that none of the named products complies with the contract documents, or is not appropriate for the function intended.

3. Nonproprietary Specification Requirements. Where the Specifications list products or manufacturers, or indicates “or approved equal” or “other acceptable”, comply with Contract Document provisions concerning PRODUCT SUBSTITUTION to obtain approval for use of another product.

4. Descriptive Specification Requirements. Where Specifications describe a product or assembly, listing exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirements.

5. Performance Specification Requirements. Where Specifications require compliance with performance requirements, provide products that comply with these requirements and are recommended by the manufacturer for the application indicated. Submit manufacturer's recommendations contained in published product literature or by the manufacturer's certification of performance for approval by Consultant.

6. Visual Matching. Where matching an established sample is required, the Consultant's decision will be final on whether a proposed product matches satisfactorily.

a. Where there is no product available within the specified category which matches satisfactorily and also complies with other specified requirements, comply with the provisions of the Contract Documents concerning "substitutions" for selection of a matching product in another product category.

7. Visual Selection. Where specified product requirements include the phrase "...as selected from manufacturer's standard colors, patterns, textures ..." or similar phrases, select a product and manufacturer that complies with other specified requirements. The Consultant will select the color, pattern, and texture from the product line selected.

2.03 PRODUCT SUBSTITUTION

A. General Provisions

1. The requirements for substitutions do not apply to specified Subcontractor options on products and construction methods. Revisions to Contract Documents, where requested by Owner or Consultant, are "changes" not "substitutions".
2. Subcontractor's determination of and compliance with governing regulations and orders issued by governing authorities do not constitute "substitutions" and do not constitute a basis for change orders, except as provided for in contract documents. Otherwise, the Subcontractor's requests for changes in products, materials and methods of construction required by contract documents are considered requests for "substitution", and are subject to requirements hereof.
3. If a bidder or Contractor desires approval of some material or product other than that specified, it shall submit a written request for approval of the substitute item in accordance with the following requirements:
    a. All such requests must be made on the SUBSTITUTION REQUEST FORM at end of this Section. Where specifications specify a product color and/or pattern, Contractor shall include a sample of proposed product/item at a size appropriate to make an evaluation with the specified product.
    b. No request for approval will be considered unless submitted in accordance with this Section.
    c. Final decision as to whether an item is an equal or satisfactory substitution rests with Owner.
4. Every substitution request must state whether the item offered is equal or equivalent to the specified product. The substitute material or product must be accompanied by its reference in the Contract Documents and complete catalog, technical and other information. If applicable, include samples showing comparison of physical and other pertinent characteristics as required to establish equivalence of acceptability for the proposed application. Where specific test results are required by the Contract Documents, the comparison data for the proposed item shall be based upon the same test methods as those specified, or they shall be correlated to clearly demonstrate comparability. The same guarantee described for the specified product is required for the substitution.

B. Substitution requests for approval of substitute materials or products for all items not followed by restrictive language will be considered if the Contractor submits information and documentation as required above. The proposed product or material shall be equal or equivalent to the specified item and shall be subject to the same redesign and coordination as all substituted items.

C. In making request for approval of substitute materials, the Bidder/Contractor shall represent that it has investigated the proposed product and, in its opinion, it is equal or superior in equivalence in all respects to that specified. Also, Contractor shall coordinate all trades including changes thereto as may be required, that it waives all claims for additional costs which subsequently become apparent as a consequence of the substitution, and that it will bear all costs related hereto, including costs of Consultant's services for redesign, if deemed necessary.

D. Substitutions will not be considered if they are indicated or implied on Shop Drawings or other project data submittals, without proper notice shown on the SUBSTITUTION REQUEST FORM at the end of this Section. Submissions received that include products or manufacturers not listed in the specifications or approved on the form during the bid period will be returned and marked “Revise and Resubmit”.

2.04 SUBMITTAL REQUIREMENTS

A. Requests For Substitutions

1. Submit requests for substitutions in the manner of the form provided immediately following this Section, fully identified for product or method being replaced by substitution, including

related specification section and drawing number(s), and fully documented to show compliance with requirements for substitutions.

a. When making requests for substitutions, submit three (3) copies of requests directly to Consultant, and one (1) copy directly to Owner, for concurrent review.

2. Include product data/drawings, description of methods, samples where applicable, Contractor's detailed comparison of significant qualities between specified item and proposed substitution, statement of effect on construction time and coordination with other affected work, cost information or proposal, and Contractor's statement to the effect that proposed substitution will result in overall work equal-to or-better-than work originally indicated.

B. Action By Consultant

1. During Bidding Period: If the Consultant approves any proposed substitution, such approval will be set forth in an Addendum. Bidders shall not rely upon approvals made in any other manner.

2. After Start of Work:

a. Within one week of receipt of Contractor's request for substitution, the Consultant will request whatever additional information or documentation may be needed for their evaluation of the request.

b. Within two weeks of receipt of request, or within one week of receipt of requested additional information or documentation (whichever is later), the Consultant will notify the Contractor of either their acceptance or rejection of the proposed substitution.

1) Rejection will be the endorsement on the form provided by the Contractor and will include statement of the reasons for rejection (non-compliance with the requirements for requested substitutions, or other reasons as detailed).

2) Acceptance will be the endorsement on the form provided the Contractor.

PART 3 EXECUTION

3.01 GENERAL INSTALLATION PROVISIONS

A. Manufacturer's Instructions: Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.

1. When Contract Documents require installation of work to comply with Manufacturer's printed instructions, obtain and distribute instructions to concerned parties, including Consultant, before starting that particular work.

2. Handle, install, connect, clean, condition and adjust products in accordance with Manufacturer's recommendations, directions and specified requirements.

a. Should job conditions or specified requirements conflict with Manufacturer's instructions, consult with Consultant for further instructions.

b. Do not proceed with work without clear instructions.

3. Perform work in accordance with Manufacturer's instructions. Do not omit any preparatory step or installation procedure unless it is:

a. Verified with and accepted by Consultant in writing.

b. Specifically modified or exempted by Contract Documents.

c. Perform additional requirements that are specified which are greater than the manufacturer's requirements and do not have a deleterious effect on the product being installed.

B. Attachment & Connection Devices & Methods

1. Provide attachment and connection devices and methods necessary for anchoring work securely and properly in place as it is installed; install true to line and level, accurately

located and aligned with other Work, and within recognized industry tolerances if not otherwise indicated.

2. Allow for expansions and building movements.
3. Provide uniform joint widths in exposed work, organized for best possible visual effect. Refer questionable visual-effect choices to Consultant for final decision.

C. In-Place Protection
   1. General
      a. During handling and installation of work at project site, clean and protect work in progress and adjoining work on a basis of perpetual maintenance.
      b. Apply suitable protective covering on newly installed work where reasonably required to ensure freedom from damage or deterioration at time of Substantial Completion; otherwise, clean and perform maintenance on newly installed work as frequently as necessary through remainder of construction period.
      c. Adjust and lubricate moving components to ensure operability without damaging effects. Contractor is responsible for function, condition and unblemished appearance of all work on Project, and any item or work judged defective by A/E shall be subject to replacement at no additional cost to Owner.
   2. To extent possible through reasonable control and protection methods, supervise performance of 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 construction period.

D. Replacement Components with damage affecting appearance, function or structural characteristics will not be accepted; repair and/or replace all such items on the Project as directed at no additional expense to Owner.

END OF SECTION

SUBSTITUTION REQUEST FORM

TO: KMB Architects, 906 Columbia St. SW, Suite 400, Olympia, WA 98501

PROJECT: Lewis County Community Development Tenant Improvements

We hereby submit for consideration, the following product in lieu of specified item for above project:

Section: _____ **Specified Item:** _____

Proposed Substitution: _____

Attach complete technical data, including laboratory tests and samples, as applicable. Include detailed comparison of the significant qualities (size, weight, durability, performance and similar characteristics, and including visual effect where applicable) for the proposed substitution in comparison with the original requirements.

List completely installation changes and changes to Drawings and Specifications required by proposed substitution.

Fill in Blanks Below:

A. Does substitution require change in Drawing dimensions? _____

B. Will Undersigned pay for resulting building design changes including engineering and detailing costs? _____

C. What effect does substitution have on other trades? _____

D. Differences between proposed substitution and specified item? _____

E. Manufacturer's guarantees of proposed and specified items are:
_____ Same _____ Different (Explain on attachment)

F. Name and address of 3 similar projects on which product was used, and date of installation:

G. Contract completion date is: _____ Same _____ Different (Explain on attachment)

Undersigned attests function and quality equivalent or superior to specified item and waives his rights to additional payment and time which may subsequently be necessitated by failure of the substitution to perform adequately, and for the required work to make corrections thereof.

Submitted by:

Signature: _____

Firm: _____

Address: _____

_____

Date: _____

Telephone: _____

Fax: _____

For use by Architect:

_____ Accepted _____ Accepted as Noted

_____ Not Accepted _____ Received Too Late

By: _____

Date: _____

Remarks: _____

_____

_____

End of Form

PART 1 - GENERAL

1.01 SUMMARY

A. General Contractor is responsible for all cutting, fitting, and patching, required to complete the Work and to:
   1. Make its several parts fit together properly;
   2. Join new work to existing work;
   3. Uncover portions of the Work to provide for installation of any ill-timed work;
   4. Remove and replace defective work;
   5. Remove and replace work not conforming to requirements of Contract Documents;
   6. Remove samples of installed work as specified for testing;
   7. Provide routine penetrations of non-structural surfaces for installation of piping, duct work, and electrical conduit.

B. For additional requirements for cutting and patching see respective Specification Sections.

1.02 DEFINITIONS

A. "Cutting and patching" includes cutting into existing construction to provide for the installation or performance of other work and subsequent fitting and patching required to restore surfaces to their original condition.
   1. "Cutting and patching" is performed for coordination of the work, to uncover work for access or inspection, to obtain samples for testing, to permit alterations to be performed or for other similar purposes.
   2. Cutting and patching performed during the manufacture of products, or during the initial fabrication, erection or installation processes is not considered to be "cutting and patching" under this definition. Drilling of holes to install fasteners and similar operations are also not considered to be "cutting and patching".
   3. "Selective Demolition" is recognized as related-but-separate categories of work, which may or may not require cutting and patching as defined in this Section.
   4. See respective Specification Sections for additional definitions and requirements pertaining to Cutting and Patching.

1.03 SUBMITTALS

A. Submit written request to Owner and Architect a minimum of 48 hours in advance of executing any cutting and alteration affecting:
   1. The work of the Owner or any separate Contractor;
   2. Structural value or integrity of any element of Project;
   3. Integrity or effectiveness of weather-exposed or moisture-resistant elements or systems;
   4. Efficiency, operational life, maintenance, or safety of existing operational elements;
   5. Visual quality of sight-exposed elements.
   6. Exterior weather protective finish.

B. Include with Request:
   1. Project identification;
   2. Description of affected work and products to be used;
   3. Necessity for cutting;
   4. Effect on work of Owner or any separate Contractor;
   5. If structural modifications is a contractor alternative to work shown in the Contract Documents, the Contractor shall retain and submit calculations of a Washington State

registered structural engineer that the proposed work will not change the load-carrying capacity or load-deflection ratio of the structural element;

6. Weatherproof integrity of Project;
7. Description of proposed work designating extent of cutting, patching or alteration. Include the following:
    a. name trades to be executing the Work;
    b. products proposed to be used;
    c. extent of refinishing to be done;
    d. alternatives to cutting and patching;
    e. where cutting and patching involves adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with the original structure.
    f. cost proposal (when applicable);
    g. written permission of any separate Contractor whose work will be affected;
    h. list of utilities that will be disturbed or otherwise affected by Work. Indicate duration of disruption.

C. Submit written notice to Architect designating date and time work will be uncovered.

D. Approval by the Architect to proceed with cutting and patching does not waive the Architect's right to later require complete removal and replacement of unsatisfactory work.

1.04 QUALITY ASSURANCE

A. Requirements For Structural Work: Do not cut-and-patch structural work in a manner resulting in reduction of load-carrying capacity or load/deflection ratio; submit proposed cutting and patching of structural elements to Architect for structural approval before proceeding.

B. Operational & Safety Limitations: Do not cut-and-patch operational elements and safety-related components in a manner resulting in reduction of capacities to perform in manner intended, including energy performance, or resulting in decreased operational life, increased maintenance, or decreased safety.

C. Visual Requirements: Do not cut-and-patch work which is exposed on exterior or exposed in occupied spaces of buildings, in a manner resulting in reduction of visual qualities or resulting in substantial evidence of cut-and-patch work, both as judged solely by Architect. Remove and replace work judged by Architect to be cut-and-patched in a visually unsatisfactory manner.

1.05 WARRANTY

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

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible if identical materials are unavailable or cannot be used. Use materials whose installed performance will equal or surpass that of existing materials.

B. Salvaged Materials: Salvage sufficient quantities of cut or removed material to replace damaged work of existing construction, when material is not readily obtainable on current market.

1. Store salvaged items in a dry, secure place on site, or deliver to Owner as noted.
2. Items not required for use in repair of existing work shall remain the property of Owner at the Owner's option; otherwise they shall become Contractor's salvage.

3. Salvaged items to be re-used shall be cleaned, refinished, etc., as appropriate before reinstallation.
4. Do not incorporate salvaged or used material in new construction except where specifically indicated or with written permission of Architect.
5. Refer to other sections for salvage requirements that may be more stringent.

PART 3 - EXECUTION

3.01 INSPECTION

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

B. Prior to cutting into existing concrete or masonry, the Contractor shall conduct X-ray inspections to verify location of existing internal conditions (conduit, structural steel, etc.) to ensure that they will not be damaged during cutting and demolition work.

C. After uncovering work, inspect condition affecting product installations and work performance. Advise A/E in writing if there are conditions which will change the Contract Document requirements.

3.02 PREPARATION

A. Provide adequate temporary support of work to be cut to assure structural integrity of affected work and safety for Contractor and Owner personnel.

B. Protect existing and adjoining construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.

C. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

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

3.03 PERFORMANCE

A. Employ skilled workmen to perform cutting and patching. Skilled shall mean workmen trained in the installation and repair of the specific material(s) impacted.

B. Execute cutting and removals by methods preventing damage to other work. Use core drilling equipment and diamond saws for cutting required openings in concrete and masonry. Provide proper surfaces to receive installation of repairs.

C. Work shall be performed by or under the direct supervision of the General Contractor and only by specialists or workers skilled in the necessary trades for materials requiring cutting and patching. Employ qualified installer or fabricator to perform cutting and patching for sight-exposed finished surfaces.

D. Execute fitting and adjustment of products to provide finished installations complying with specified products, functions, tolerances, and finishes.

E. Restore cut or removed work. Install new products as required to complete work in accordance with Contract Documents. Quality of patched or extended work shall be not less than that specified for new work.

F. Fit work air-tight to pipes, sleeves, ducts, conduit, and other surface penetrations. Maintain required clearance around pipe in accordance with National Fire Protection Association NFPA-13. Provide required firestopping in conjunction with patching.

G. Refinish entire surfaces as necessary to provide even finish matching adjacent finishes:
   1. For continuous surfaces, refinish to nearest intersection.
   2. For an assembly, refinish the entire unit.

3.04 CUTTING

A. Only sawcutting or core drilling of concrete and masonry are permitted; no jack hammering, unless an exception is requested by the Contractor and approved by the Owner., hammering, or chopping. Limited use of rotohammers is acceptable. Use of these pieces of equipment shall occur when the building occupancy is at its lowest in the space adjoining the work. See Specification Section 01 50 00 for requirements related to cutting equipment.

B. Cut existing construction using methods least likely to damage elements retained or adjoining construction.
   1. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
   2. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.
   3. Where services are required to be removed, relocated, or abandoned, by-pass utility services, such as pipe or conduit, before cutting. Cut-off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal the remaining portion of pipe or conduit flush with remaining wall, floor, or ceiling to prevent entrance of moisture or other foreign matter after by-passing and cutting.
   4. Monitor cutting to detect any movement of surrounding work after cutting has occurred.
   5. Cutting of any surface identified as historical shall be observed by the A/E and not begun prior to A/E approval.

3.05 PATCHING

A. Except as specified otherwise, all patching is the responsibility of the applicable trade and performed under the direction of the Contractor. All patching shall conform to the requirements set forth herein and to the standards set forth in these Contract Documents for applicable like work and materials.

B. Patch with durable seams that are as invisible as possible. Comply with specified tolerances.
   1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
   2. Patching shall match existing or adjacent surfaces, and shall match existing materials and assemblies so as to retain all existing fire ratings. Existing walls, floors, ceilings, beams and other building surfaces shall be neatly finished by patching, filling or otherwise as directed by the Architect.
   3. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
   4. Where removing walls or partitions extending from one finished area into another, patch and repair floor and wall surfaces at the removed area to obtain a uniform transition between any adjoining spaces. Provide an even surface of uniform color and appearance. If necessary to achieve uniform color and appearance, remove existing floor, wall and ceiling coverings and replace with new materials.
   5. Patch, repair, or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.
   6. Fit work air-tight to pipes, sleeves, ducts, conduit, and other surface penetrations.

7. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material allowed in these specifications to full thickness of the penetrated element.
8. When finished surfaces are cut in such a way that a smooth transition with new work is not possible, terminate existing surface in a neat manner along a straight line at a natural line of division, and provide trim appropriate to finished surface as approved by Architect.

C. Refinish entire surfaces from corner to corner or to change in material as necessary to provide an even finish matching adjacent finishes.
1. For continuous surfaces, refinish to nearest intersection.
2. For an assembly, refinish the entire unit.

3.06 CLEANING

A. Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar items. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.
1. Clean common areas on a daily basis that may be used by occupants.

END OF SECTION

PART 1 GENERAL

1.01 DESCRIPTION

A. This Section includes administrative and procedural requirements for cleaning and protection during construction and final cleaning at Substantial Completion.

B. Related Requirements: Coordinate related requirements specified in other parts of the Project Manual; special cleaning requirements for specific construction elements are included in appropriate Sections of Divisions 02 through 33, as applicable.

1.02 RELATED REQUIREMENTS

A. Section 01 74 19 - Construction Waste Management And Disposal.

1.03 QUALITY ASSURANCE

A. General Cleaning Requirements: Conduct cleaning and waste disposal operations in compliance with governing laws, codes, and ordinances. Comply fully with Federal and Local environmental and anti-pollution regulations.

1. Do not dispose of volatile wastes, such as mineral spirits, oil, or paint thinner, in storm or sanitary drains.
2. Burning or burying of debris, rubbish, or other waste material on premises is not permitted.

B. Conform to State safety regulations (WISHA requirements).

C. Documentation of waste management, spill response, procedures and contingency plans to be made available to Owner's Representative upon request.

PART 2 PRODUCTS

2.01 MATERIALS

A. Cleaning Agents (for non-historic materials and spaces)

1. Use only cleaning agents and methods recommended by Manufacturer of surface material to be cleaned.
2. Use cleaning materials only on surfaces recommended by cleaning material Manufacturer; Do not use cleaning materials damaging to surfaces.
3. Do not use cleaning materials creating hazards to health or property.

PART 3 EXECUTION

3.01 CLEANING & PROTECTION DURING CONSTRUCTION

A. General:

1. Contractor and each subcontractor at all times shall keep the premises free from accumulation of waste materials, debris and rubbish caused by their operations.
2. During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
3. Execute periodic cleaning. Keep work area free from accumulation of construction waste materials and rubbish.
4. Clean and maintain completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
5. Provide on-site containers for collection of waste materials, debris, and rubbish.

6. Allow no debris, broken or open cartons, or other refuse to collect in the project or around it; allow no inflammable or hazardous materials to be stored on the site without approved fire protection precautions and procedures.

B. Non-Compliance: If the Contractor fails to enforce clean-up procedures, the Owner may do the cleanup and the cost thereof shall be charged to the Contractor and/or subcontractors, as applicable, as provided in Paragraph 3.4 of the General Conditions.

3.02 CLEANING DURING CONSTRUCTION - GENERAL REQUIREMENTS

A. Execute periodic cleaning. Keep work, site, and adjacent properties free from accumulation of construction waste materials, rubbish, and windblown debris.
   1. Protect new materials from damage by construction debris.
   2. Dispose daily all flammable, hazardous, and toxic waste materials. Storage of these materials will not be permitted on the interior of the building.
      a. Disposal and storage shall be in accordance with 40 CFR; WAC 173-303; 49CFR; State and Local fire codes and regulations.

B. Store volatile wastes in covered metal containers and remove from premises daily. Prevent accumulation of wastes which create hazardous conditions. Provide adequate ventilation during use of volatile or noxious substances.

C. Debris Control: In accordance with Section 01 74 19, Construction Waste Management and Disposal, and the following:
   1. Maintain all areas free of extraneous debris.
   2. Initiate and maintain a specific program to prevent accumulation of debris at construction site, storage and parking areas, and along access roads and haul routes.
      a. Provide containers for deposit of debris as specified.
      b. Prohibit overloading of trucks to prevent spillages on access and haul routes.
         1) Provide periodic inspection of traffic areas to enforce requirements.
   3. Schedule periodic collection and disposal of debris as specified. Provide additional collection and disposal of debris whenever the periodic schedule is inadequate to prevent accumulation.
   4. Keep storm sewers free of debris or extraneous materials.

3.03 FINAL CLEANING

A. Provide final cleaning operations when indicated. Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit of Work to the condition expected in a normal commercial building cleaning and maintenance program, complying with manufacturer's instructions.

B. Cleaning to include all exposed surfaces and materials within the limits of construction, whether installed by the Contractor, installed by the Owner, or existing prior to the beginning of this project.
   1. The extent of cleaning existing facilities (remodel and/or addition projects) shall apply only to those areas of new work, or existing areas impacted by the construction activities, even if simply due to workmen passing through the space.

C. Complete the following cleaning operations before requesting review for certification of Substantial Completion for the entire Project or a portion of the Project. Cleaning shall include adjacent existing surfaces, such as, but not limited to, walls, floors, ceilings and glazing, that have been affected by the construction activity.
   1. Clean the Project Site, yard and grounds, in areas disturbed or impacted by construction activities, including landscape development areas, of rubbish, waste material, litter, and foreign substances.

2. Remove tools, construction equipment, machinery, and surplus material from the site.
3. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
4. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
5. Broom and mop clean concrete floors and floors finished with sheet vinyl, and similar surfaces.
6. Vacuum clean carpet and similar soft surfaces, removing debris and excess nap. Shampoo, if required.
7. Clean transparent materials, including mirrors and glass (both sides) in doors and windows. Remove glazing compounds and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
8. Remove labels that are not permanent labels.
9. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
    a. Do not paint over “UL” and similar labels, including mechanical and electrical nameplates.
10. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
11. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
12. Clean ducts, blowers, and coils if units were operated without filters during construction.
13. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs and defective and noisy starters in fluorescent and mercury vapor fixtures.
14. Leave the Project clean and ready for occupancy.

D. Removal of Protection: Remove temporary protection and facilities installed for protection and administration of the work during construction. Restore landscaping and other repair as necessary or required.

E. Compliances: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner. Do not use Owner's containers for trash generated by cleaning or construction.
    1. Where extra materials of value remaining after completion or associated work have become Owner's property, arrange for disposition of these materials as directed.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

A. Closeout is hereby defined to include general requirements near end of Contract Time, in preparation for final acceptance, final payment, normal termination of contract, occupancy by Owner and similar actions evidencing completion of the work. Time of closeout is directly related to "Substantial Completion".

B. This Section includes administrative and procedural requirements for contract closeout including, but not limited to, the following:

1. Maintenance Materials submission.
2. Substantial Completion.
3. Final Acceptance.

1.02 SEQUENCE OF CLOSE-OUT

A. The Contractor's superintendent shall perform a review of all installed work (general, electrical, security electronics) and note any corrections, touch-up, or otherwise restore marred, exposed surfaces necessary to comply with the Contract Document requirements before requesting the Consultant to review the Work. The Contractor shall develop a written correction list (pre-punch list) and track the completion of the items by initialing and dating each item, signifying that it has been reviewed and properly completed.

B. Upon receipt of the Contractor’s written notice of completion with its incidental correction list (pre-punch list), the Consultant team will schedule and conduct a punch list inspection with the Contractor, and the Owner PM. The Consultant will prepare a supplemental punch list to include incidental corrective work not addressed in the Contractor’s punch list as well as any review comments and punch list items generated by the Owner PM and incorporate into a single supplemental punch list. The Consultant will issue the supplemental punch list to the Contractor and monitor the Contractor’s performance to ensure the work on both lists are completed

C. Provide operation and maintenance instruction on installed equipment to Owner designated staff.

D. The Contractor shall correct any outstanding punch list items and submit all other close-out documentation to the Consultant as indicated under Article FINAL ACCEPTANCE below. When punch lists have been verified by the Consultant as being complete and all documentation is satisfactory and accepted by the Consultant, the Consultant will issue its notification of Final Acceptance.

1.03 PROJECT RECORD DOCUMENT SUBMITTAL

A. Refer to Section 01 78 00, Closeout Submittals.

1.04 OPERATION AND MAINTENANCE MANUALS

A. Refer to Section 01 78 00, Closeout Submittals.

1.05 FINAL CLEANING

A. Refer to Section 01 74 00, Cleaning.

1.06 WARRANTIES, BONDS & EXTRA STOCK

A. Refer to Section 01 78 00, Closeout Submittals.

1.07 OPERATING INSTRUCTION OF OWNER'S PERSONNEL

A. The Contractor shall provide for operating and maintenance instruction of Owner's personnel for items installed under this contract. Contractor shall provide for this instruction at a mutually agreeable time and place, which may be outside of Contractor's normal working hours.

1. Prior to any training, the Contractor is to complete all system start-up and functionality testing. The Contractor/Sub-contractor will then assist the Consultant to review and confirm the systems are performing in accordance with the Contract Documents. If the documents identify that systems will be commissioned, the Owner may elect to have the commissioning agent also perform the functionality review with the Contractor. If commissioning is required, this will be completed prior to the Contractor and major subcontractors providing qualified personnel for conducting full on-site operation and maintenance training and instruction to Owner's designated user personnel and maintenance crews. Instruction shall include the proper operation, adjustment and maintenance of all general, detention, mechanical and electrical operating systems and equipment.
2. Contractor shall schedule this period in advance with the Owner and appropriate subcontractor or vendor's representative. This shall be scheduled two (2) weeks after submittal of the final Operating and Maintenance Manuals so that such information will be available for Owner staff familiarization prior to the time of this instructional period. Provide a minimum of (8) hours of such training and instructions on site, unless otherwise directed, conducted to Owner's satisfaction. Such instruction shall be given in time blocks not exceeding (4) hours in any one-day and shall be exclusive of off-site factory training for such items as the energy management system.
3. At each training session, provide a sign-in sheet for signature of all Owner staff that attend. Identify the sign-in sheet with the training being provided and the date of the training. Submit the sign-in sheet(s) with FINAL ACCEPTANCE procedure.
4. Except as otherwise specified, arrange for each installer of work requiring continuing maintenance or operation to meet with Owner's personnel at project site to provide basic instructions needed for proper operation and maintenance of entire work. Include instructions by manufacturer's representatives where installers are not expert in the required procedures.
5. Use operation and maintenance manuals as the basis for instruction. Review contents of manual with personnel in full detail to explain all aspect of operations and maintenance; include as a minimum record documentation, tools, spare parts and materials, lubricants, fuels, identification system, control sequences, hazards, cleaning and renewal of finishes, and similar procedures and facilities.
6. For operational equipment, demonstrate start-up, shut-down, emergency operations, noise and vibration adjustments, safety, economy/efficiency adjustments, and similar operations. Review maintenance and operations in relation with applicable warranties, agreements to maintain bonds, and similar containing commitments.
7. All equipment operation and maintenance instructions and training shall be video taped in a professional manner, at the expense of the Contractor, and the edited film delivered with documents for FINAL ACCEPTANCE.
8. In addition, provide (4) hours training for the energy management system.
9. Provide a minimum of (4) hours additional follow-up training sessions to be conducted four (4) months following initial training. Systems/equipment to be covered under these training sessions shall be as determined by the Owner.
10. In addition to or in conjunction with these training sessions, provide for (4) seasonal adjustment training sessions of the energy management system.

B. The Contractor shall submit a training synopsis for each system required under the Contract Documents to review operations and maintenance instruction and training. Submit training synopsis with each respective preliminary Operation and Maintenance Manual submittal. Each synopsis shall be reviewed by the Architect and approved or returned with comments if necessary. Written approval by the Architect of each synopsis is required prior to beginning such training.

C. For additional requirements for operating instructions, see respective Specification Sections.

1.08 MAINTENANCE MATERIALS

A. Provide maintenance materials (tools, spare parts, extra stock, etc) indicated in other sections of the specifications.
   1. Submit a receipt to the Owner identifying the product and quantity that is being provided.
   2. Obtain Owner's signature on the receipt.
   3. Send original receipt to Owner's Project Manager and include a copy of the receipt in the Warranties, Bonds, Extra Stock, and Permits manual.

1.09 SUBSTANTIAL COMPLETION

A. Substantial Completion is defined in the General Conditions. Before requesting Consultant's review for certification of Substantial Completion, complete the following, and provide a letter of request for Substantial Completion. List exceptions in the request.
   1. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
   2. Advise the Owner of pending insurance changeover requirements.
   3. Make final changeover of permanent locks and transmit keys, and a list identifying each key to the Owner. The list is a receipt to be signed by the Owner with a copy delivered to Owner's Representative and a copy placed in the Operation and Maintenance Manual hardware section. Advise the Owner's personnel of changeover in security provisions.
   4. Complete startup testing and commissioning of systems; submit Balancing Logs.
   5. Discontinue and remove temporary facilities from the site, along with mockups, construction tools, and similar elements.
   6. Complete final clean-up requirements.

1.10 CLOSEOUT PROCEDURES

A. Record Drawings: Refer to Section 01 78 00, Closeout Submittals.

B. Punch List:
   1. Consultant throughout the course of construction will identify items of work observed to be in non-conformance with the contract documents. It will be incumbent upon the contractor to take appropriate action to satisfy such deficiencies as they are brought to his attention. Do not wait for such items to be re-listed as citations in a formal punch list issued at the time of substantial completion.
   2. When the project is substantially completed or when a portion or portions of the building(s) or project is complete that the owner wishes to accept, the Consultant will assist the contractor in preparation of a punch list. This punch list will be a tabulated list of items that are not complete, defective items and materials, and items that do not conform to the contract documents.
   3. The punch list will not be made prior to all finishes being installed, all systems operating, and all cleaning work completed. Contractor shall give the Consultant written notice of completion and readiness for the punch list inspection.
   4. Upon written notification of completion of the punch list items by the contractor, the project will be re-inspected by the Consultant and involved interested parties. One re-inspection only is anticipated. Should repeated re-inspections be required due to failure of the Contractor to properly complete the punch list items, the Contractor shall pay for the Consultant's services for the re-inspections through a deductive change order as issued by the Owner as specified below, Article 1.11, billed at his normal hourly rates.

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

D. Correct items of work listed in executed Certificates of Substantial Completion and comply with requirements for access to Owner-occupied areas.

E. Notify Consultant when work is considered finally complete.

F. Complete items of work determined by Consultant's final inspection.

1.11 FINAL ACCEPTANCE

A. Before requesting certification of Final Acceptance and final payment, complete the following: (Submit all of the following items together - no partial submittals will be accepted.)

1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include insurance certificates for products and completed operations where required.
2. Submit an affidavit that all payrolls, bills for materials and equipment, and other indebtedness connected with the work for which the Owner of property might in any way be responsible, have been paid or otherwise satisfied. (AIA Document G706).
3. Submit Contractor's Affidavit of Release of Liens (AIA Document G706A) and Subcontractor/ Suppier "Conditional Waiver Of Lien" (see attached form) from each Subcontractor and Supplier. If any liens are filed and cause the Owner to employ the services of any attorneys, the cost of the services will be deducted from the retainage.
4. Submit a letter from the Contractor's Bonding Company addressed to Owner and submitted to Architect approving release of final payment and waiving submittal of final receipts as well as a statement confirming the extension of the Bond for the one-year warranty period. Final receipts from all subcontractors and material and equipment suppliers shall be furnished to the Architect by the Contractor if the Surety does not waive this requirement.
5. Submit a copy of the Architect's final review list (“punch list”) of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, identifying the name and company of the individual who confirmed completion of each item, and date when confirmation inspection was performed.
6. Submit consent of surety to final payment on AIA Form G707.
7. Submit final As-Built Documents.
8. Submit final Operation and Maintenance Manuals.
9. Submit final Warranties, Bonds, and Permit Manual.
10. Submit a list of all paints used, manufacturer, and formulation for each.
11. Submit evidence of completion of Owner's training for all designated systems and videotape(s).
12. Submit evidence of compliance with requirements of governing Authorities.
    a. Certificate of Occupancy, if not submitted at time of Substantial Completion.
    b. (Note: Certificate of Occupancy is required to be submitted with Substantial Completion Request unless otherwise exempted by Owner in writing.)
    c. Certificates of Inspection
        1) Mechanical Work.
        2) Plumbing Work.
        3) Fire Suppression Work.
        4) Electrical Work.
    d. Others as required by Regulatory Agencies.

B. Submit all other required close-out documents.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Project Record Document submittal.

B. Operation and Maintenance manuals.

C. Warranties, Bonds, Extra Stock, and Permits manuals.

1.02 SUBMITTALS

A. Project Record Documents: Submit documents to Consultant with claim for final Application for Payment. The following submittal procedure shall occur prior to Final Acceptance.

1. Submit original copy of as-builts (drawings & specifications) to Consultant for review.
2. Compile and organize any drawings or schedules in the Project Manual onto sheets of the same size as the Contract Drawings and submit with other record documents.
3. Contractor will be notified within 15 work days if the submitted documents are acceptable.
4. Should the submittal be unacceptable for any reason, the Contractor shall make requested modifications and resubmit to the Consultant. Continue to resubmit as necessary until the submittal is acceptable.

B. Operation and Maintenance Data:

1. Submit two (2) copies of preliminary Operating and Maintenance Manuals for operational and non-operational equipment for review by Architect. Submit for each system upon attaining 75% system completion, together with respective training synopsis; refer to Section 01 77 00. Upon review, Architect will return one copy with comments.
2. Submit 1 copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.
3. Within 10 days following receipt of the Architect approval and comments, and prior to Owner training, Contractor shall prepare and transmit to the Architect three (3) final copies of each of the above manuals.

C. Warranties and Bonds:

1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 PRODUCTS

2.01 PROJECT RECORD DOCUMENTS

A. Project Record Documents include the following:

1. Marked-up copies of Contract Drawings.
2. Marked-up copies of Project Manual.
3. Addenda.
4. Reviewed and marked-up copies of shop drawings and product data.
5. Newly prepared drawings.
6. Change Orders, RFIs and other modifications to the Contract issued in printed form during construction.

7. Consultant's Clarifications and Proposal Request with all supporting documentation.
8. Construction Change Directives.
9. Record Samples.
10. Field records for variable and concealed conditions.
11. Record information on Work that is recorded only schematically.
12. Manufacturer's instruction for assembly, installation, and adjusting.
13. Other miscellaneous record documents as listed below and applicable.
    a. Certifications received in lieu of labels on bulk products.
    b. Documented qualification of installation firms and/or personnel.
    c. Load and performance testing.
    d. Inspections and certifications by governing authorities.
    e. Final inspection and correction procedures.

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS

A. Maintenance of Documents and Samples:
   1. Store and maintain in field office apart from the Contract Documents used for construction, one complete set of record documents and samples which are used to record as-built conditions.
   2. Do not use Project Record Documents for construction purposes; protect from deterioration and loss in a secure fire-resistant location. Maintain record documents in good order and in a clean, dry, legible condition.
   3. Make record documents and samples available at all times for review by Architect and Owner's Representatives.
   4. Record actual revisions to the Work concurrent with construction progress.
   5. Ensure entries are complete and accurate, enabling future reference by Owner.
      a. As specified in Section 01 31 19, following each monthly progress schedule meeting, Contractor shall meet with all major subcontractors whose work is in progress at the site, including but not limited to mechanical, plumbing, electrical, security, fire protection, civil, and as otherwise designated, to review all “as-built” revisions on the day-by-day working set of "Project Record Copy" and verify installed record information from the previous month is properly recorded on the day-by-day "Project Record Copy", with all revisions and pertinent information clearly indicated.

B. Record Drawings and Shop Drawings: A clean, undamaged set of Contract Drawings including coordination drawings and shop drawings shall be kept at the job site as as-built record documents. Record “as-built” drawings shall be comprised of all sheets contained in the Contract Drawings, as well as all special equipment or systems drawings.
   1. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark whichever drawings that show conditions fully and accurately. Where shop drawings, RFI's or other communication record are used to identify a change, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date. Items required to be marked include, but are not limited to, the following:
      a. Indicate field changes of dimension and detail.
      b. RFIs.
      c. Depths of foundations below the first floor.
      d. Horizontal and vertical measurements of underground services and utilities, referenced to the building or other permanent construction.

e. Note changes of directions and locations, by dimensions and elevations, as utilities are actually installed.
f. Duct size and routing. Indicated locations of mechanical dampers, valves, reheat boxes, cleanouts, and other items that require maintenance.
g. Show measured locations of construction-concealed internal utilities and appurtenances referenced to visible and accessible features of the structure.
h. Record accurate locations of piping, valves, traps, dampers, duct work, equipment, and the like.
i. Revisions to electrical circuitry.
j. Indicate details not on original Contract drawings.
k. “X-out” conditions not constructed and appropriately annotate "not constructed" to convey the actual "as constructed" condition.

2. Mark record sets in a clear, legible manner, using red ink (no pencils); use other colors to distinguish between variations in separate categories of the work. Use 'whiteout' to erase errors.
3. Mark new information that is important to Owner, but which was not shown on Contract Documents or Shop Drawings.
4. Show addenda items, change orders, RFI, or other means of communication used in the construction process.
5. Show and date revisions to drawings with a "cloud" drawn around the revision.
6. Organize record drawing sheets in manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set. Where shop drawings, RFI's or other communication record are used as a reference, include a copy of them as part of the record drawings.

C. Shop Drawings
1. Maintain as record documents; legibly annotate to record changes made after review.
2. Include subcontractor reproducible shop drawings for all special equipment including as a minimum where applicable to the project, ductwork layout, fire sprinkler system layout, temperature control system, fire alarm system, intrusion alarm system, communications systems, data systems, detention security systems and others as deemed appropriate. Record Drawing shop drawings shall be easily reproducible; i.e., on mylar or of standard copy machine size, as appropriate and approved.

D. Project Manual: During the construction period, maintain one complete copy of the Project Manual, including Specifications, addenda, and one copy of other written construction documents, such as Change Orders and RFI's issued in printed form during construction.
1. Legibly mark these documents in red ink to show substantial variations in actual work performed in comparison with the text of the specification and modifications. Give particular attention to substitutions, selection of options and similar information on elements that are concealed or cannot otherwise be readily discerned later by direct observation. Note related record drawing information and product data. Record at each product section description of actual products installed, including the following:
a. Manufacturer's name and product model and number.
b. Product substitutions or alternates utilized.
c. Changes made by Addenda and modifications.
2. Each prime contractor (Subcontractor) is responsible for marking up Sections that contain its own Work.
a. General Contractor shall be responsible for collecting marked-up record Sections from each of the other prime contractors. General Contractor shall also be responsible for collating these Sections in proper numeric order with its own Sections to form a complete set of record Specifications.

b. General Contractor shall be responsible for submitting the complete set of record Specifications as specified.

E. Record Product Data

1. Maintain one copy of each product data submittal, and mark-up variations in actual work in comparison with submitted information. Include both variations in product as delivered to site, and variations from manufacturer's instructions and recommendations for installation.
2. Give particular attention to concealed products and portions of the work which cannot otherwise be readily discerned at a later date by direct observation. Note related change orders and mark-up of record drawings and project manuals.
3. Note related Change Orders and mark-up of record Drawings, where applicable.
4. Upon completion of mark-up, submit complete set to Architect for Owner's records.
5. Where record Product Data is required as part of maintenance manuals, submit marked-up Product Data as an insert in the manual instead of submittal as record Product Data.
6. Each prime contractor (Subcontractor) shall be responsible for marking up and submitting record Product Data for its own Work.
7. Insofar as possible, insert record product data in individual sub-sections of O&M Manuals. Refer to 3.05 below.

F. Record Sample Submittal: Immediately prior to date(s) of substantial completion, Architect (and including Owner's personnel where desired) will meet with Contractor at site, and will determine which (if any) of submitted samples maintained by Contractor during progress of the work are to be transmitted to Owner for record purposes. Comply with Architect's instructions for packaging, identification marking, and delivery to Owner's sample storage place.

G. Miscellaneous Record Submittals: Refer to Paragraph 2.01A.13 above for listing of miscellaneous record documents and to other Sections of these specifications for requirements of miscellaneous record-keeping and submittals in connection with actual performance of the work. Immediately prior to date of Substantial Completion, complete miscellaneous records and place in good order, properly identified and bound or filed, ready for continued use and reference. Submit to Architect for Owner's records.

3.02 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following record documents; record actual revisions to the Work:

1. Drawings.
2. Specifications.
3. Addenda.
4. Change Orders and other modifications to the Contract.
5. Reviewed shop drawings, product data, and samples.
6. Manufacturer's instruction for assembly, installation, and adjusting.

B. Ensure entries are complete and accurate, enabling future reference by Owner.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress.

E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:

1. Changes made by Addenda and modifications.

F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:

1. Field changes of dimension and detail.
2. Details not on original Contract drawings.

3.03 OPERATION AND MAINTENANCE DATA - GENERAL

A. General: For all operational equipment installed, Contractor shall submit operation and maintenance documents in manuals as specified herein.

B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.

C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.

D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

A. For Each Item of Equipment and Each System:
   1. Description of unit or system, and component parts.
   2. Identify function, normal operating characteristics, and limiting conditions.
   3. Include performance curves, with engineering data and tests.
   4. Complete nomenclature and model number of replaceable parts.

B. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.

C. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

D. Provide servicing and lubrication schedule, and list of lubricants required.

E. Include manufacturer's printed operation and maintenance instructions.

F. Include sequence of operation by controls manufacturer.

G. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

H. Additional Requirements: As specified in individual product specification sections.

3.05 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

A. Content for Operational Equipment.
   1. Product Data.
      a. Compile product data and related information for Owner's maintenance and operation. All manufacturer literature shall be original printed matter; photocopies, printouts from websites or other non-original reproductions are not acceptable.
      b. Product data shall contain detailed information relative to the following:
         1) Description of unit or system, and component parts.
         2) Equipment functions, normal operating characteristics, and limiting conditions.
         3) Assembly, installation, alignment, adjustment and checking instructions.
         4) Operating instructions and sequences for start-up, break-in, routine and normal operation, regulation and control, shutdown, and emergency conditions. Include control diagrams and sequence of operation by controls manufacturer.
         5) Routine procedures and guide for preventative maintenance and trouble shooting, including a schedule of recommended checks; disassembly, repair, and reassembly instructions.
         6) Detailed servicing and lubrication schedule. Include list of lubricants required.

7) Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
8) Complete nomenclature and model number of replaceable parts. Include with list manufacturer's current prices and recommended quantities to be maintained in storage.
9) Safety precautions and safety features.
10) Outline, cross-section and assembly drawings, engineering data, and color coded wiring diagrams as installed.
11) Test data and performance curves.
12) Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.
13) Provide Contractor's coordination drawings, with color coded piping diagrams as installed.
14) Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
15) Test and balancing reports.

c. Include only sheet pertinent to specific product.
d. Annotate each sheet to:
1) Clearly identify specific product or part installed.
2) Clearly identify data applicable to installation.
e. Delete references to inapplicable information.

2. Drawings.
a. Supplement product data with drawings as necessary to clearly illustrate relations of component parts of equipment and systems.
b. Coordinate drawings with information in Project Record Documents to ensure correct illustration of completed installation.
c. Do not use Project Record Documents as maintenance drawings.

3. Supplement product/installation data with written text.
a. Organize in consistent format under separate headings for different procedures.
b. Provide logical sequence of installations for each procedure.

4. Special Mechanical Subcontractor Requirements: Comply with Divisions 21 though 25 requirements.

5. Special Electrical Subcontractor Requirements: Comply with Divisions 26 through 28 requirements.

3.06 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

A. For all architectural non-operational products, applied materials and finish items installed, Contractor shall submit maintenance information as specified herein. Provide detailed information relative to the following:

1. Manufacture's data, giving full information on products.
a. Catalog number, size, and composition.
b. Color and texture designations.
c. Information required for re-ordering special manufactured products.

2. Instructions for care and maintenance.
a. Manufacturer's recommendation for types of cleaning agents and methods.
b. Cautions against cleaning agents and methods, which are detrimental to the product.
c. Recommended schedule for cleaning and maintenance.
d. Instructions and recommendations for repair of finish.

3. Moisture protection and weather-exposed products.

a. Include product data listing applicable reference standards, chemical composition, and details of installation.
b. Provide recommendations for inspections, maintenance, and repair.

B. For additional requirements for maintenance data, see respective Specification Sections.

C. Provide a listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

3.07 OPERATION AND MAINTENANCE MANUALS

A. Prepare instructions and data by personnel experienced in maintenance and operation of described products. Prepare data in the form of an instructional manual.

B. Format of Operation and Maintenance Manuals
1. Binders
a. Commercial quality, stiff cover, metal-hinged 8-1/2 x 11 inch three D side ring binders with durable and cleanable plastic covers. Binders shall be Wilson Jones #344 Series or equivalent as approved by the Architect.
b. Provide suitable ring size for content with a 1-inch minimum, up to 3-inch maximum, range.
c. When multiple binders are used, correlate data into related consistent groupings.
2. Cover and Spine: Identify the cover and spine of each volume with typed or printed title of the project, project number, and the words OPERATION AND MAINTENANCE INSTRUCTIONS.
3. For Contractor produced pages, paper shall be 8-1/2” x 11”, white, 20 pound minimum.
4. Provide tabbed dividers for each separate product and system, with typed description of product and major component parts of equipment.
5. Text: Manufacturer's printed data, or typewritten data on 24 pound paper.
6. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
7. Arrange content by systems under section numbers and sequence of Table of Contents of this Project Manual.
8. Contents: Prepare a Table of Contents for each volume, with each product or system description identified, in three parts as follows:
a. Part 1: Directory, listing names, addresses, and telephone numbers of Architect, Architect Consultants, Contractor, Subcontractors, and major equipment suppliers.
b. Part 2: Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
1) Significant design criteria.
2) List of equipment.
3) Parts list for each component.
4) Operating instructions.
5) Maintenance instructions for equipment and systems.
6) Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
c. Part 3: Project documents and certificates, including the following:
1) Shop drawings and manufacturer's printed product data.
2) Air and water balance reports.
3) Certificates.
4) Photocopies of warranties and bonds.

5) Materials Safety Data Sheets (MSDS) for each product used on the Project.

9. Provide a listing in Table of Contents for design data, with tabbed dividers and space for insertion of data.
10. Table of Contents: Provide title of Project; names, addresses, and telephone numbers of Architect, Consultants, and Contractor with name of responsible parties; schedule of products and systems, indexed to content of the volume.

3.08 WARRANTIES AND BONDS

A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial completion is determined.

B. Verify that documents are in proper form, contain full information, and are notarized.

C. Co-execute submittals when required.

D. Retain warranties and bonds until time specified for submittal.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

A. Demonstration of products and systems to be commissioned and where indicated in specific specification sections.

B. Training of Owner personnel in operation and maintenance is required for:
   1. All software-operated systems.
   2. HVAC systems and equipment.
   3. Electrical systems and equipment.
   4. Conveying systems.
   5. Items specified in individual product Sections.

C. Training of Owner personnel in care, cleaning, maintenance, and repair is required for:
   1. Roofing, waterproofing, and other weather-exposed or moisture protection products.
   2. Finishes, including flooring, wall finishes, ceiling finishes.
   3. Fixtures and fittings.
   4. Items specified in individual product Sections.

1.02 RELATED REQUIREMENTS

A. Section 01 78 00 - Closeout Submittals: Operation and maintenance manuals.

B. Other Specification Sections: Additional requirements for demonstration and training.

1.03 INSTRUCTOR QUALIFICATIONS

A. The Contractor shall provide competent technicians who shall give full instruction to the Owner's designated personnel in the adjustment, operation and maintenance, including pertinent safety requirements of the equipment and systems specified, with emphasis on:
   1. How to use and find information in documentation
   2. System operational procedures for all modes of operation including: warm-up, cool-down, emergency, seasonal change-over, occupied, unoccupied, etc
   3. Acceptable tolerances for system adjustment in all operating modes
   4. Procedures for dealing with abnormal conditions and emergency situations for which there is a specified system response
   5. Troubleshooting procedures to deal with equipment malfunction or failure

B. Arrange and pay for services of Manufacturers' representatives required for instruction on specialized portions of the installation, maintenance and/or operation.

C. Contractor shall permit the Owner to videotape the training sessions for the Owner's internal use such as training new employees.

1.04 TRAINING PLAN

A. Submit the training plan for approval by the Consultant thirty (30) days prior to the first scheduled training session. The plan shall cover:
   1. Proposed curriculum and teaching methods
   2. Required entering skills (e.g., familiarity with Windows™ controls theory). It shall be the responsibility of the Owner to ensure that the trainees have the required entering skills prior to taking the Contractor's course.

B. The duration of the training period shall not be less than 10 hours of general instruction, and not less than ten (10) hours of site specific instruction for the Work, and not limited to a consecutive

period. All training shall take place during normal working hours and shall not exceed seven hours per day. Travel time to sites or place of training shall not be counted as training time.

C. Co-ordinate all sessions with the Owner and/or his representatives. The Owner and/or the Contractor shall provide written notification at least three working days prior to cancellation or postponement of the training session.

D. Documentation specified in Section 01 78 00 shall be used as source information for the training sessions.
   1. Provide a training manual for each trainee, covering in detail the data included in each training program, before training shall commence.
   2. If the Contractor wishes to use visual aids such as video tape, slides, overhead, etc. as a part of the training course fulfillment, these visual aids or copies of them shall be made a part of the documentation package for future reference, refresher or retraining.
   3. Provide training source material for a minimum of four of the Owner's operations personnel at least four weeks prior to start of training session.

E. Training courses shall be presented in the form of four sessions or approved by owner. Each session shall be of equal length.

F. The first session shall occur prior to the start of the system test for Substantial Completion. This course shall include but not be limited to the following:
   1. System architecture
   2. Equipment operation
   3. Introduction to programming
   4. System communication protocol
   5. BACnet overview
   6. System names
   7. Color graphics creation and operation
   8. Report generation
   9. Maintenance management
   10. Energy management
   11. Changing setpoints
   12. Changing schedules
   13. Alarm management

G. The second session shall start immediately after the start of Substantial Completion and shall include but not be limited to the following:
   1. Preventive maintenance of all system components
   2. Calibration of all sensors and controls
   3. Programming of system equipment (DDC system and Front End)
   4. Additional system features
   5. Troubleshooting
   6. Abnormal and emergency condition procedures

H. The remaining two sessions will occur at two months and four months after the second session. These sessions shall be designed to address the Owner's requirements. Co-ordinate course curriculum with Owner. Material may cover any or all of the following subjects:
   1. OCL programming: editing, saving, reloading, composition and implementation
   2. Color Graphic Generation: creation, file management and installation
   3. Operational Skills: setpoint modification, graphic interrogation, menu manipulation, file interrogation, alarm management, and controller communications

4. Front End system: Level 0 hardware and Operator software language functions
5. Calibration and preventive maintenance of field equipment
6. Troubleshooting

I. All training shall be clearly documented on a daily basis, detailing number of hours of instruction, material covered, trainees' names and instructor(s') name. At the end of each training day, this information shall be authorized by the Owner's designated representative and by the Contractor.

J. Training for Owner's custodians/security personnel:
1. These persons shall be given an orientation to the DDC system including the location and operation of each DDC system component in their buildings, introduction to problem diagnosis, operation of the alarm printer and interpretation of its output.
2. The minimum length of this course is three hours per site. The course shall be delivered to the respective custodian(s) and other Owner's personnel in each building covered the Work.

K. Upon completion of each session of training, the Contractor shall provide the Owner with a written statement, signed by the Owner, indicating that the training outlined by this Specification has been fulfilled to the satisfaction of the Owner.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 DEMONSTRATION - GENERAL

A. Demonstrations conducted during system start-up do not qualify as demonstrations for the purposes of this section, unless approved in advance by Owner.

B. Demonstrations conducted during Functional Testing need not be repeated unless Owner personnel training is specified.

C. Demonstration may be combined with Owner personnel training if applicable.

D. Operating Equipment and Systems: Demonstrate operation in all modes, including start-up, shut-down, troubleshooting, and maintenance procedures, including scheduled and preventive maintenance.
1. Perform demonstrations not less than two weeks following date of Substantial Completion.

3.02 TRAINING - GENERAL

A. Conduct training on-site unless otherwise indicated.

B. Owner will provide classroom and seating at no cost to Contractor.

C. Do not start training until Functional Testing is complete, unless otherwise specified or approved by the Commissioning Authority.

D. Provide training in minimum two hour segments.

E. Training schedule will be subject to availability of Owner's personnel to be trained; re-schedule training sessions as required by Owner; once schedule has been approved by Owner failure to conduct sessions according to schedule will be cause for Owner to charge Contractor for personnel "show-up" time.

F. Review of Facility Policy on Operation and Maintenance Data: During training discuss:
1. The location of the O&M manuals and procedures for use and preservation; backup copies.
2. Typical contents and organization of all manuals, including explanatory information, system narratives, and product specific information.
3. Typical uses of the O&M manuals.

G. Product- and System-Specific Training:
   1. Review the applicable O&M manuals.
   2. For systems, provide an overview of system operation, design parameters and constraints, and operational strategies.
   3. Review instructions for proper operation in all modes, including start-up, shut-down, seasonal changeover and emergency procedures, and for maintenance, including preventative maintenance.
   4. Provide hands-on training on all operational modes possible and preventive maintenance.
   5. Emphasize safe and proper operating requirements; discuss relevant health and safety issues and emergency procedures.
   6. Discuss common troubleshooting problems and solutions.
   7. Discuss any peculiarities of equipment installation or operation.
   8. Discuss warranties and guarantees, including procedures necessary to avoid voiding coverage.
   9. Review recommended tools and spare parts inventory suggestions of manufacturers.
   10. Review spare parts and tools required to be furnished by Contractor.
   11. Review spare parts suppliers and sources and procurement procedures.

H. Be prepared to answer questions raised by training attendees; if unable to answer during training session, provide written response within three days.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. All selective building remodel demolition as indicated on the Drawings, as specified herein, and as needed for complete and proper installation of new work indicated.

B. Abandonment and removal of existing utilities where indicated or otherwise encountered at removed construction.

C. Carefully remove, disassemble or dismantle and store on the site those items to be removed and re-used in the completed work or retained by Owner, all as indicated on the Drawings and/or specified.

1.02 RELATED REQUIREMENTS

A. Section 01 50 00 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.

B. Section 01 73 29 - Cutting and Patching.

C. Section 01 74 19 - Construction Waste Management & Disposal.

1.03 SUBMITTALS

A. Submit to Owner demolition plan addressing the following, as applicable:

1. Description of method(s) for protecting existing and installed work.
2. Schedule of required utility and building system shutdowns, if any.
3. Identify demolition work (saw cutting, drilling, removal) that will involve or affect any structural element or part of the building structure.

B. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

1.04 FIELD CONDITIONS

A. Condition Of Building Prior To Selective Demolition: Accept premises on as "as-is" condition. Owner assumes no responsibility for building condition now, at time of bidding nor thereafter. Damage or loss resulting from any cause to building, persons and/or property shall not relieve contractor from his obligation to complete all work under the Contract.

B. Protection

1. Before beginning selective demolition activities, erect barriers, fences, overhead protection, shoring, and the like, to protect personnel and construction.
2. Keep free of damage those portions of existing building which are to remain. Contractor shall provide total protection for all existing portions of building against damage caused by construction means and any or all weather elements.
3. Any damage occurred shall be immediately corrected by the Contractor as directed by the Architect or Owner, at Contractor's expense.
4. Remove temporary protection and cover when no longer needed.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION

3.01 INSPECTION

A. Building Examination

1. Prior to Starting Demolition: Contractor and Owner to make a complete inspection of condition of the existing building within the project limits of construction, including visible

defects. Make careful notes on condition of the existing work. Inspection report to be accepted and signed by both parties to the survey.

2. At Completion of Demolition - Each Area: Contractor and Owner to make examination for possible damage to the building facilities caused by demolition work. Examination report to be accepted and signed by both parties to the inspection where no damage is apparent.

3.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
   1. Obtain required permits.
   2. Provide, erect, and maintain temporary barriers and security devices.
   3. Use physical barriers to prevent access to areas that could be hazardous to workers, occupants or the public.
   4. Conduct operations to minimize effects on and interference with adjacent structures.

B. Do not begin removal until built elements to be salvaged or relocated have been removed.

C. Perform demolition in a manner that maximizes salvage and recycling of materials.
   1. Dismantle existing construction and separate materials.
   2. Set aside reusable, recyclable, and salvageable materials; store and deliver to collection point or point of reuse.

3.03 EXISTING UTILITIES

A. Protect existing utilities to remain from damage.

B. Do not disrupt public utilities without permit from authority having jurisdiction.

C. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 5 days prior written notification to Owner.

D. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.

3.04 SELECTIVE DEMOLITION FOR ALTERATIONS

A. Separate areas in which demolition is being conducted from other areas that are still occupied.

B. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.

C. Remove existing work as indicated and as required to accomplish new work.

D. Selective Building Demolition - General
   1. Do all demolition, drilling and/or removal work, as applicable, required for the completion of new work shown on Drawings or specified. Refer to Drawings and details for specific items of construction to be removed and other demolition requirements for the new work.
   2. The extent of demolition required for the entire project shall be verified by the Contractor at the jobsite and performed to the fullest extent required due to actual job conditions and requirements of new work indicated.
   3. Where demolition occurs next to existing work to remain, remove carefully only those items required for placing new work. Conduct demolition to minimize interference with adjacent structures to remain.
   4. Remove all loose material caused by or remaining from demolition work. Cut openings and/or pockets neatly ready for installation of new work. Use carborundum saws or approved means or devices where cuts will remain exposed in the completed work.
   5. Coordinate demolition work with work in other Sections.

E. Materials & Equipment To Be Removed For Re-Use Or Turned Over To Owner
   1. Carefully remove, disassemble or dismantle and store on the site those items to be removed and re-used in the completed work or retained by Owner, all as indicated on the Drawings and/or specified.
   2. If wall mounted equipment items are encountered in areas where demolition of associated wall is required for new work, they shall be salvaged for reuse/reinstallation or, if not reused, shall be turned over to Owner.
   3. All other debris and non-selected removed materials and equipment shall become the property of the Contractor and removed from site.

3.05 SALVAGE

A. To Owner
   1. Owner to retain title of items to be removed for re-use in the new Work and as otherwise indicated or selected by the Owner to be retained as specified above.
   2. Deliver salvage materials and equipment and store in approved locations on site, as directed.

B. To Contractor: Remove from site all other equipment and materials removed for new work and not otherwise specified and/or selected by Owner to be retained or re-used in the new work; let no removed said material accumulate at site.

C. Leave site in clean condition, ready for subsequent work.

3.06 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site.

B. Leave site in clean condition, ready for subsequent work.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Formwork for cast-in place concrete, with shoring, bracing and anchorage.

B. Form accessories.

C. Form stripping.

1.02 RELATED REQUIREMENTS

A. Section 03 20 00 - Concrete Reinforcing.

B. Section 03 30 00 - Cast-In-Place Concrete.

1.03 REFERENCE STANDARDS

A. ACI 117 - Specifications for Tolerances for Concrete Construction and Materials 2010 (Reapproved 2015).

B. ACI 301 - Specifications for Structural Concrete 2016.

C. PS 1 - Structural Plywood 2009 (Revised 2019).

1.04 SUBMITTALS

A. Product Data: Provide data on void form materials and installation requirements.

B. Shop Drawings: Indicate pertinent dimensions, materials, bracing, and arrangement of joints and ties.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver prefabricated forms and installation instructions in manufacturer's packaging.

B. Store prefabricated forms off ground in ventilated and protected manner to prevent deterioration from moisture.

PART 2 PRODUCTS

2.01 FORMWORK - GENERAL

A. Provide concrete forms, accessories, shoring, and bracing as required to accomplish cast-in-place concrete work.

B. Design and construct concrete that complies with design with respect to shape, lines, and dimensions.

C. Chamfer outside corners of beams and walls.

D. Comply with applicable state and local codes with respect to design, fabrication, erection, and removal of formwork.

E. Comply with relevant portions of ACI 301, ACI 318, and ACI 347R.

2.02 WOOD FORM MATERIALS - GENERAL

A. Plywood: Douglas Fir species exterior type minimum 5/8" thick; medium density overlaid one side grade; sound undamaged sheets with clean, true edges and surfaces suitable for the required finish.

B. Lumber forms shall be boards selected for straightness in both planes and having no surface defects which will prevent achieving the required finish.

2.03 FORMWORK ACCESSORIES

A. Form Ties: Snap-off type, galvanized metal, fixed length, cone type, with waterproofing washer, free of defects that could leave holes larger than 1 inch (25 mm) in concrete surface.

B. Corners: Chamfered, rigid plastic type; 3/4 x 3/4 inch (19 x 19 mm) size, unless shown otherwise; maximum possible lengths.

C. Keyways shall be formed using wood or removable plastic or metal preformed units to sizes indicated.

D. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Sized as required, of sufficient strength and character to maintain formwork in place while placing concrete.

E. Embedded Anchor Shapes, Plates, Angles and Bars: As shown on Drawings.

F. Waterstops: Rubber, minimum 1,750 psi (12 MPa) tensile strength, minimum 50 degrees F (46 degrees C) to plus 175 degrees F (79 degrees C) working temperature range, 6 inch wide, maximum possible lengths, ribbed profile, preformed corner sections, heat welded jointing.

G. Isolation/Expansion Joints: Furnish resilient bituminous type, Sternson Ltd. "Flexcell", Grace Construction Products "Fiber", Homosote Co. "Homex 300", Old North Mfg. Co., Inc. "Gray-Flex", or approved, non-extruding type, 1/4 inch thickness unless otherwise shown, of depth as required to bring top to within 1/4 inch of surface of slab.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with drawings.

3.02 ERECTION - FORMWORK - GENERAL

A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 347R.

B. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads.

C. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.

D. Align joints and make watertight. Keep form joints to a minimum.

E. Provide chamfer strips on external corners of formwork.

F. Coordinate this section with other sections of work that require attachment of components to formwork.

G. Joints And Stoppages:

1. Construction Joints:
    a. Install in accordance with provisions of ACI 318, Section 26.5.6.2, and as specified herein. Located where indicated or otherwise required and approved as to not impair strength of structure.
    b. Provide nominal 3/4" x 2-1/2" key at construction joints, unless otherwise shown on drawings, or as directed by Structural Engineer.
    c. Make joints perpendicular to principal reinforcement. Continue half reinforcement and mesh across joints except at isolation joints; provide longitudinal keys at least 1-1/2 inches deep at all joints in walls and between walls and slabs or footings.
    d. Remove key-forming wood inserts and thoroughly clean surface of concrete at all joints, removing all laitance, before placing next lift.

e. Immediately prior to placing next lift and/or adjacent slab, dampen hardened concrete of joint surface and coat with neat cement mortar of similar proportions to mortar in concrete.

2. Isolation/Expansion Joints For Slabs-On-Grade: Do not extend reinforcement through where bonded on both sides of joint; smooth dowels may extend through joint. Position accurately and support against displacement in locations listed hereinafter.
   a. Interior Work:
      1) Install isolation/expansion joints between new interior ground-supported slabs and building foundation walls, and around isolated slabs at column structures; elsewhere where shown on Drawings.
      2) Install joints with top surface recessed below finish elevation 1/4 inch, and fill with joint sealer as specified in Section 07 92 00, finished flush with slab surface.
3. Control Joints: As specified in Section 03 30 00.

3.03 INSERTS, EMBEDDED PARTS, AND OPENINGS

A. Provide formed openings where required for items to be embedded in passing through concrete work.

B. Locate and set in place items that will be cast directly into concrete.

C. Coordinate with work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other work.

D. Install accessories in accordance with manufacturer's instructions, so they are straight, level, and plumb. Ensure items are not disturbed during concrete placement.

E. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain.

F. Close temporary openings with tight fitting panels, flush with inside face of forms, and neatly fitted so joints will not be apparent in exposed concrete surfaces.

G. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions.

H. Screed Supports: For concrete over vapor barrier membrane, use screeds supports of a cradle, pad or base type which shall not puncture the membrane. Staking through the membrane will not be permitted.

I. Install joint fillers, primer and sealant in accordance with manufacturer's instructions.

J. Extend joint filler from bottom of slab to within 1/4 inch of finished slab surface. Conform to Section 07 90 05 for finish joint sealer requirements.

3.04 FORM CLEANING

A. Clean forms as erection proceeds, to remove foreign matter within forms.

B. Clean formed cavities of debris prior to placing concrete.
   1. Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.
   2. During cold weather, remove ice and snow from within forms. Do not use de-icing salts. Do not use water to clean out forms, unless formwork and concrete construction proceed within heated enclosure. Use compressed air or other means to remove foreign matter.

3.05 FORMWORK TOLERANCES

A. Construct formwork to maintain tolerances required by ACI 117, unless otherwise indicated.

B. Camber slabs and beams in accordance with ACI 301.

3.06 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests, as specified in Section 01 45 29 - Testing Laboratory Services Provided By Owner.

B. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and to verify that supports, fastenings, wedges, ties, and items are secure.

3.07 FORM REMOVAL

A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.

B. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.

C. Store removed forms to prevent damage to form materials or to fresh concrete. Discard damaged forms.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Reinforcing steel for cast-in-place concrete.

B. Welded wire fabric reinforcing for interior concrete slabs on grade.

C. Deformed bar anchors.

D. Supports and accessories for steel reinforcement.

1.02 RELATED REQUIREMENTS

A. Section 01 45 29 - Testing Laboratory and Inspection Services Provided By Owner.

B. Section 03 10 00 - Concrete Forming and Accessories.

C. Section 03 30 00 - Cast-In-Place Concrete.

D. Section 04 20 00 - Unit Masonry: Reinforcement for masonry.

1.03 REFERENCE STANDARDS

A. ACI 318 - Building Code Requirements for Structural Concrete and Commentary 2014 (Errata 2018).

B. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement 2020.

C. ASTM A706/A706M - Standard Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement 2016.

D. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete 2018a.

E. CRSI (P1) - Placing Reinforcing Bars 2011.

1.04 SUBMITTALS

A. Shop Drawings: Comply with requirements of ACI SP-66. Include bar schedules, shapes of bent bars, spacing of bars, and location of splices.

1. Prepare shop drawings under seal of a Professional Structural Engineer experienced in design of work of this type and licensed in Washignton.

B. Manufacturer's Data: Submit manufacturer's product data and installation instructions for proprietary materials.

1.05 QUALITY ASSURANCE

A. Perform work of this section in accordance with ACI 301.

B. Inspections: Covered hereinafter in this Section, and in Section 01 45 29. Should reinforcing placed under this Contract not meet specified requirements, remove and replace to assure compliance with Contract Documents.

C. Welders' Certificates: Submit certifications for welders employed on the project, verifying AWS qualification within the previous 12 months and welders are WABO certified.

PART 2 - PRODUCTS

2.01 REINFORCEMENT

A. Reinforcing Steel:

1. Unless otherwise noted in Structural Notes, furnish deformed bars meeting requirements set forth in ASTM Standard A615, Grade 60 (Fy = 60,000 psi). Bars shall be unpainted, uncoated, and free from rust, dirt and loose scale.

2. Where reinforcing requires welded connections, furnish weldable reinforcing bars which meet the chemical requirements of ASTM A706 (Grade 60 ksi) with a minimum carbon equivalent of .55 percent.

B. Deformed Bar Anchors (DBA): Anchors shall be Nelson deformed bar anchors (ER 5217) or approved equal. Anchors shall be shop welded to plates or steel members by automatic end welding equipment. 1/2" diameter bars shall have 24" length, unless noted otherwise

C. Welded Steel Wire Fabric: Furnish welded wire fabric meeting requirements set forth in ASTM A1064, Fy=65 ksi; 6"x6" - W 2.9/W 2.9 size, unless otherwise noted.

D. Reinforcement Accessories:
   1. Tie Wire: 16 gauge or heavier, double annealed wire.
   2. Spacer Bars for Wall Reinforcing: 3-inch bars, "U" shaped. Stock items of equivalent function may be submitted for approval.
   3. Mortar Blocks:
      a. Furnish as required for use as spacers in placing reinforcement; shall be two (2) inches square (maximum).
      b. Mortar blocks shall be constructed of mortar mixed with the same proportions of sand and cement used in concrete, and develop a minimum compressive strength of 4,000 psi at 28 days.
      c. Mortar blocks shall have a tie wire embedded and the protruding ends to be tied to the reinforcing steel to hold the mortar blocks in place; mortar blocks with a grooved top may be used for supporting steel in slabs.
   4. Metal Chair Supports: In lieu of mortar blocks, furnish approved heavy-duty plastic-type chair supports, sized to support all slab steel to proper height and with cushioned pads to prevent vapor retarder membrane penetration.
   5. Dowel Bar Adhesive: Furnish Hilti "HIT RE-500 V3 anchor adhesive, or approved; refer to Structural Notes for additional requirements.

2.02 FABRICATION

A. Fabricate concrete reinforcing in accordance with ACI 318, ACI SP-66 - ACI Detailing Manual, and ASTM A 184/A 184M.

B. Welding of reinforcement is permitted only with the specific approval of Structural Engineer. Perform welding in accordance with AWS D1.4.

C. Locate reinforcing splices not indicated on drawings at point of minimum stress. Review locations of splices with Structural Engineer.

D. Hooks & Bends
   1. Minimum Bend Diameter: The diameter of bend measured on the inside of the bar for standard hooks, other than stirrup and tie hooks, not less than:
      a. Bar sizes #3 through #8: 6 bar diameters.
      b. Bar sizes #9 through #11: 8 bar diameters.
   2. Bending: Bend cold, unless otherwise permitted by Structural Engineer; do not field bend partially embedded bars except as permitted by Structural Engineer. Conform to ACI 318, Section 26.6.3.

PART 3 EXECUTION

3.01 PLACEMENT

A. General:
   1. Conform to ACI 318, Section 26.6.2 for placing, supports, tolerances, and draped fabric, unless noted otherwise on Drawings.

2. Place, support and secure reinforcement against displacement. Do not deviate from required position.
3. Do not displace or damage vapor barrier.
4. Prevent water from softening soil under reinforcing during steel placing.
5. Accommodate placement of formed openings.

B. Maintain concrete cover around reinforcing as set forth in Structural Notes.

C. Cleaning Reinforcement: Clean reinforcement, at time concrete is placed, free of mud, oil, or other materials that will reduce the bond. Conform to ACI 318,Section 26.6.1.2.

D. Placement:
1. Reinforcing steel shall be accurately placed in accordance with related drawings, schedules, and detailed shop drawings and be securely tied and supported in its precise location at all points where the bars cross so as to preclude shifting during the placing of formwork, construction, or concrete placement operations.
2. Provide sufficient number of supports and of strength to carry the reinforcement. Do not place reinforcing bars more than 2 inches beyond last leg of any continuous bar support. Do not use supports as bases for runways for concrete conveying equipment and similar construction loads.
    a. Bar reinforcing for concrete slabs on grade shall be securely supported in its proper position by means of mortar blocks or metal chairs as required; wood or foam supports are not acceptable.
        1) Use mortar blocks where placing reinforcing over vapor barrier or waterproof membranes at interior slabs on grade.
        2) Metal chair supports may be used at exterior slabs.
3. Bar reinforcing shall be continuous insofar as practical and shall carry around corners and through intersections in footings and walls. Provide elbow bars of size to develop required laps.
4. Unless otherwise noted, reinforcing bar splices shall lap 40 bar diameters. Splices shall not be made at the points of maximum stress. Stagger all lap splices such that no more than 50% of horizontal or vertical bars shall splice at any location.
5. Fastening:
    a. Securely tie bars and bar supports together with 16 gauge wire to hold reinforcement accurately in position during concrete placement.
    b. Set wire so that ends are directed into the concrete.
    c. Wire tie stirrups and ties to main reinforcement.
6. Steel Dowels:
    a. Provide dowel bars where shown or required for connecting to in-place or subsequent work as shown. Dowels required to receive and engage subsequent work shall be left of sufficient length to develop the strength of the bar and be securely set in the form prior to placing the concrete.
    b. For rebar doweling where tying to existing concrete foundation structures, install using epoxy grout as specified in Structural General Notes, of sizes, length and spacing as indicated on Drawings for same, following manufacturer's recommendations for all installation requirements.

E. Placing Welded Wire Fabric For Exterior Paving:
1. Install in new interior infill slabs. Provide of size specified herein or otherwise indicated, and with minimum coverages indicated for concrete protection.
2. Install welded wire fabric in as long lengths as practicable. The mesh fabric shall be rolled out, straightened, cut to the required size and be laid reasonably flat in place.

3. Lap adjoining pieces at least 12 inches or one full mesh spacing plus 2 inches, whichever is greater, and lace splices with 16 gauge wire. Offset end laps in adjacent widths to prevent continuous laps in either direction.
4. Do not carry through isolation/expansion joints.
5. Prior to concrete placement, the mesh reinforcing shall be supported at frequent intervals as required to insure proper location in the concrete.
6. Lifting mesh reinforcing during concrete placement is not allowed, unless approved in writing by the Structural Engineer.

3.02 FIELD QUALITY CONTROL

A. An independent testing agency, as specified in Section 01 45 29, will inspect installed reinforcement for conformance to contract documents before concrete placement.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Gravel capillary break base material and vapor barrier under interior building slabs on grade.

B. Floor infill slabs on grade.

C. Concrete footings and foundation walls.

D. Joint devices associated with new exterior concrete work.

E. Concrete finishing.

1.02 RELATED REQUIREMENTS

A. Section 01 45 29 - Testing Laboratory and Inspection Services Provided by Owner.

B. Section 03 10 00 - Concrete Forming and Accessories: Forms and accessories for formwork.

C. Section 03 20 00 - Concrete Reinforcing.

D. Section 03 39 00 - Concrete Curing & Sealing.

E. Section 07 92 00 - Joint Sealants: Products and installation for sealants and joint fillers for saw cut joints and isolation joints in slabs.

F. Sleeves, inserts and anchors for mechanical and electrical work covered under applicable Sections of Divisions 22, 23 and 26.

1.03 REFERENCE STANDARDS

A. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete 1991 (Reapproved 2009).

B. ACI 301 - Specifications for Structural Concrete 2016.

C. ACI 302.1R - Guide to Concrete Floor and Slab Construction 2015.

D. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete 2000 (Reapproved 2009).

E. ACI 305R - Guide to Hot Weather Concreting 2010.

F. ACI 306R - Guide to Cold Weather Concreting 2016.

G. ACI 318 - Building Code Requirements for Structural Concrete and Commentary 2014 (Errata 2018).

H. ASTM C33/C33M - Standard Specification for Concrete Aggregates 2018.

I. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens 2021.

J. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete 2021.

K. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete 2020.

L. ASTM C150/C150M - Standard Specification for Portland Cement 2020.

M. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete 2010a (Reapproved 2016).

N. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete 2019.

O. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete 2019.

P. ASTM C881/C881M - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete 2020a.

Q. ASTM E1643 - Standard Practice for Selection, Design, Installation and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs 2018a.

R. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs 2017.

1.04 SUBMITTALS

A. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.

B. Mix Design: Submit proposed concrete mix design.

C. Test Reports: Submit report for each test or series of tests specified.

D. Manufacturer's Installation Instructions: For concrete accessories, indicate installation procedures and interface required with adjacent construction.

E. Concrete Mix Data: Submit the following submittals in accordance with ACI-301:
   1. Admixture certification. Chloride ion content must be included.
   2. Aggregate certification.
   3. Concrete mix design. Submit a mix design for each strength and type of concrete. Clearly indicate where each mix design will be used.
   4. Materials and methods for curing (per Section 03 35 50).
   5. Laboratory tests on concrete.

F. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.

G. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

A. Perform work of this section in accordance with ACI 301 and ACI 318.

B. Follow recommendations of ACI 305R when concreting during hot weather.

C. Follow recommendations of ACI 306R when concreting during cold weather.

D. For slabs required to include moisture vapor reduction admixture (MVRA), do not proceed with placement unless manufacturer's representative is present for every day of placement.

E. Quality Control
   1. Do not commence placement of concrete until mix designs have been reviewed and approved by the Architect and all governmental agencies having jurisdiction, and until copies are at the job site, the batch plant, and the building department.
   2. See Section 01 45 29 for general testing and inspection requirements. Give inspector full cooperation.

F. Notice Of Intention To Place Concrete: Notify Architect, Structural Engineer, and Special Inspector at least 48 hours prior to an intended pour. See Structural Notes for additional infor-mation and requirements pertaining to Structural Observation as it pertains to work of this Section.

1.06 JOB CONDITIONS

A. Winter Concreting
   1. Provide adequate equipment for heating materials and protecting concrete during freezing or near-freezing weather.

2. Keep all materials, reinforcement, forms, and ground in contact with concrete, free from frost; use no materials containing ice.

1.07 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Slabs with Moisture Vapor Reducing Admixture (MVRA): Provide warranty to cover the cost of flooring failures due to moisture migration from slabs for life of the concrete.
   1. Include cost of repair or removal of failed flooring, placement of topical moisture remediation system, and replacement of flooring with comparable flooring system.
   2. Provide warranty by manufacturer of MVRA matching terms of flooring adhesive or primer manufacturer's material defect warranty.

1.08 COORDINATION

A. General: Coordinate with other trades for installation of concrete embedded items.

B. Buried Items: Do not place concrete until items have been tested for mechanical operation.

C. Concrete Surfaces to Receive Other Finishes: Coordinate with other applicable sections to assure concrete finish is suitable to receive specified finish.

D. Reinforcement: Do not place any reinforced concrete until inspected.

PART 2 PRODUCTS

2.01 FORMWORK

A. Comply with requirements of Section 03 10 00.

2.02 REINFORCEMENT MATERIALS

A. Comply with requirements of Section 03 20 00.

2.03 CONCRETE MATERIALS

A. Portland Cement: Furnish conforming to ASTM C150, Type I or Type I-II. Use same brand of cement for all exposed work.

B. Fine Aggregate: Except as otherwise specified, furnish sand conforming to ASTM C33 with deleterious substances not to exceed those in Table I less subnote "a" thereof.

C. Coarse Aggregate
   1. Except as otherwise specified, furnish conforming to ASTM C33, maximum size 1/5 of narrowest dimension between forms of concrete member, 3/4 inch minimum clear spacing between reinforcing bars, with standard placing procedures in no case exceeding 1-1/2 inch size.
   2. If concrete pumping is employed, use 3/4 inch maximum size aggregate.

D. Fly Ash: Furnish conforming to ASTM C618, Class F, with loss on ignition (LOI) maximum one percent (1%).

E. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.

2.04 ADMIXTURES

A. General
   1. Obtain approval for calcium compound use in all concrete; use no calcium compound in reinforced concrete.
   2. All admixtures shall be compatible with one another.

B. Air Entraining Agent: Furnish as manufactured by Dewey & Almy, Master Builders, Sika or Sonneborn, conforming to ASTM C260.

C. Water-Reducing Admixture

1. Unless specified otherwise, furnish meeting requirements of ASTM C494, Type A, containing no set-accelerating or set-retarding compounds, chlorides, fluorides or nitrates; The Euclid Chemical Co. “Eucon WR-75”, Master Builders “Pozzolith 200N” or Sika Chemical Co. “Plastocrete 160”, or approved.
2. For concrete to be pumped, furnish high range water-reducing admixture (superplasticizer) meeting requirements of ASTM C494, Type F or G, containing no more chloride ions than are present in municipal drinking water; The Euclid Chemical Co. “Eucon 37” or Sika Chemical Co. “Sikament”, or approved.

D. Shrinkage Reducing Admixture For Exposed Slabs: Furnish equal to W.R. Grace 'Eclipse' shrinkage reducing admixture, or approved, at a rate of 1 gallon per cubic yard of concrete. Use 'Eclipse Plus', or approved, for all concrete requiring an air entrainment admixture.

E. Moisture Vapor Reduction Admixture (MVRA) for Concrete For Patching Interior Slabs: Liquid, inorganic admixture free of volatile organic compounds (VOCs) and formulated to close capillary systems formed during curing to reduce moisture vapor emission and transmission, with no adverse effect on concrete properties.

1. Provide admixture in slabs to receive adhesively applied flooring.
2. Manufacturers:
   a. Barrier One, Inc; Barrier One Moisture Vapor Reduction Admixture: www.barrierone.com.
   b. Hycrete, Inc; W1000: www.hycrete.com.
   c. ISE Logik Industries, Inc; MVRA 900: www.iselogik.com.
   d. Cementaid Ltd. "Everdure Caltite System": www.cementaid.com.
   e. Substitutions: See Section01 61 00-- Common Product Requirements.

2.05 ACCESSORY MATERIALS

A. Gravel Capillary Break Base Material Under Interior Building Slabs: Furnish clean sand and gravel containing at least 40 percent (by weight) gravel sized particles larger than a U.S. No. 4 sieve with fines limited to 5 percent or less.

B. Vapor Retarding Membrane Under New Interior Slabs On Grade Including Infills: Furnish polyolefin vapor barrier sheeting meeting or exceeding performance requirements of ASTM E1745 Class A. Single ply polyethylene is prohibited.

1. Approved Products:
   a. Stego Industries, LLC "Stego Wrap" 10-mil Vapor Barrier.
   b. W.R. Meadows "Perminator" 10 mill Under Slab Vapor Barrier.
   c. Reef Industries, Inc. "Griffolyn" 10 mill co-extruded polyolefin membrane.
2. Furnish complete with manufacturer's recommended tape, adhesive, mastic, prefabricated boots, etc., for sealing seams and penetrations in vapor retarder.

2.06 BONDING AND JOINTING PRODUCTS

A. Bonding Agent: Furnish two (2) component, 100% solids, 100% reactive epoxy adhesive compound suitable for use on dry or damp surfaces; Larsen Products Corp. “Weld Crete” or The Eucid Chemical Co. “Euco Epoxy” #452MV or #620 or Sika Chemical Co. “Sikadur Hi-Mod”, or approved.

B. Slab Isolation Joint Filler: 1/4 inch (6 mm) thick, height equal to slab thickness, with removable top section that will form 1/4 inch (6 mm) deep sealant pocket after removal.

2.07 CONCRETE MIX DESIGN

A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.
   1. Replace as much portland cement as possible with fly ash as is consistent with ACI recommendations.

B. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI 301.

C. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended or required by manufacturer.

D. Normal Weight Concrete:
   1. Minimum Compressive Strength, when tested in accordance with ASTM C39 at 28 days: As indicated in Structural Notes.
   2. Fly Ash Content: Maximum 15 percent of cementitious materials by weight, subject to approval of Structural Engineer.
   3. Water-Cement Ratio: Maximum 46 percent by weight.
   4. Air Entraining Agent & Water-Reducing Admixtures
      a. Do not pre-mix air entraining agent with water-reducing admixtures; add separately from separate container.
      b. All concrete shall contain the specified water-reducing admixture and/or high-range water-reducing admixture (superplasticizer). Do not use more than one admixture in concrete mixture without Architect's approval. Mix in conformance with ASTM C494 and in strict accordance with manufacturer's instructions.
      c. Add air entraining agent to all concrete for exposed exterior work including walks, slabs, and the like, to attain a 5% (+/-1%) entrained air content; reduce water content but maintain cement quantity.
   5. Slump In Inches: Refer to Structural General Notes.

E. Workability: Workability of concrete shall be such that concrete can be handled, placed and worked into angles and corners of forms and around reinforcing steel and inserts without segregation and without excessive bleeding. Minor adjustments in agreed proportions may be made by the concrete supplier to insure optimum proportioning. No change in the cement factor shall be permitted without approval.

2.08 MIXING

A. General
   1. Concrete for minor work, when approved by the Architect, may be mixed at the site in a power mixer when the mixer has a capacity not less than one full sack batch.
   2. All other concrete shall be ready-mixed as specified below.

B. Ready Mixed Concrete:
   1. Ready-mixed concrete shall be measured, batched, mixed and delivered to the project in accordance with ASTM C94. The ready-mixed concrete producer shall furnish legible duplicate delivery tickets for each batch of concrete delivered to the project.
   2. Mixing:
      a. Mix each batch of concrete not less than 15 minutes, five minutes of which shall be at the site. Rotate the drum at the rate specified by the manufacturer of the mixer as "mixing speed."
      b. Whenever there is a delay in unloading, rotate the drum slowly at intervals to prevent incipient set of concrete.
   3. Concrete at time of placing shall be in such condition that it can be placed properly.
   4. Mixing equipment shall not be charged beyond its rated capacity.

C. Concrete Consistency
   1. Use the amount of water established by the approved mix design.
      a. Do not exceed the maximum quantity specified for the grade of concrete.
      b. Use the minimum amount of water necessary to produce concrete of the workability required by the Architect.
      c. Do not supplement predetermined amount of water with additional water for any reason.
   2. Measure concrete consistency by ASTM C143 method.

D. Adding Water: If concrete arrives on-site with slump less than suitable for placement, do not add water that exceeds the maximum water-cement ratio or exceeds the maximum permissible slump.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify lines, levels, and dimensions before proceeding with work of this section.

B. Verify requirements for concrete cover over reinforcement

C. Verify anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with placing concrete

3.02 PREPARATION

A. Gravel Capillary Break Base Material Under Interior Building Slabs: Place capillary break layer specified above over compacted subgrade, to a 4 inch minimum compacted thickness, unless otherwise indicated. Compact to 95% minimum of maximum dry density as determined by ASTM D1557.

B. 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.

C. Cleaning Forms: Before placing concrete, clean spaces within forms of all refuse, debris and dirt. Provide cleaning holes for removal of foreign matter; after cleaning, replace forms at openings and brace to prevent form failure.

D. Mixing And Placing
   1. Conform to the requirements of ACI 301, Chapters 7 and 8.
   2. Clean free of all foreign matter and ice, all mixing and transporting equipment, subgrade and forms to receive concrete.
   3. Clean reinforcement of deleterious coatings and ice.

E. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.

F. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning and applying bonding agent in according to bonding agent manufacturer's instructions.

G. Vapor Barrier At Interior Slabs on Grade: Install vapor retarder sheeting over granular capilary break, under interior slabs on grade. Lap joints minimum 6 inches (150 mm). Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions. Repair damaged vapor retarder before covering.

3.03 INSERTS, ANCHORS, & EMBEDDED ITEMS

A. General: Where openings in floors and walls are required by the various trades, but are not detailed on the Drawings, reinforce as directed by the Architect.

B. Concrete Fasteners
   1. In addition to their use where the pins are loaded in shear, pneumatic driven concrete fasteners may be used in tension for support of light loads such as duct work, conduits, pipes, and similar items when such loads are limited to less than 75 lbs.
   2. Where hanger rods, bolts, wire, or similar items are used to suspend construction items, place in the concrete as required and/or indicated.

C. Embedded Piping & Rough Hardware
   1. Coordinate the various trades who are required to fasten work to the structure, or are required to insert therein any sleeve, box, bolt, anchor, insert, or other rough hardware.
   2. Provide every facility for setting all required items accurately in the forms.
   3. Be responsible for changes in position of such items after they have been set.
   4. Provide in the forms for all sleeves, boxes, bolts, anchors, inserts, strap anchors, for frames, and other rough hardware required for the Work, and which are shown or required to be embedded in the concrete.
   5. Conduits and Sleeves:
      a. Place sleeves and core forms as required for mechanical and electrical work, sizes and locations as shown as directed by cognizant trades.
      b. Locate so as not to reduce the strength of construction. Do not place pipes, except conduits, in a slab of less than 4" thickness.
      c. In placing conduits at slabs on earth, place below the reinforcement, and encase in concrete.

3.04 PLACING CONCRETE

A. Place concrete in accordance with ACI 304R.

B. Place concrete for floor slab patches in accordance with ACI 302.1R.

C. Place concrete continuously without construction (cold) joints wherever possible; where construction joints are necessary, before next placement prepare joint surface by removing laitance and exposing the sand and sound surface mortar, by sandblasting or high-pressure water jetting.

3.05 SLAB JOINTING

A. Locate joints as indicated on drawings.

B. Anchor joint fillers and devices to prevent movement during concrete placement.

C. Isolation Joints: Use preformed joint filler with removable top section for joint sealant, total height equal to thickness of slab, set flush with top of slab.

D. Saw Cut Contraction Joints: Saw cut joints before concrete begins to cool, within 4 to 12 hours after placing; use 3/16 inch (5 mm) thick blade and cut at least 1 inch (25 mm) deep but not less than one quarter (1/4) the depth of the slab.

E. Construction Joints: Where not otherwise indicated, use metal combination screed and key form, with removable top section for joint sealant.

F. Repair underslab vapor retarder damaged during placement of concrete reinforcing. Repair with vapor retarder material; lap over damaged areas minimum 6 inches (150 mm) and seal watertight.

G. Separate new exterior sidewalk slabs on grade from sidewalk slabs with joint filler.

H. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.

I. Place concrete continuously between predetermined expansion, control, and construction joints.

J. Do not interrupt successive placement; do not permit cold joints to occur.

K. Provide concrete dense and free from honeycomb and other defects.

L. Place and finish members to conform to the shapes and dimensions indicated, with all surfaces true to line, plumb, and level.

M. Bonding Agent Application
   1. Apply to prepared existing concrete surfaces where new slab patches abut existing.
   2. Mix bonding agent thoroughly and apply strictly in accord with the manufacturer's directions.
   3. Place fresh concrete in contact immediately and while bonding agent is still tacky.

N. Method Of Placing
   1. Deposit concrete direct into conveyances, and direct from conveyances to final points of repose, except where troughs, buckets, or the like are used, in which case dump concrete into hoppers and then into the conveyances.
   2. Deposit concrete so that the surface is kept level throughout, a minimum being permitted to flow from one position to another, and place as rapidly as practicable after mixing.
   3. Do not use in this Work any concrete not placed within 30 minutes after leaving the mixer.

O. Tamping & Conveying
   1. Thoroughly work concrete around reinforcement and embedded fixtures, and into corners of forms, during placing operations.
   2. Completely compact and vibrate all concrete until the concrete is thoroughly compact and without voids.
   3. Exercise care to tamp and vibrate concrete vigorously and thoroughly to obtain maximum density.

P. Stoppages
   1. Stop concrete at joint locations indicated on Drawings; elsewhere where directed and approved by Architect.
   2. Maintain flow surfaces of freshly placed concrete as level whenever a pour is stopped, providing tight dams to accomplish this.
   3. Make horizontal construction joints only where shown on the Drawings or specifically approved by the Architect.
   4. Provide keys and dowels at construction joints where indicated on the Drawings, and where concrete placement is interrupted.

3.06 FINISHING FLAT WORK SURFACES

A. Finishing Slabs - General
   1. For tolerances not indicated, refer to ACI 117-06.
   2. All floor surfaces shall be within ±1/8" of finished floor elevations designated on plans. If variations greater than this exist, the Architect may direct the Contractor to grind the surfaces to bring them within the requirements. Patching of low spots shall not be permitted. Grinding shall be done as soon as possible, preferably within 3 days, but not until the concrete is sufficiently strong to prevent dislodging coarse aggregate particles.
   3. Floor Flatness/Leveling Tolerances: All floors shall be measured in accordance with ASTM E-1155 "Standard Test Method for Determining Floor Flatness and Levelness Using the "F-Number" System (Inch-Pound Units). Evaluation shall occur within 24 hours of slab placement and be reported to the Architect within 72 hours.

a. All trowel finished slabs to receive carpeting, resilient flooring, or to be left exposed and sealed shall achieve overall values of flatness FF 30; and levelness FL 20; with minimum local values of flatness FF 22; and levelness FL 15.

4. Replace slabs with excessive shrinkage cracks and those not properly inished to floor flatness and leveling tolerances specified above, as approved, without additional cost to Owner.

B. Slab Finishes: Unless otherwise indicated or specified, flatwork shall have an integral monolithic finish. Apply as soon as freshly poured concrete slabs will bear weight of workers. Allow surface mortar to partially set, then float with wooden floats and finish with one of following, as required.

C. Slab Finishes:

1. Unless otherwise shown, scheduled or specified hereinafter, use the following finishes, as applicable:
   a. Furnish smooth troweled finish for all interior floors to remain as walking surfaces and which are scheduled to receive sealed finish.
   b. Furnish smooth troweled finish for all interior floor slabs to receive resilient and carpet floor coverings including walk-off mats.
   c. Furnish broomed float finish for interior recessed slabs on grade to receive ceramic floor tile finishes and associated setting beds.
2. Before finishing work begins, place, strike off, consolidate and level concrete to condition ready for finishing.
3. Slope slabs evenly to drains where slopes and/or drains are indicated, not less that 1/8 inch each linear foot.
4. Replace slabs with excessive shrinkage cracks and those not properly finished, without additional cost to Owner.

D. Float Finish

1. After the concrete has been placed, consolidated, struck off, and leveled, do not work the concrete further until ready for floating.
2. Begin floating when the water sheen has disappeared and when the surface has stiffened sufficiently to permit the operation.
3. During or after the first floating, check the planeness of the surface with a ten foot straightedge applied at not less than two different angles.
4. Cut down high spots and fill low spots.
5. Refloat the slab immediately to a uniform sandy texture.

E. Boomed Float Frinish: Provide float finish same as specified above. After floating, draw a broom across surface to a light scored texture finish, as approved.

3.07 CURING AND PROTECTION

A. Comply with requirements of Section 03 39 00.

3.08 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests, as specified in Section 01 45 29.

B. Provide free access to concrete operations at project site and cooperate with appointed firm.

C. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.

D. Tests of concrete and concrete materials may be performed at any time to ensure compliance with specified requirements.

E. Compressive Strength Tests: ASTM C39/C39M, for each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cubic yards (76 cu m) or less of each class of concrete placed.

F. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.

G. Perform one slump test for each set of test cylinders taken, following procedures of ASTM C143/C143M.

H. Slab Testing: Cooperate with manufacturer of specified moisture vapor reduction admixture (MVRA) to allow access for sampling and testing concrete for compliance with warranty requirements.

3.09 DEFECTIVE CONCRETE

A. Test Results: The testing agency shall report test results in writing to Architect, Structural Engineer, and Contractor within 24 hours of test.

B. Defective Concrete: The following concrete will be deemed to be defective, and shall be removed promptly from the job site.

1. Concrete which is not formed as indicated, is not true to intended alignment, is not plumb or level where so intended, is not true to intended grades and levels.
2. Has voids or honeycombs that have been cut, resurfaced, or filled, unless with the approval of the Architect.
3. Does not have the specified finish, or reveals.
4. Has cracking which is more than minor hairline cracks, and which are unacceptable to the Architect.
5. Or does not conform fully to the provisions of the Contract Documents.

C. Repairs & Replacements

1. Defective concrete may be cut out and repaired with gunite, or other approved methods, when and as directed by the Architect.
2. Where defective concrete is found after removal of the forms, cut out the defective concrete, if necessary, and make the surfaces match adjacent surfaces. Conform to repair procedures specified above, Article 3.07.

3.10 PROTECTION

A. Do not permit traffic over unprotected concrete floor surface until fully cured.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Initial and final curing of various horizontal and vertical concrete surfaces.

B. Sealing of interior concrete floor surfaces scheduled to have 'sealed' finish.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast-in-Place Concrete.

B. Section 09 65 00 - Resilient Flooring.

C. Section 09 68 00 - Carpeting.

1.03 REFERENCE STANDARDS

A. ACI 301 - Specifications for Structural Concrete for Buildings; American Concrete Institute International; 2010.

B. ACI 302.1R - Guide for Concrete Floor and Slab Construction; American Concrete Institute International; 2004 (Errata 2007) .

1.04 SUBMITTALS

A. Product Data: Provide data on curing compounds and sealers, including compatibility of different products and limitations.

1.05 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 301 and ACI 302.1R.

B. 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.

C. Defective Work: Contractor shall remove and replace at his own expense all defective work as adjudged by the Architect.

1.06 JOB CONDITIONS

A. Refer to Section 03 30 00 for same and conform thereto as they apply to concrete curing and finishing work of this Section.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver curing materials in manufacturer's sealed packaging, including application instructions.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: For slabs, when the estimated evaporation rate calculated per ACI 305 Figure 2.1.5 is greater than 0.2 psf/hour, provide a spray applied evaporation retarder immediately after concrete placement.

B. Formed Surfaces Excluding Foundations: Apply a liquid membrane forming curing compound conforming to ASTM C309 Type 1 Class B specifications, per manufacturer's recommendations to all formed surfaces immediately after final form removal. Not required if formwork remains in place for more than 7 days.

C. Curing Compound For Curing Exterior Slabs

1. Furnish liquid membrane-forming curing compound conforming to ASTM C309, Type I clear. Compound shall be a clear styrene acrylate type, 30% solids content minimum, and

have test data from an independent testing laboratory indicating a maximum loss of 0.030 grams per sq. cm. when applied at a coverage rate of 300 sq. ft. per gallon.

2. Compound shall be "Super Rez Seal" by The Euclid Chemical Co., "Vulkem 2101" by Mameco International, Inc., "Masterkure 30" by Master Builders, or "Sealtight CS-309" by W.R. Meadows.
3. Manufacturer's certification required. (Sodium Silicate Compounds are prohibited.)

D. For Recessed Slab Surfaces to Receive Tile Setting Beds: Furnish 6 mil clear visqueen or reinforced waterproof kraft paper conforming to ASTM C171, Type I; liquid membrane-forming curing compound shall not be used for curing recessed slabs.

E. Interior Slabs - General: Unless otherwise specified, cure by one of the following methods:
1. Provide pre-approved continuous wet cure method for a minimum of 14 days.
2. Apply a liquid membrane forming curing compound, conforming to ASTM C309 Type 1 Class B specifications or ASTM C1315 Type 1 Class A specifications, per manufacturer's recommendations immediately after final finishing. Curing compound shall be compatible with architectural floor coverings where scheduled.
3. Provide 'Ultracure Max' moisture retaining cover by Mctech Group, or approved, for a minimum of 14 days

F. Curing Compound For Curing Interior Slabs to be Left Exposed and Sealed: Furnish one coat curing, sealing and hardening compound, Curecrete Distribution Inc. “Ashford Formula”, applied at a rate of 200 sq.ft. per gallon.

G. Sealer Coat For Interior Sealed Concrete Slab Finish: Furnish one coat of Advanced Floor Products “RetroPlate 99”, applied at end of project.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate surfaces are ready to be cured.

3.02 PREPARATION

A. General: All existing concrete floor slabs to receive new sealer top coat shall be clean and free of all oil, grease, dirt, and any substance that might act as a bond breaker. Mechanically clean if necessary using shot blasting or other approved cleaning method. Acid etching and the use of sweeping compounds and solvents are NOT acceptable.

B. Clean existing concrete slab surfaces to receive new floor finish.

3.03 CURING

A. General
1. The Contractor shall use all necessary precautions to keep cracking of all concrete work to an absolute minimum. Beginning immediately after placement, protect concrete from premature drying, excessively hot and cold temperatures, and mechanical injury.
2. Cure floor surfaces in accordance with ACI 308R.
3. Maintain curing procedures used for seven (7) days at minimum temperature of 50 degrees F.; if mean daily temperature drops below 40 degrees F. during this period, extend curing period an equal number of days or provide temporary heat or additional protection to maintain specified minimum temperature of air in contact with concrete.

B. Temperature, Wind & Humidity: When exterior concrete slab placements are subjected to high temperatures, wind and/or low humidity the Architect may require the use of the specified evaporation retarder to minimize plastic cracking. The compound may be required to be applied one or more times during the finishing operation. The initial application is usually made after the strike-off operation.

1. Cold Weather:
    a. When the mean daily temperature outdoors is less than 40 degrees F, maintain the temperature of the concrete between 50 degrees F and 70 degrees F for the required curing period.
    b. When necessary, provide a proper and adequate heating system capable of maintaining the required heat without injury due to concentration of heat.
    c. Do not use combustion heaters during the first 24 hours unless precautions are taken to prevent exposure of the concrete to exhaust gases which contain carbon dioxide.
    d. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
    e. Only the specified non-corrosive non-chloride accelerator shall be used. Calcium chloride, thiocyanates or admixtures containing more than 0.05% chloride ions are not permitted.
    f. Hot Weather: When necessary, provide wind breaks, fog spraying, shading, sprinkling, ponding, or wet covering with a light colored material, applying as quickly as concrete hardening and finishing operations will allow.
    g. Rate of Temperature Change: Keep the temperature of the air immediately adjacent to the concrete during and immediately following the curing period as uniform as possible and not exceeding a change of 5 degrees F in any one hour period, or 50 degrees F in any 24 hour period.

C. Curing Walls & Formed Surfaces
    1. Where forms are exposed to the sun, minimize moisture loss by keeping forms wet until they can be removed safely.
    2. In hot weather, immediately after forms have been removed, cure by continuous sprinkling or covering with absorptive mat or fabric kept continuously wet or use vapor mist bath. In freezing weather, protect in accordance with ACI 301.

D. Curing Exterior Slabs: Spray slabs with liquid membrane-forming compound or moisture retaining cover specified above for slabs, applied at not less than the manufacturer's specified and recommended rate.

E. Curing Interior Slabs to be Left Exposed and Sealed:
    1. Spray new slab surfaces with specified and selected liquid membrane-forming curing and sealing compounds specified above for respective applications, applied at not less than the manufacturer's specified and recommended rate and in accordance with manufacturer's written instructions.
    2. After curing compound has fully dried per manufacturer's recommendations, Contractor shall cover such slab surfaces with protective sheeting as necessary to avoid damage due to subsequent construction work and prior to final finishing of such floor surfaces as specified below.

F. Protection Paper For Recessed Slab Surfaces to Receive Tile Setting Beds: Install appropriate sheeting as specified above, installed over slabs immediately upon completion of surface finish work as work proceeds. Lap 3 inches and tape or otherwise seal edges and hold down by adequate means to prevent dislodgment. Maintain covering for a minimum of seven (7) days. Repair any damage to membrane which allows escape of slab moisture. Maintain membrane upkeep until full removal.

G. Curing All Other Interior Slabs
    1. Spray new slab surfaces with specified and selected liquid membrane-forming curing and sealing compounds specified above for respective applications, applied at not less than the manufacturer's specified and recommended rate and in accordance with manufacturer's written instructions.

2. After curing compound has fully dried per manufacturer's recommendations, Contractor shall cover such slab surfaces with protective sheeting as necessary to avoid damage due to subsequent construction work and prior to final finishing of such floor surfaces as specified below.

3.04 APPLIED FINISHES

A. Sealer Coat Finish For Interior Slabs to be Left Exposed and Sealed: Just prior to Substantial Completion and following final cleaning in said spaces, spray new slab surfaces with specified sealer, applied at not less than the manufacturer's specified and recommended rate and in accordance with manufacturer's written instructions

3.05 PROTECTION

A. Protection From Mechanical Injury
   1. During the curing period, protect all concrete during period from all damaging mechanical disturbances, more especially load stresses, heavy shock and excessive vibration.
      a. Protect finished concrete surfaces from damage from construction equipment, materials and methods, from application of curing procedures, and from rain and running water.
      b. Do not permit traffic over unprotected floor surfaces.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Water cleaning of brick veneer surfaces following tuckpointing repair work.

B. Paint stripping and cleaning of painted exterior brick veneer surfaces as designated on drawing sheets AD-201 and AD-202.

C. Repointing mortar joints at exterior building walls as designated on drawing sheets AD-201 and AD-202.

1.02 RELATED REQUIREMENTS

A. Section 04 05 11 - Masonry Mortar And Grout.

B. Section 04 20 00 - Unit Masonry: New concrete masonry unit wall and infill work.

C. Section 07 19 30 – Water Repellent Treatment.

1.03 DEFINITIONS

A. Low-Pressure Spray: 100 to 400 psi; 4 to 6 gpm.

B. Medium-Pressure Spray: 400 to 800 psi; 4 to 6 gpm.

C. High-Pressure Spray: 800 to 1500 psi; 4 to 6 gpm.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene one week prior to commencing work of this section.
   1. Require attendance of parties directly affecting work of this section.
   2. Review conditions of installation, installation procedures, and coordination with related work.

1.05 SUBMITTALS

A. Product Literature: Submit manufacturer's product literature and application instructions for use of for all cleaning materials

B. Manufacturer's Instructions: For cleaning materials, indicate special procedures, conditions requiring special attention.

C. Cleaning Program: Describe cleaning process in detail, including materials, methods, and equipment to be used and protection of surrounding materials on building and Project site, and control of runoff during operations.

D. Cleaning Program: Describe cleaning and paint stripping processes in detail, including materials, methods, and equipment to be used and protection of surrounding materials on building and Project site, and control of runoff during operations.

1.06 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with all local, state and federal safety and environmental requirements, local codes and all applicable laws and regulations.

B. Restorer: Company specializing in masonry restoration with minimum three years of documented experience.

C. Work Plan: Prior to beginning Work, submit Work Plan to Architect and Owner for approval. Do not proceed without Architect’s written approval of Work Plan.
   1. Indicate methods for storing, transporting and mixing chemicals.
   2. Indicate methods for protecting adjacent surfaces not being cleaned during cleaning.
   3. Indicate method for protecting landscape features and materials.

4. Indicate method for protecting surrounding areas from excess run-off from cleaning.
5. Indicate methods for clean up and disposal of excess materials.

1.07 MOCK-UP

A. Restore and repoint an existing masonry wall area sized 8 feet (2.40 m) long by 6 feet (2 m) high; include in mock-up area instances of mortar, accessories, wall openings, and flashings.

B. Brick Cleaning: Clean a 10 ft (3 m) by 10 ft (3 m) panel of wall to determine extent of cleaning.
1. Notify Architect 72 hours in advance of when sample cleaning will be carried out.
2. Locate where directed.
3. Repeat cleaning as necessary, using different cleaning methods for up to three different panels.

C. Paint Stripping: Clean a 10 ft (3 m) by 10 ft (3 m) panel of painted brick wall to determine type of paint removal method and material best suited to remove the paint.
1. Notify Architect 72 hours in advance of when sample paint stripping will be carried out.
2. Locate where directed.
3. Repeat the processes and alter methods and materials as required to achieve paint stripping and cleaning results that are satisfactory to the Architect.

D. Acceptable panels and procedures for each type of cleaning and restoration work employed will become the standard for work of this section.

E. Mock-ups may remain as part of the Work.

1.08 DELIVERY, STORAGE, AND HANDLING

A. All materials shall be delivered to the job site in unopened containers as shipped by the manufacturer. The Architect shall be permitted to view delivered materials in their original unopened containers.
1. Store, handle and protect all materials from damage, moisture, dirt, and intrusion of foreign matter.
2. Immediately re-seal containers after partial use.
3. Remove and replace damaged materials.

B. Store blast medium materials in manufacturer's packaging.

1.09 FIELD CONDITIONS

A. Materials shall be used only at the manufacturer's recommended temperature tolerances for masonry materials.
1. The work shall be protected during hot weather from premature or rapid drying.
2. Work shall not be permitted in freezing weather, or when temperature of the air is expected to fall below 40 degrees F within the following seven (7) days.

B. Avoid cleaning during periods of extreme or excessive winds. Do not blast clean or use process creating dust, dirt, or overspray , when wind is over 10 mph (16 kph).

1.10 PROTECTION

A. During cleaning process take all precautions necessary to avoid staining or streaking of masonry adjacent to areas being cleaned. Check condition of adjacent materials frequently during cleaning process, and stop all cleaning if discoloration or alteration of surface texture is observed.
1. Protect all architectural detail elements and surfaces from breakage, marring, abrasion, disfigurement and/or other damage during the staging or moving of lifts and/or other access equipment to building.

2. Immediately notify Architect of any such damage for evaluation prior to continuing work sequence.
3. Protection of Existing Surfaces:
    a. Building surfaces that will not be cleaned shall be protected from any run down of treatment solutions; protect with heavy polyethylene sheeting. Top edges shall be sealed to building facings with either removable adhesive tape or a prior accepted method of sealing protective sheeting to brick surfaces.
    b. All masonry shall be pre-wetted with clean potable water immediately prior to application of cleaning agent to protect brick from deep penetration of solutions.

B. When cleaning from scaffolding in traffic areas, drape scaffolding with plastic or burlap to reduce spray drift.

C. Channel runoff and control residue from cleaning with loose sand or sandbags as required. Allow liquid runoff to evaporate, and dispose of solid materials appropriately and as acceptable to the governing authorities.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Restoration and Cleaning Chemicals:
1. Diedrich Technologies, Inc: www.diedrichtechnologies.com.
2. PROSOCO: www.prosoco.com.
3. Hydrochemical Techniques, Inc.: www.hydroclean.com.
4. Substitutions: See Section01 61 00 - Common Product Requirements.

2.02 CLEANING MATERIALS

A. Water shall be potable, non-staining and free of materials detrimental to all surfaces to be cleaned

B. Acidic Cleaner For Brick Veneer: Manufacturer's standard acidic masonry restoration cleaner composed of hydrofluoric acid blended with other acids, detergents, wetting agents, and inhibitors.
1. Products:
    a. ProSoCo; Sure Klean Restoration Cleaner.
    b. Diedrich Technologies Inc.; 101 Masonry Restorer or 101G Granite, Terra Cotta, and Brick Cleaner.
    c. Hydrochemical Techniques, Inc.; Hydroclean Brick, Granite, Sandstone and Terra Cotta Cleaner (HT-626).

C. Paint Remover: Solvent or alkaline based paint remover as determine through mock-up testing process.

2.03 MISCELLANEOUS MATERIALS

A. Liquid Strippable Masking Agent: Manufacturer's standard liquid, film-forming, strippable masking material for protecting glass and metal surfaces from damaging effects of acidic and alkaline masonry cleaners.
1. Products:
    a. ProSoCo; Sure Klean Strippable Masking or Sure Klean Strippable Acid Stop.
    b. Diedrich Technologies Inc.; Diedrich Acid Guard.
    c. American Building Restoration Products, Inc.; LM 130 Acid Shield.

B. Provide other materials not specifically described but required for complete and proper performance of the Work. Use new materials of first quality of their respective kinds.

2.04 MORTAR MATERIALS

A. Comply with requirements of Section 04 05 11.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces to be cleaned and restored are ready for work of this section. Do not begin the work of this Section until unsatisfactory conditions have been corrected.

B. Inspect surfaces for existing damage, make a complete listing of preconditions for review by the Architect and Owner.

C. Prior to beginning cleaning operations, confirm that all joints are caulked and sound to ensure that water does not infiltrate the building wall.

3.02 PREPARATION

A. Protect surrounding elements from damage due to restoration procedures. Comply with the chemical cleaner manufacturer's recommendations for protecting building surfaces against damage from exposure to their products.

B. Carefully remove and store removable items located in areas to be restored, including fixtures, fittings, finish hardware, and accessories; reinstall upon completion.

C. Separate areas to be protected from restoration areas using means adequate to prevent damage.

D. Mask immediately adjacent surfaces with material that will withstand cleaning and restoration procedures.

E. Protect unfinished work when stopping for the day.

F. When using cleaning methods that involve water or other liquids, install drainage devices to prevent runoff over adjacent surfaces unless those surfaces are impervious to damage from runoff.

G. Do not allow cleaning runoff to drain into sanitary or storm sewers.

H. Neutralize and collect alkaline and acid wastes for proper disposal off Owner's property.

I. Dispose of runoff from cleaning operations by legal means and in a manner that prevents soil erosion, undermining of paving and foundations, and water penetration into building interiors.

3.03 REPOINTING

A. Perform repointing prior to cleaning masonry surfaces.

B. Cut out loose or disintegrated mortar in joints to minimum 1/2 inch (6 mm) depth or until sound mortar is reached.

C. Use hand tools only. Do not use power tools.

D. Do not damage masonry units.

E. When cutting is complete, remove dust and loose material by brushing.

F. Premoisten joint and apply mortar. Pack tightly in maximum 1/4 inch (6 mm) layers. Form a smooth, compact concave joint to match existing.

G. Moist cure for 72 hours.

3.04 GENERAL CLEANING REQUIREMENTS

A. Use only those cleaning methods indicated for each masonry material and location.
   1. Do not use wire brushes or brushes that are not resistant to chemical cleaner being used. Do not use plastic-bristle brushes if natural-fiber brushes will resist chemical cleaner being used.
   2. Use spray equipment that provides controlled application at volume and pressure indicated, measured at spray tip; equip units with working pressure gages. Adjust pressure and volume to ensure that cleaning methods do not damage masonry.
   3. For chemical cleaner spray application, use low-pressure tank or chemical pump suitable for chemical cleaner indicated, equipped with cone-shaped spray tip.
   4. For low-pressure water spray application, use fan-shaped spray tip that disperses water at an angle of 25 to 45 degrees.
   5. For high-pressure water spray application, use fan-shaped spray tip that disperses water at an angle of 15 to 30 degrees.

B. Perform each cleaning method indicated in a manner that results in uniform coverage of all surfaces, including corners, moldings, and interstices, and that produces an even effect without streaking or damaging masonry surfaces.

C. Water Spray Applications: Unless otherwise indicated, hold spray nozzle at least 6 inches from surface of masonry and apply water in horizontal back and forth sweeping motion, overlapping previous strokes to produce uniform coverage.

D. Chemical Cleaner Application Methods: Apply chemical cleaners to masonry surfaces to comply with chemical cleaner manufacturer's written instructions; use brush or spray application methods, at Contractor's option. Do not spray apply at pressures exceeding 50 psi. Do not allow chemicals to remain on surface for periods longer than those indicated or recommended by manufacturer.

E. Rinse off chemical residue and soil by working upward from bottom to top of each treated area at each stage or scaffold setting. Periodically during each rinse, test pH of rinse water running off of cleaned area to determine that chemical cleaner is completely removed.

F. After cleaning is complete, remove protection no longer required. Remove tape and adhesive marks.

3.05 RESTORATION CLEANING - UNPAINTED BRICK VENEER

A. Surfaces include all existing unpainted brick veneer which is to be left exposed (and sealed) in the completed work.

B. Clean surfaces and remove large particles with wood scrapers or non-ferrous wire brush.

C. Spray coat masonry with restoration cleaner, mixed into solution in accordance with manufacturer's instructions.

D. Provide a second application if required to match mock-up area.

E. Allow sufficient time for solution to remain on masonry and agitate with soft fiber brush or sponge.

F. Rinse from the bottom up with potable water applied at 400 psi (2 750 kPa) and at a rate of 4 gal/min (16 L/min).

3.06 PAINT STIPPING CLEANING

A. A viscous paint removal compound shall be applied by brush, spray or roller.

B. After standing on the surface for 30 minutes to 8 hours, as determined by mock-up evaluation, rinse effluent using high pressure water spray per stripping manufacturer's instructions.

C. The pressure nozzle shall be held at a distance and angle from the substrate to prevent damaging the masonry surface.

D. Paint removal shall commence at the bottom and shall continually progress up the face of the wall.

E. The surfaces shall be rinsed with clean water to remove all residue. The substrate shall be rinsed until the rinse water is neutral (pH7).

F. Repeat the procedures until the specified level of paint removal is attained. If necessary, clean the substrate with an appropriate cleaner to prevent "ghosting".

3.07 CLEANING

A. Immediately remove stains, efflorescence, or other excess resulting from the work of this section.

B. Remove excess mortar, smears, and droppings as work proceeds and upon completion.

C. Clean surrounding surfaces.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Mortar and grout for new CMU wall construction and infills.

B. Tuckpointing mortar for repair of portions of existing brick masonry.

1.02 RELATED REQUIREMENTS

A. Section 04 01 00 - Maintenance of Masonry: Tuckpointing and cleaning of exterior masonry to be left exposed in the finished work.

B. Section 04 20 00 - Unit Masonry: Installation of mortar and grout for new concrete masonry unit wall construction and wall infill work.

C. Section 08 11 13 - Hollow Metal Doors and Frames: Hollow metal door frames installed in new masonry.

1.03 REFERENCE STANDARDS

A. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures 2016.

B. ASTM C91/C91M - Standard Specification for Masonry Cement 2018.

C. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar 2018.

D. ASTM C150/C150M - Standard Specification for Portland Cement 2018.

E. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes 2018.

F. ASTM C270 - Standard Specification for Mortar for Unit Masonry 2019.

G. ASTM C387/C387M - Standard Specification for Packaged, Dry, Combined Materials for Concrete and High Strength Mortar 2017.

H. ASTM C404 - Standard Specification for Aggregates for Masonry Grout 2018.

I. ASTM C476 - Standard Specification for Grout for Masonry 2018.

J. ASTM C780 - Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry 2019.

1.04 SUBMITTALS

A. Product Data: Include design mix and indicate whether the Proportion or Property specification of ASTM C270 is to be used. Also include required environmental conditions and admixture limitations.

B. Reports: Submit reports on mortar indicating compliance of mortar to property requirements of ASTM C270 and test and evaluation reports per ASTM C780.

C. Material, Mix Certificates: If mortar and grout are plant-mixed, furnish certificate from supplier attesting to compliance with specified requirements.

1.05 QUALITY ASSURANCE

A. Comply with provisions of TMS 402/602, except where exceeded by requirements of Contract Documents.

B. Inspections & Tests

1. Field testing of grout and pre-construction and construction-site testing of mortar covered under Section 01 45 29.
2. Contractor shall furnish mortar and grout materials for testing; follow special inspector's directions for any required jobsite alterations to mortar and grout mixes.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Maintain packaged materials clean, dry, and protected against dampness, freezing, and foreign matter.

1.07 FIELD CONDITIONS

A. Maintain materials and surrounding air temperature to minimum 40 degrees F (5 degrees C) prior to, during, and 48 hours after completion of masonry work.

B. Maintain materials and surrounding air temperature to maximum 90 degrees F (32 degrees C) prior to, during, and 48 hours after completion of masonry work.

PART 2 PRODUCTS

2.01 MATERIALS

A. Packaged Dry Material for Mortar for New Unit Masonry: Premixed Portland cement, hydrated lime, and sand; complying with ASTM C387/C387M and capable of producing mortar of the specified strength in accordance with ASTM C270 with the addition of water only.
   1. Type: Type S.
   2. Color: Standard gray.
   3. Water repellent mortar for use with water repellent masonry units.
   4. Manufacturers:
      a. GCP Applied Technologies "Dry-Block" Mortar Admixture: www.gcpat.com.
      b. Substitutions: See Section 01 61 00 - Common Product Requirements.

B. Packaged Dry Material for Mortar for Repointing: Premixed Portland cement, hydrated lime, and graded sand; capable of producing Type O mortar in accordance with ASTM C270 with the addition of water only.
   1. Color: Standard gray.

C. Portland Cement: ASTM C150/C150M.
   1. Type: Type I - Normal; ASTM C150/C150M.
   2. Color: Standard gray.

D. Hydrated Lime: ASTM C207, Type S.

E. Mortar Aggregate: ASTM C144.

F. Grout Aggregate: ASTM C404.

G. Water: Clean and potable.

2.02 MORTAR TYPES FOR UNIT MASONRY WORK

A. General
   1. All mortar compressive strengths and types listed hereinafter for various uses shall be those conforming to and referenced in ASTM C270 for mortar for brick masonry and CMU block setting mortar.
   2. Measure materials for mortar in method that specified or designed proportions can be controlled and accurately maintained.

B. Mortar Types (per ASTM C270):
   1. For CMU Wall Setting Mortar: Type S.
   2. For Exterior Brick Tuckpointing Mortar: Type N.

C. Average Compressive Strengths (at 28 days):
   1. Type S: 1800 psi.

2. Type N: 750 psi.

D. Mortar Proportions (Parts) By Volume (C270)
   1. Mortar Type S:
      i. Portland cement: 1
      i. Hydrated lime or lime putty: over 1/4 to 1/2
      i. Aggregate (damp, loose, passing a 16 mesh sieve): 2-1/4 to 3 times sum of cement and lime volumes.
   2. Tuckpointing Mortar (Type N):
      i. Portland cement: 1
      i. Hydrated lime, Type N: 2
      i. Aggregate (damp, loose, passing a 16 mesh sieve): 6 times sum of cement and lime volumes.
   3. Integral Waterproofing Admixture: Add to mortar used for all exterior masonry work and all masonry work at shower areas.
   4. Mortar Design: Exact proportions of mortar mixes specified herein to be determined by an approved independent laboratory using ingredients proposed to be furnished on the work and following procedures set forth under Section 01 45 29 for pre-construction evaluation of mortar mixes.

2.03 GROUT TYPES FOR REINFORCED MASONRY WORK

A. General
   1. Grout compressive strengths and types listed hereinafter for various uses shall be those conforming to and referenced in ASTM C476.
   2. Design to attain (1) minimum compressive strength of 2500 psi in 28 days, average of three 3-1/2 x 3-1/2 x 7 inch cubes, (2) water retention (flow after suction, min., percent of original flow) of 70, and (3) air content (volume, max. percent) of 18.
   3. Measure materials for grout in method that specified or designed proportions can be controlled and accurately maintained.

B. Grout Proportions (Parts) By Volume (C476)
   1. Fine Aggregate Grout:
      i. Portland cement: 1
      i. Hydrated lime or lime putty: 0 to 1/10
      i. Fine aggregate, damp, loose: 2-1/4 to 3 times sum of cement and lime

2.04 MORTAR MIXING

A. Thoroughly mix mortar ingredients using mechanical batch mixer, in accordance with ASTM C270 and in quantities needed for immediate use.

B. Maintain sand uniformly damp immediately before the mixing process.

C. Add admixtures in accordance with manufacturer's instructions; mix uniformly.

D. Do not use anti-freeze compounds to lower the freezing point of mortar.

E. If water is lost by evaporation, re-temper only within two hours of mixing.

2.05 GROUT MIXING

A. Mix grout in accordance with ASTM C94/C94M.

B. Thoroughly mix grout ingredients in quantities needed for immediate use in accordance with ASTM C476 for fine grout.

PART 3 EXECUTION

3.01 PREPARATION

A. Verify that inside of hollow metal door frames to be grouted are coated with bituminous coating, prior to installation of grout specified below.

B. Coordinate frame anchor placement with wall construction.

3.02 APPLICATION

A. Mortar Types & Uses:
   1. Use Type S mortar in conjunction with all unit masonry work specified in Section 04 20 00.
   2. Use tuckpointing mortar for tuckpointing joints in existing brick walls where wall repair work occurs.

B. Grout Types & Uses: Use fine grout for grouting voids of all concrete masonry unit work and for grouting all hollow metal frames set in masonry construction.

3.03 INSTALLATION

A. Install mortar and grout to requirements of section(s) in which masonry is specified.

B. Work grout into masonry cores and cavities to eliminate voids.

C. Do not install grout in lifts greater than 16 inches (400 mm) without consolidating grout by rodding.

D. Do not displace reinforcement while placing grout.

E. Remove excess mortar from grout spaces.

3.04 GROUTING

A. Perform all grouting by means of low-lift technique. Do not employ high-lift grouting.

B. Low-Lift Grouting:
   1. Limit height of pours to 48 inches (1200 mm).
   2. Limit height of masonry to 16 inches (400 mm) above each pour.
   3. Pour grout only after vertical reinforcing is in place; place horizontal reinforcing as grout is poured. Prevent displacement of bars as grout is poured.
   4. Place grout for each pour continuously and consolidate immediately; do not interrupt pours for more than 1-1/2 hours.

C. Grout hollow metal frames to be set in masonry construction, using hand trowel methods.

3.05 FIELD QUALITY CONTROL

A. Inspections & Tests: Field inspection and testing shall be performed under provisions of Section 01 45 29. Contractor shall comply with the requirements of the Owner's testing and inspection agency.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. New interior, grouted and reinforced concrete masonry unit wall assemblies

B. New exterior, fully grouted concrete masonry unit wall infill where existing door and frame assembly has been removed.

C. Masonry block reinforcing.

D. Masonry accessories.

1.02 RELATED REQUIREMENTS

A. Selective building demolition associated with repair work of this Section covered under section 02 41 19.

B. Reinforcing steel for dowels for tying new masonry work to concrete construction specified under Section 03 20 00.

C. Mortar covered under Section 04 05 11.

D. Interior painting systems for certain CMU covered under Section 09 91 00.

E. Interior epoxy coating applied to designated CMU wall surfaces covered under Section 09 96 56.

1.03 QUALITY ASSURANCE

A. Inspections & Tests: Covered under Section 01 45 29.

B. Pre-Installation Meeting

1. Approximately two weeks prior to scheduled commencement of masonry installation and associated work, meet at project site with masonry subcontractor, associated finish coatings Installer(s), Architect, Owner, and other representatives directly concerned with performance of the work including (as applicable) test agencies and governing authorities.
2. Review foreseeable methods and procedures related to masonry work, including, but not necessarily limited to, the following:
    a. Inspect and discuss condition of substrates, penetrations and other preparatory work performed by other trades.
    b. Review masonry requirements (drawings, specifications and other contract documents).
    c. Review required submittals, both completed and yet to be completed.
    d. Review and finalize construction schedule related to masonry work and verify availability of materials, Installer's personnel, equipment and facilities needed to make progress and avoid delays.
    e. Review required inspection, certifying and material usage accounting procedures.
    f. Review weather and forecasted weather conditions as they may apply, and procedures for coping with unfavorable conditions, including requirements for temporary protection.

1.04 SUBMITTALS

A. Certificates: For masonry work furnish for approval, attesting conformance to specified ASTM Designation and Type for each different type masonry units.

B. Manufacturer's Data: Furnish product information in accordance with Section 01 33 00, for masonry products. Include manufacturer's specifications including installation instructions and general recommendations for the types of products required.

1.05 PRODUCT DELIVERY, STORAGE & HANDLING

A. Material Delivery, Storage, Protection & Breakage
   1. Deliver all materials dry; store all new and re-useable materials at site off ground, adequately covered to protect from moisture and other damage until placed in the work.
   2. Contractor shall allow for and discard all chipped or broken masonry.

1.06 JOB CONDITIONS

A. Protection Of Work, Weather & Work Suspensions
   1. Cold Weather Work:
      a. When temperature is or expected to be below 40 degrees F during and for 48 hours after placing, heat materials and provide adequate enclosures to maintain temperature above 40 degrees F; obtain approval of protection methods prior to proceeding.
      b. Protect all masonry repair work from freezing for 4 days after laying, in approved manner.
      c. Use NO antifreeze admixtures or calcium chloride in mortar for any masonry work.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Concrete Masonry Block Units
   1. Furnish ASTM C90 Type I moisture controlled units of medium weight with sand and gravel aggregate, f'c = 1900 psi minimum for block units; 8 inch x 16 inch standard face size; 6-inch thick block stock stretcher and half size units in square edge configuration, all as required for new interior wall work and for exterior wall infill work.
   2. For units fully concealed behind other wall finishes, and for all interior exposed surfaces, furnish smooth-faced natural gray colored unscored block units. Furnish with bullnosed edges at door openings and exposed outside corners.
   3. Furnish bond beam units for continuous bond beam courses as shown or otherwise required.

B. Masonry Ties & Accessories
   1. Galvanized (zinc) Coating: Where specified hereinafter, conform to ASTM A153 Class B-2, 1.50 oz./sq.ft. minimum coating weight.
   2. Bar Positioners for Fully Grouted CMU: Furnish Hohmann & Barnard, Inc. "RB" Rebar Positioner or Wire-Bond "Corelock" double rebar vertical bar positioners, or approved, hot dipped galvanized.
   3. Furnish all other specialty ties as detailed for special conditions.

C. Bars For Vertical & Horizontal Reinforcing
   1. Furnish vertical and horizontal reinforcing of ASTM A615 Grade 60 steel reinforcing bars, of sizes and quantities shown for walls and tying to steel dowels set into surrounding wall structure; furnish as shown and noted on Structural Drawings and related Details.
   2. Vertical bars to be of lengths and laps as required for low-lift grout work in lifts not exceeding five feet; length of bar laps as shown on Drawings.
   3. Furnishing and placement of dowels associated with masonry work, to be set into concrete structures as indicated on Structural Drawings and specified therefor under Section 03 20 00, shall be the responsibility of masonry subcontractor for work of this Section.
   4. Furnish additional reinforcing as specified under Structural Notes or as otherwise indicated on Structural Drawings.

D. Deformed Bar Anchors: Furnish deformed bars meeting requirements set forth in ASTM Standard A496; sizes as indicated on Structural Drawings in each case for respective epoxy anchors.

E. Threaded Rod Epoxy Anchors: ASTM F1554, Grade 36, Class 2A, 5/8 inch diameter, of lengths shown on Structural Drawings for each application shown. Furnish complete with nuts and washers.

F. Dowel Bar & Threaded Rod Anchor Adhesive: Furnish vinylester blended anchor adhesive of the following types for their respective conditions; refer to Structural Notes for additional requirements.
   1. Solid Grouted Masonry Adhesive Anchors: Hilti Hit-Hy 270 or Simpson Strong Tie “SET XP”, or approved.
   2. Solid Grouted Masonry Adhesive Anchors: Hilti Hit-Hy 270 with screen tube or Simpson Strong Tie “SET XP” with screen tube, or approved.

G. Cleaning Solution: Furnish as recommended by masonry manufacturer for the various masonry types and colors, as approved.

PART 3 - EXECUTION

3.01 INSPECTION

A. Inspection Of Prior Work
   1. Inspect bearing surfaces and related work in place for existing conditions.
   2. See that dowels, masonry anchors, shelf angles and weld plates, as applicable, are properly placed.
   3. If deficiencies or errors are found, notify those trades responsible that corrections are made as approved before starting work.

3.02 PREPARATION

A. General
   1. Clean top surfaces of bearing surfaces and work in place removing all foreign material before starting or resuming work.
   2. Remove loose mortar from surrounding brick and block units at perimeter of openings to be infilled.
   3. Direct and coordinate placement of metal anchors supplied for installation under other sections.
   4. Wet concrete masonry units only as required to assure watertight mortar joint bond.

B. Steel Dowels & Threaded Rod Anchors:
   1. Install steel dowel bars for connecting new rebar reinforcement to existing wall structure as shown, of sizes, length and spacing as indicated on Drawings.
   2. Install steel threaded rod anchors for connecting new structural members to existing wall structures as shown on Structural Drawings, of sizes, length and spacing as indicated on Drawings.
   3. Install using epoxy adhesive as specified above or otherwise noted in Structural Notes, following manufacturer's recommendations for all installation requirements.

3.03 MASONRY INSTALLATION

A. Workmanship, General
   1. Except as otherwise noted or indicated, lay all work to true plumb and level lines, maintaining and aligning with existing coursing patterns at each opening infill.

2. Use stock units wherever possible; where cutting is required use high speed masonry power saw. Masonry units utilized on an exposed finish surface shall be free of chips, breakage, or other imperfections.
3. Unless otherwise noted, lay all masonry work in a full bed of mortar, head and vertical joints completely filled.
4. Use mortar type specified under Section 04 05 11 for the work as described hereinafter.
5. Make all joints approximately 3/8 inch width.
    a. For all work to remain exposed in the finished work, tool all exposed joints smooth with steel tool to a concave profile matching existing adjacent joints.
    b. For concealed joints, tool joints smooth with steel tool, leveled flush with face of masonry units.

B. Concrete Masonry Block Unit Installation
1. General:
    a. At infill work, prepare existing openings to be infilled. Lay all work to true plumb and level lines, maintaining existing established module, coursing pattern and uniform joints. Lay infill units in coursing patterns matching existing concrete masonry unit coursing pattern; all vertical and horizontal joints to be aligned to the greatest extent possible.
    b. Lay units by face shell bedding method, in running bond with head joints conforming to IBC Section 2104, of masonry types, face patterns, and size courses as indicated on Drawings for the various wall structures. Install with all open cells placed vertically.
    c. Lay continuous bond beam courses in locations indicated.
    d. Make all joints approximately 3/8 inch width.
    e. Anchor units to wall and foundation structures as shown.
    f. Form outside corners and exposed corners at door openings with bullnosed corner units.
2. Built-in Work:
    a. As the work progresses, build in built-in items specified under this and other sections of these specifications. Fill in solidly with masonry around built-in items. Extend drainage piping at bench units into gravel as shown.
    b. Install control joints, cell vent weeps, air vents, thru-wall flashing, sheet metal flashings, truss reinforcement with veneer anchors, and veneer ties as work proceeds, as applicable, installed as shown for the various conditions and/or otherwise specified herein.
    c. As work progresses, fill hollow metal frames solid with grout. Leave space between hollow metal frames and exterior masonry for subsequent application of sealant.
3. Finishing Mortar Joints: For work to be concealed and for interior work to be left exposed, tool all joints smooth with steel tool, leveled flush with face of masonry units.

C. Installation Of Air Vents: Install air vent tubes in bedding mortar joint of top course of veneer units at building walls, with one tube vent located directly above each cell vent weep; install elsewhere where indicated.

D. Installation Of Masonry Reinforcing
1. Install deformed reinforcing steel bars vertically and horizontally in cells of concrete masonry unit infill work, sized and spaced as shown. Engage reinforcing with bar dowels as shown.
2. Remove inside face of top course units as indicated and required for placement of grout.

E. Grout Work: Install grout specified in Section 04 05 11, completely filling voids of new CMU around vertical reinforcing.

3.04 POINTING & CLEANING

A. Pointing: On completion of new work, point all exposed masonry work surfaces filling all holes and cracks. Remove all loose mortar and defective work and re-point as approved.

B. Cleaning

1. Clean all surfaces of concrete masonry unit surfaces which are to be left exposed and painted. Clean surfaces with cleaning solution specified above.
2. Wet surfaces with water before applying cleaning solution; after application of cleaning solution, water rinse all solution off the surface.
3. Protect adjacent materials from damage from cleaning solution.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. General Description Of Work: The extent of structural steel work is indicated on Structural Drawings, which shall also include, whether specifically indicated or not on Structural Drawings, all steel items including steel angles and bent plates designated on Architectural Drawings with references to the Structural Drawings. Notwithstanding the above description of structural steel items, and except where specified elsewhere in these specifications, all miscellaneous steel items having a thickness of 12 gauge or heavier shall be designated as structural steel and provided under work of this Section.

B. Structural steel canopy framing members.

C. Structural steel beam and column support members.

D. Post-installed anchors.

E. Base plates, shear stud connectors.

F. Grouting under base plates.

1.02 RELATED REQUIREMENTS

A. Section 05 31 00 - Steel Decking.

B. Section 05 50 00 - Metal Fabrications.

C. Field prime and finish painting of certain exposed structural steel members covered under Section 09 91 00.

1.03 REFERENCE STANDARDS

A. AISC (MAN) - Steel Construction Manual; American Institute of Steel Construction, Inc.; 2011; hereinafter called "Standard No. 1". Unless otherwise noted, furnish material conforming to the Standard No. 1 of types shown on the Structural Drawings.

B. AISC 303 - Code of Standard Practice for Steel Buildings and Bridges; American Institute of Steel Construction, Inc.; 2016; hereinafter called "Standard No. 2".

C. ASTM A29/A29M - Standard Specification for General Requirements for Steel Bars, Carbon and Alloy, Hot-Wrought; 2016.

D. ASTM A36/A36M - Standard Specification for Carbon Structural Steel 2014.

E. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless 2020.

F. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products 2017.

G. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware 2016a.

H. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes 2021.

I. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing 2014.

J. ASTM A563 - Standard Specification for Carbon and Alloy Steel Nuts 2015.

K. ASTM A992/A992M - Standard Specification for Structural Steel Shapes 2020.

L. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi

Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength 2019, with Editorial Revision (2020).

M. ASTM F436/F436M - Standard Specification for Hardened Steel Washers Inch and Metric Dimensions 2019.

N. ASTM F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength 2020.

O. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination 2012.

P. AWS D1.1/D1.1M - Structural Welding Code - Steel 2020.

Q. RCSC (HSBOLT) - Specification for Structural Joints Using High-Strength Bolts; Research Council on Structural Connections 2014, with Errata (2015).

R. Standard Specifications For Surface Preparation For Priming: Steel Structures Painting Council (SSPC) "SSPC-SP1 Solvent Cleaning", hereinafter called "SP1"; "SSPC-SP3 Power Tool Cleaning", hereinafter called "SP3"; and "SSPC-SP10 Near White Blast", hereinafter called "SP10".

S. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic") 2002 (Ed. 2004).

1.04 SUBMITTALS

A. Shop Painting Submittals
   1. Submit list of products to be used, giving the brand name, product name, product number, name and address of manufacturer.
   2. Submit copies of manufacturer's technical data covering each product giving percentage of volume solids, shelf life, curing time, recommended dry film thickness, mixing, thinning and application instructions.
   3. Submit copies of certified test report showing performance characteristics.

B. Shop Drawings
   1. Furnish for approval in accordance with Section 01 33 00. Shop drawings, stamped by a Professional Engineer licensed in the State of Washington, shall be required for all fabricated structural steel elements.
   2. Include complete information for the fabrication and erection of each component including all required dimensions, details, necessary accessory items as described in the Standard No. 1, the location, type and size of bolts, welds, member sizes and lengths, and connection details.
   3. Verify all applicable dimensions; coordinate with connected and adjacent work.
   4. Use AWS standard welding symbols.
   5. Shop drawings shall not be reproductions of contract drawings.

C. Manufacturer's Mill Certificate: Certify that products meet or exceed specified requirements.

D. Welders Certificates: Certify welders employed on the Work, verifying AWS and WABO qualification within the previous 12 months.

1.05 QUALITY ASSURANCE

A. Standard Specifications & Code Of Practice
   1. Standard Specifications: Steel Construction Manual; hereinafter called "Standard No. 1". Unless otherwise noted, furnish material conforming to the Standard No. 1 of types shown on the Structural Drawings.
   2. Code of Practice: AISC "Code of Standard Practice for Steel Buildings and Bridges".

B. Standard Specifications For Surface Preparation For Priming: Steel Structures Painting Council (SSPC) "SSPC-SP1 Solvent Cleaning", hereinafter called "SP1"; "SSPC-SP3 Power Tool Cleaning", hereinafter called "SP3"; and "SSPC-SP10 Near White Blast", hereinafter called "SP10".

C. Inspections & Testing: See Structural Drawings and Section 01 45 29 for details for steel testing and inspections. Cooperate with inspector; permit inspector's access to all places where work is being done.

D. Qualifications

1. Fabricator/Erector: Shall have plant, facilities, and personnel sufficient to fabricate and/or erect structural metal framing as indicated on Drawings. Shall have minimum of five (5) years of experience and be able, upon request, to show framing of size, materials, and scope similar to work of this Contract.
2. Welders: Shall be certified by the American Welding Society (AWS) and Washington Association of Building Officials (WABO). Welders of structural steel tubes shall have qualification as required by AWS D1.1. Each welder shall mark his identification symbol on his work.

1.06 PRODUCT DELIVERY, STORAGE & HANDLING

A. Stacking & Shipping

1. Handle and stack all materials carefully to prevent deformation or damage. Store all structural steel members carefully on substantial timbers and blocking, so arranged that the steel will be properly drained.
2. Keep primed steel members from touching each other by using wooden separators for stacking. Take measures to avoid damaging prime coat while stacking, loading or unloading and use wooden protectors to prevent damage from chain or cable cinches.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Structural Steel: Provide carbon steel shapes, plates, straps, and bars of structural quality, sizes, and types noted on Drawings and specified herein, for use in welded and bolted construction. Steel manufactured by the Acid Bessemer process shall not be used for structural purposes.

1. Shapes and Plates: Steel W-shapes shall conform to ASTM A992, Grade 50. All other shapes, plates, channels, and angles shall conform to ASTM A36 unless otherwise noted on Structural Drawings.
2. Steel Tubing: ASTM A500 Grade B, Fy = 46 ksi.
3. Steel Pipe: ASTM A53, Type E or S, Grade B, Fy = 35 ksi.
4. Threaded Rods: ASTM A1554, Grade 55.
5. Headed Stud Anchors: ASTM A108, Grades 1010 to 1020, Fy = 65.
6. Substitutions: Should substitutions be required due to non-availability of sections shown, obtain Architect's prior approval.

B. Fasteners

1. Standard Fasteners: Low-carbon steel externally and internally threaded fasteners conforming to requirements of ASTM A307, Grade A except as otherwise noted on Structural Drawings. Provide hexagonal heads and nuts for all connections. Include lock washers under nuts or self-locking nuts. All bolts, nuts and washers exposed to the weather shall be hot-dipped galvanized.
2. High-Strength Fasteners: Quenched and tempered steel bolts and nuts conforming to requirements of ASTM A325 or A490, or as otherwise noted on Structural Drawings. Provide heavy hexagonal head bolts and nuts and hardened steel

washers. Load indicator washers conforming to ASTM F959 or tension control bolts shall be used. All bolts, nuts and washers exposed to the weather shall be hot-dipped galvanized.

3. Drilled-in-Concrete Expansion Anchors: Shall be Hilti concrete anchors as manufactured by Hilti Corporation, or Rawl equivalent, or approved, of the type noted on Structural Drawings.

C. Stud Anchors: All stud anchors welded to steel beams or embedded items for concrete connections shall be "Nelson Studs" as manufactured by Nelson Stud Welding Division, Gregory Industries, Inc., or “Tru-Weld Studs” as manufactured by Tru-Fit Screw Products Corp., Cleveland, Ohio, or approved, conforming to ASTM A29. Studs shall be 1/2 inch diameter by minimum 4 inch embedment, unless otherwise indicated on Drawings. Install as indicated on Drawings, automatically end-welded in shop or field with equipment recommended by manufacturer of studs.

D. Shear Stud Connectors: Made from ASTM A108 Grade 1015 bars.

E. Structural Bolts and Nuts: Carbon steel, ASTM A307, Grade Aand galvanized in compliance with ASTM A153/A153M Class C.

F. High-Strength Structural Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, with matching compatible ASTM A563 or ASTM A563M nuts and ASTM F436/F436M washers.

G. Unheaded Anchor Rods: ASTM F1554, Grade 36, plain, with matching ASTM A563 or ASTM A563M nuts and ASTM F436/F436M Type 1 washers.

H. Headed Anchor Rods: ASTM A 307 Grade C, plain.

I. Weld Electrodes: For base metal conforming with ASTM A36, A53, A500 and A572 Gr50, use E70 series electrodes in accordance with AWS A5.1 or AWS A5.5 for shielded metal arc welding or AWS 5.20 for flux cored arc welding.

J. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.

K. Non-Shrink Grout: Furnish Sika Chemical Corp. "Sikagrout 212" or Master Builders "Masterflow 928 Grout", or approved, "flowable" consistency, 0 g/L VOC, complying with ASTM C 1107 and capable of developing a minimum compressive strength of 8,000 psi at 28 days.

L. Shop Painting Materials: Furnish Tnemec Company, Inc. "Series 394" PerimePrime or Wasser Corporation "MC-Miozinc 100" one-component, moisture-cured, micaceous iron oxide and zinc filled polyurethane primer, or approved.

2.02 FABRICATION

A. General

1. Fabrication and assembly shall be performed in the shop to the greatest extent possible, all in accordance with the requirements of AISC specifications and in strict accordance with the details shown on the Contract Documents or as accepted on shop drawings. Assemble and weld built-up sections by methods which will produce true alignment of axis without warp.
2. Identify all steel at mill, showing grade and yield points.
3. Properly mark and match-mark materials for field assembly.
4. Beams and girders shall be upward cambered where indicated on Drawings. For beams and girders without specified cambers, fabricate members so that after erection, any minor camber due to rolling or fabrication is upward.

B. Straightening Material: If rolled sections are not straight within the tolerances allowed by ASTM A6, straight by methods not injuring the metal, as approved. Examine all straightened material prior to fabrication for signs of distress or other defects; no distressed or otherwise defective material will be accepted.

C. Openings & Holes
   1. All holes and openings not indicated on Structural Drawings shall be approved by Structural Engineer.
   2. Do no flame cutting by hand or openings greater than one-half the depth of the member, unless approved by the Owner's independent testing agency. All flame-cut holes shall be smoothed by chipping, planing, or grinding members to required tolerances.
   3. No sharp bends or kinks will be allowed.

D. Connections
   1. Form connections as detailed; make all shop connections by welding or bolting as approved on shop drawings.
   2. No combination of bolts and welds shall be used for stress transmission in the same faying face of any connection without prior approval by Architect.

E. Welding
   1. Conform to Standards No. 1 and No. 2 as applicable. All welding shall be in accordance with the "Structural Welding Code", ANSI/AWS D1.1, and shall be performed by WABO certified welders.
   2. Welding processes other than shielded metal arc, submerged arc, and flux cored arc may be used, provided procedure qualification tests in accordance with the AWS are made for the intended application of all such processes.
   3. Built-up sections assembled by welding, when present, shall be free of warpage, and all faces shall have true alignment.
   4. Welds not specified shall be continuous fillet welds, using not less than the minimum fillet as specified by AWS, except make all structural steel welds not less than 3/16 inch, unless noted otherwise. Note on shop drawings when assumption of weld is used for review of conformance.
   5. Prepare and clean sharp edges to be joined of all oil, grease, scale, and rust in accordance with AWS D1.1.
   6. Remove all slab or flux remaining on any bead before proceeding. Remove any cracks or blow holes that appear on any bead by chipping, grinding, or arc-gouging before proceeding.

F. Finishing: Prepare compression joints depending upon contact bearing to common plane by milling, sawing or approved means.

G. Tolerances, Straightness & Length: Conform to Standard No. 1.

2.03 FINISH

A. Shop Painting
   1. Surface Preparation:
      a. General: After fabrication, clean surfaces free of all mill scale, rust, oil, grease, weld slag, flux deposit, dirt and other foreign matter. Clean and prepare surfaces in exterior work in accordance with SSPC Specification SP10. Clean and prepare surfaces in interior work in accordance with SSPC Specification SP3.
      b. Inaccessible Finished Surfaces: Except for contact surfaces as specified below, surfaces inaccessible after shop assembly shall be cleaned and prime painted as specified herein, prior to assembly.
      c. Contact Finished Surfaces: Conform to Standard No. 1; clean and prepare surfaces in accordance with SSPC standards SP1 and SP3.
      d. Surfaces Adjacent To Field Welds: Conform to Standard No. 1.
   2. Shop Painting Application: Paint with one coat primer specified above, by brush, spray, roller coating, flow coating or dipping at Fabricator's or Erector 's option, applied to an

even consistency to provide a uniform dry film thickness of between 2.5 and 3.5 mils. Apply prime coat within time limits recommended by pretreatment manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that conditions are appropriate for erection of structural steel and that the work may properly proceed.

3.02 ERECTION

A. General
   1. Coordinate as required with other trades to assure proper and adequate provisions in the work of those trades for interface with the work of this Section. Exercise care to prevent damage due to handling, dropping or placement of members.
   2. Furnish anchor bolts and steel templates, and other items as indicated, to other Sections for installation prior to placement of concrete.
   3. Install the work of this Section in strict accordance with the original design, the approved shop drawings, pertinent requirements of governmental agencies having jurisdiction, and the manufacturer's recommended installation procedures as approved by the Architect.
   4. Install in accurate locations and to lines and elevations indicated. Align and adjust members forming part of a complete frame or structure before fastening permanently. Adjust and shim as required to compensate for discrepancies in elevation and alignment. Level and plumb individual members of the structure within AISC tolerances; final assembly shall produce true alignment of axis without warp.
   5. Weld, securely anchor and install bracing and/or bridging before applying any loads, except the weight of the erectors. Anchor all components firmly into position for long life under hard use.
   6. Splice structural members only where indicated or approved. Fasten splices of compression members after bringing abutting surfaces completely into contact. Make all field connections by high-strength bolting or welding, unless otherwise noted.
   7. Tighten and leave erection bolts in place after welding. Where high-strength bolts are required, provide identified and marked bolts. Install using procedure as hereinafter specified; mark tightened bolts.
   8. Cut holes by drilling only.
   9. Furnish shim plates or develop fills where required to obtain proper fit and alignment.
   10. Mutilate threads or use lock nuts for unfinished bolts to prevent nuts from backing off. Draw unfinished bolt heads and nuts tight against the work.

B. Temporary Shoring & Bracing
   1. Conform to Standard Nos. 1 and 2, as applicable.
   2. Provide supplemental structural steel support framing for metal decking where deck bearing is precluded by column flange plates or other framing members. Remove temporary connections and members when permanent members are in place and the final connections have been made.

C. Connections & Anchorage Members: Provide end supports and other items as detailed or necessary to support members from vertical loads, uplifts and lateral loads. Install all expansion anchors and threaded doweling anchors as detailed and in accordance with manufacturer's written instructions.

D. Field Welding
   1. Preheat metal to 70 degrees F when ambient temperature is below 32 degrees F in accordance with Standard No. 1.

2. Do no welding when ambient temperature is below 0 degrees F.
3. Grind welds smooth on steel to be left exposed.

E. Field Painting: Wire brush shop primed surfaces damaged by welding or other causes and apply one brush coat of same materials as used for shop primer.

F. Grouting Base & Bearing Plates
1. Install following manufacturer's written instructions for surface preparation, mixing and installation procedures."
2. Pack solidly to fill entire space.
3. Tool edges smooth, flush with adjacent surfaces.

G. Erect structural steel in compliance with Standard No. 2 "Code of Standard Practice for Steel Buildings and Bridges". Allow for erection loads and provide sufficient temporary bracing to maintain structure in safe condition, plumb, and in true alignment until completion of erection and installation of permanent bracing.

H. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.

3.03 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests, as stipulated on Structural Drawings and specified in Section 01 45 29.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Roof deck at canopies.

B. Supplementary framing for openings up to and including 18 inches (450 mm).

C. Bearing plates and angles.

D. Stud shear connectors.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel 2014.

B. AWS D1.1/D1.1M - Structural Welding Code - Steel 2020.

C. AWS D1.3/D1.3M - Structural Welding Code - Sheet Steel 2018.

D. IAS AC172 - Accreditation Criteria for Fabricator Inspection Programs for Structural Steel 2018.

1.04 SUBMITTALS

A. Product Data: Provide deck profile characteristics, dimensions, structural properties, and finishes.

B. Shop Drawings: Indicate deck plan, support locations, projections, openings, reinforcement, pertinent details, and accessories.

C. Certificates: Certify that products furnished meet or exceed specified requirements.

D. Submit manufacturer's installation instructions.

E. Welders Certificates: Certify welders employed on the Work, verifying AWS qualification within the previous 12 months.

1.05 QUALITY ASSURANCE

A. Design deck layout, spans, fastening, and joints under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in Washignton.

B. Fabricator Qualifications: A qualified steel fabricator that is accredited by the International Accreditation Service (IAS) Fabricator Inspection Program for Structural Steel in accordance with IAS AC172.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Cut plastic wrap to encourage ventilation.

B. Separate sheets and store deck on dry wood sleepers; slope for positive drainage.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Steel Deck:

1. ASC Steel Deck: www.ascsd.com.
2. Cordeck, Inc: www.cordeck.com.
3. Nucor-Vulcraft Group: www.vulcraft.com.
4. Verco Decking, Inc.: www.vercodeck.com.
5. Substitutions: See Section 01 61 00 - Common Product Requirements.

2.02 MATERIALS

A. Steel Decking
   1. Material:
      a. Painted, galvanized deck using sheet steel conforming to ASTM A653 or A1063, Grade 50 Structural Quality.
      b. In addition to galvanizing, all decking on the side to be left exposed in the finished work shall be factory primed with white primer applied by a roller coat process and oven cured having a 0.6 mil nominal thickness; equal to Verco “Double White” primer.
      c. All canopy roof decking shall be of size, type, gauge and shape indicated on Structural Drawings for the various canopy applications, as approved.
   2. Design & Section Properties: Conform to the SDI Standard Specifications and Structural Notes.
      a. Moment and Deflection Coefficients: Conform to the SDI Standard Specifications and Structural Notes.
      b. Anchorage:
         1) Anchor to supports to resist uplift at roof areas in accordance with SDI Standard Specifications and Structural Notes.
         2) Further weld or anchor to conform to the local code requirements for seismic forces for Zone III.

2.03 ACCESSORY MATERIALS

A. General: Provide accessories specifically designed to be used with the metal deck units supplied to the Work, and as normal to the uses shown on the Drawings.

B. Bearing Plates and Angles: ASTM A36/A36M steel unfinished.

C. Stud Shear Connectors: Made from ASTM A108 Grade 1015 bars.

D. Welding Materials: AWS D1.1/D1.1M.

E. Fasteners: Galvanized hardened steel, self tapping.

F. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

G. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, complying with VOC limitations of authorities having jurisdiction.

H. Flute Closures: Closed cell foam rubber, 1 inch (25 mm) thick; profiled to fit tight to the deck.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions prior to beginning work.

3.02 INSTALLATION

A. Erect metal deck in accordance with SDI Design Manual and manufacturer's instructions. Align and level.

B. On steel supports provide minimum 1-1/2 inch (38 mm) bearing.

C. Fasten deck to steel support members at ends and intermediate supports at 12 inches (300 mm) on center maximum, parallel with the deck flute and at each transverse flute using methods specified.
   1. Welding: Use fusion welds through weld washers.
   2. Place and secure special deep fluted sections for integral concrete bridging.

D. Weld deck in accordance with AWS D1.3/D1.3M.

E. Where deck (other than cellular deck electrical raceway) changes direction, install 6 inch (150 mm) minimum wide sheet steel cover plates, of same thickness as deck. Fusion weld 12 inches (300 mm) on center maximum.

F. At openings between deck and walls, columns, and openings, provide sheet steel closures and angle flashings to close openings.

G. Close openings above walls and partitions perpendicular to deck flutes with single row of foam cell closures.

H. Weld stud shear connectors through steel deck to structural members below.

I. Immediately after welding deck and other metal components in position, coat welds, burned areas, and damaged surface coating, with touch-up primer.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Formed steel stud exterior wall and interior wall framing.

1.02 RELATED REQUIREMENTS

A. Section 05 12 00 - Structural Steel Framing.

B. Section 05 31 00 - Steel Decking.

C. Section 07 21 00 - Building Insulation: Insulation within framing members.

D. Section 07 92 00 - Joint Sealants.

1.03 REFERENCE STANDARDS

A. AISI S100-12 - North American Specification for the Design of Cold-Formed Steel Structural Members 2012.

B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware 2016a.

C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2020.

D. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable 2020.

E. AWS D1.3/D1.3M - Structural Welding Code - Sheet Steel 2018.

1.04 SUBMITTALS

A. Product Data: Provide manufacturer's data on factory-made framing connectors, showing compliance with requirements.

B. Shop Drawings: Indicate component details, framed openings, bearing, anchorage, loading, welds, and type and location of fasteners, and accessories or items required of related work.
   1. Indicate stud and ceiling joist layout.
   2. Describe method for securing studs to tracks and for bolted framing connections.
   3. Design data:
      a. Shop drawings signed and sealed by a professional structural engineer.

1.05 QUALITY ASSURANCE

A. Designer Qualifications: Design framing system under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in Washington.

B. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, and with minimum three years of documented experience.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Metal Framing:
   1. CEMCO: www.cemcosteel.com.
   2. ClarkDietrich: www.clarkdietrich.com.
   3. Jaimes Industries: www.jaimesind.com/.
   4. Marino: www.marinoware.com.

5. R-stud, LLC: https://www.rstud.com.
6. SCAFCO Corporation: www.scafco.com.
7. Steel Construction Systems: www.steelconsystems.com.
8. The Steel Network, Inc: www.SteelNetwork.com/.

B. Framing Connectors and Accessories:
1. Same manufacturer as metal framing.
2. ClarkDietrich: www.clarkdietrich.com.
3. Simpson Strong Tie: www.strongtie.com.

2.02 FRAMING SYSTEM

A. Provide primary and secondary framing members, bridging, bracing, plates, gussets, clips, fittings, reinforcement, and fastenings as required to provide a complete framing system.

2.03 FRAMING MATERIALS

A. Studs and Track: ASTM C955; studs formed to channel, "C", or "Sigma" shape with punched web; U-shaped track in matching nominal width and compatible height.
1. Gauge and Depth: As indicated on structural drawings.
2. Galvanized in accordance with ASTM A653/A653M, G90/Z275 coating.
3. Provide components fabricated from ASTM A1008/A1008M Designation SS (structural steel).

B. Framing Connectors: Factory-made, formed steel sheet.
1. Material: ASTM A653/A653M SS Grade 33 and 40 (minimum), with G90/Z275 hot dipped galvanized coating for base metal thickness less than 10 gage, 0.1345 inch (3.42 mm), and factory punched holes and slots.
2. Structural Performance: Maintain load and movement capacity required by applicable code, when evaluated in accordance with AISI S100-12.
3. Movement Connections: Provide mechanical anchorage devices that accommodate movement using slotted holes, shouldered screws or screws and anti-friction or stepped bushings, while maintaining structural performance of framing. Provide movement connections where indicated on drawings.
a. Where continuous studs bypass elevated floor slab, connect stud to slab in manner allowing vertical and horizontal movement of slab without affecting studs; allow for minimum movement of 1/2 inch (13 mm).
b. Where top of stud wall terminates below structural floor or roof, connect studs to structure in manner allowing vertical and horizontal movement of slab without affecting studs; allow for minimum movement of 1/2 inch (13 mm).
c. Provide top track preassembled with connection devices spaced to fit stud spacing indicated on drawings; minimum track length of 10 feet (3048 mm).
d. Products:
1) ClarkDietrich; Drift FastClip Slide Clip D-FCSC: www.clarkdietrich.com.
2) Simpson Strong Tie: www.strongtie.com.
4. Fixed Connections: Provide non-movement connections for tie-down to foundation, floor-to-floor tie-down, roof-to-wall tie-down, joist hangers, gusset plates, and stiffeners.
5. Wall Stud Bridging Connections: Provide mechanical load-transferring devices that accommodate wind load torsion and weak axis buckling induced by axial compression loads. Provide bridging connections where indicated on the drawings.

2.04 FASTENERS

A. Self-Drilling, Self-Tapping Screws, Bolts, Nuts and Washers: Hot dip galvanized per ASTM A153/A153M.

B. Anchorage Devices: Powder actuated and drilled-in epoxy anchors per structural drawings.

C. Welding: Comply with AWS D1.1/D1.1M.

2.05 ACCESSORIES

A. Bracing, Furring, Bridging: Formed sheet steel, thickness determined for conditions encountered; finish to match framing components.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify products have been stored, and will be installed, in accordance with project's Construction Indoor Air Quality (IAQ) Management Plan specified in Section 01 35 46 Indoor Air Quality Procedures.

B. Verify that substrate surfaces are ready to receive work.

C. Verify field measurements and adjust installation as required.

3.02 INSTALLATION OF STUDS

A. Install components in accordance with ASTM C1007 requirements and ASTM C1007 requirements.

B. Align floor and ceiling tracks; locate to wall layout. Secure in place with fasteners at maximum 24 inches (600 mm) on center. Coordinate installation of sealant with floor and ceiling tracks.

C. Place studs at 16 inches (400 mm) on center; not more than 2 inches (50 mm) from abutting walls and at each side of openings. Connect studs to tracks using clip and tie method.

D. Construct corners using minimum of three studs. Install double studs at wall openings, door and window jambs.

E. Install load bearing studs full length in one piece. Splicing of studs is not permitted.

F. Install load bearing studs, brace, and reinforce to develop full strength and achieve design requirements.

G. Coordinate placement of insulation in multiple stud spaces made inaccessible after erection.

H. Install intermediate studs above and below openings to align with wall stud spacing.

I. Provide deflection allowance in stud track, directly below horizontal building framing at non-load bearing framing.

J. Attach cross studs to studs for attachment of fixtures anchored to walls.

K. Install framing between studs for attachment of mechanical and electrical items, and to prevent stud rotation.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. General Description Of Work: The extent of the miscellaneous metal work is indicated on the drawings, which includes, whether specifically specified herein or not, all items fabricated from iron and steel shapes, plates, bars, strips and pipes which are not a part of structural steel or other metal systems in other sections of these specifications.

1.02 RELATED REQUIREMENTS

A. Section 05 12 00 - Structural Steel Framing.

B. Section 05 40 00 - Cold-Formed Metal Framing.

C. Section 06 41 00 - Architectural Wood Casework.

1.03 REFERENCE STANDARDS

A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel 2019.

B. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless 2020.

C. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products 2017.

D. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware 2016a.

E. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes 2021.

F. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing 2014.

G. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination 2012.

H. AWS D1.1/D1.1M - Structural Welding Code - Steel 2020.

I. IAS AC172 - Accreditation Criteria for Fabricator Inspection Programs for Structural Steel 2018.

J. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic") 2002 (Ed. 2004).

1.04 SUBMITTALS

A. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.

1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.

B. Welders' Certificates: Submit certification for welders employed on the project, verifying AWS qualification within the previous 12 months.

1.05 JOB CONDITIONS

A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication, where possible, to ensure proper fitting of the work. However, do not delay job progress; allow for trimming and fitting wherever the taking of field measurements before fabrication might delay the work.

B. Inserts & Anchorages: Furnish inserts and anchoring devices which must be set in concrete and/or welded to building components for the installation of miscellaneous metal work. Coordinate delivery with other work to avoid delay.

C. Shop Assembly
   1. Pre-assemble items in the shop to the greatest extent possible, so as to minimize field splicing and assembly of units at the project site.
   2. Disassemble units only to the extent necessary for shipping and handling limitations.
   3. Clearly mark units for re-assembly and coordinated installation.

1.06 QUALITY ASSURANCE

A. Fabricator Qualifications: A qualified steel fabricator that is accredited by IAS AC172.

PART 2 - PRODUCTS

2.01 MATERIALS - STEEL

A. Materials - General
   1. Metal Surfaces, General: For the fabrication of miscellaneous metal work which will be exposed to view, use only materials which are smooth and free of surface blemishes including pitting, seam marks, roller marks, rolled trade names and roughness. Remove such blemishes by grinding, or by welding and grinding, prior to cleaning, treating and application of surface finishes including zinc coatings.
   2. Steel Plates, Shapes and Bars: Steel W-shapes shall conform to ASTM A992, Grade 50, Fy = 50 ksi. All other shapes, plates, rods, channels, and angles shall conform to ASTM A36, Fy = 36 ksi.
   3. Steel Pipe: ASTM A53, type as selected; Grade B; black finish; standard weight (schedule 40), except where otherwise shown or specified as stronger.
   4. Steel Tubing: ASTM A500, Grade B.

B. Fasteners
   1. General: Provide zinc-coated fasteners for exterior use or where built into exterior walls.
   2. Bolts, Nuts, and Washers: ASTM A 307, galvanized to ASTM A 153 where connecting galvanized components. Use ASTM A 325, Type 1 or F1852 bolts where indicated on Drawings.
   3. Lag Bolts: Hex head type.
   4. Machine Screws: Cadmium plated steel.
   5. Plain Washers: Round, general assembly grade carbon steel.
   6. Lock Washers: Helical spring type carbon steel.

C. Welding Materials: AWS D1.1; type required for materials being welded.

D. Shop-Applied Powder Coat Finish
   1. Primer Coat: Tiger Drylac USA Inc. #69-90500 zinc-rich epoxy powder coat primer; applied to approximately 2.5 mils DFT.
   2. Finish Coat: Tiger Drylac USA Inc. “Series 68” weather resistant super durable polyester powder coat with smooth semi-gloss finish meeting AMAA 2604 performance requirements; applied to a 2.5 - 3.5 mils DFT.
   3. Color: Black.

2.02 FABRICATION - GENERAL

A. General
   1. Fit and shop assemble items in largest practical sections, for delivery to site.
   2. Fabricate items with joints tightly fitted and secured.
   3. Use materials of the size and thicknesses shown or, if not shown, of the required size and thickness to produce adequate strength and durability in the finished product for the

intended use. Work to the dimensions shown or accepted on shop drawings, using proven details of fabrication and support. Use the type of materials shown or specified for the various components of the work.

4. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges. Ease exposed edges to a radius of approximately 1/32" unless otherwise shown. Form bent-metal corners to the smallest radius possible without causing grain separation or otherwise impairing the work; punch and shear leaving clean and true surfaces.
5. Weld corners and seams continuously and in accordance with the recommendations of AWS. Grind exposed welds smooth and flush, to match and blend with adjoining surfaces.
6. Form exposed connections with hairline joints which are flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of the type shown or, if not shown, use Phillips flathead (countersunk) screws or bolts.
7. Provide holes, cuts and connections, where shown, for work of other trades. Provide for anchorage of the type shown, coordinated with the supporting structure and the progress schedule. Fabricate and space anchoring devices as shown and as required to provide adequate support for the intended use of the work.
8. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
9. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

B. Powder Coat Finish: Primer and Finish Coat Application: Apply primer and finish coats using the Tiger Drylac "Two-Coat Process" where the primer coat is 'pre-gelled' at 392 deg. F for 2 - 3 minutes prior to applying finish coat; finish coat is then cured in accordance with manufacturer's data sheet instructions.

2.03 FABRICATION - MISCELLANEOUS STEEL ITEMS

A. Steel Support Brackets For Countertops

1. Provide tube steel bracket supports of 2” x 2” x 1/8” ASTM A500 tube steel as detailed, corners mitered and continuously welded. Vertical leg to extend 24 inches minimum. Horizontal leg in each case to extend to within 4 inches from outer face of countertops.
2. Exposed ends of tube steel to be beveled and capped with cap welds ground smooth.
3. Drill holes of size and in locations shown for securing brackets to stud wall framing (in stud cavity) and for securement of countertops; minimum three bolted connections at each leg unless otherwise shown.
4. Powder coat members after fabrication; color Black.

B. Other Items: Furnish all other miscellaneous metal fabrication items shown on Drawings and not classed as structural steel. Generally this includes steel angle jamb supports for overhead coiling door and shutter guides, and the like. Fabricate accurately.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Prior to installation of work in this Section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where installation of the work of this Section may properly commence.

B. Verify that miscellaneous metal items have been fabricated for installation in strict accordance with the original design and the approved shop drawings.

C. In the event of discrepancy, immediately notify the Architect. Do not proceed with installation of miscellaneous metal items in areas of discrepancy until all such discrepancies have been fully resolved.

3.02 PREPARATION

A. Coordinate setting drawings, diagrams, templates, instructions and directions for the installation of anchorages, such as concrete inserts, anchor bolts and miscellaneous item having integral anchors, which are to be embedded in concrete construction. Coordinate the delivery of such items to the project site.

B. Supply setting templates to the appropriate entities for steel items required to be cast into concrete.

3.03 INSTALLATION - FABRICATED ITEMS

A. Installation - General

1. Fastening to in-place construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal item to in-place construction; including threaded fasteners for concrete inserts, toggle bolts, through-bolts, lag bolts and other connectors as required.
2. Cutting, fitting & placement:
    a. Perform all cutting, drilling and fitting required for the installation of the miscellaneous metal items. Set the work accurately in location, alignment and elevation, plumb, level, true and free of distortion or defects, measured from established lines and levels.
    b. Provide temporary bracing or anchors in formwork for items which are to be built into concrete, masonry or similar construction.
    c. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
    d. Fit exposed connections accurately together to form tight hairline joints. Weld connections which are not to be left as exposed joints, but cannot be shop welded because of shipping size limitations.
    e. Grind joint smooth and touch-up shop paint coat.
    f. Do not weld, cut or abrade the surfaces of units which have been hot-dip galvanized after fabrication, and are intended for bolted field connections.
    g. Obtain approval prior to site cutting or making adjustments not scheduled.

B. Steel Support Brackets For Countertops: Install at all countertops with unsupported (wall) ends and countertops wall supported both ends which span more than four feet between walls or other supports, spaced not more than 42 inches apart or as otherwise indicated or directed by the Architect; install elsewhere where indicated on Drawings and associated details. Set to true level, firmly anchored to walls using minimum three anchor bolts per leg as detailed, ready for application of countertops provided under work of Section 06 41 00.

C. Other Fabricated Items: Install all other steel items as specified above and as otherwise shown on Drawings and not classed as structural steel. Install as detailed or required for rigidity and permanence. Grind all welds smooth in fabrication work to be left exposed in completed work.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Structural dimension lumber framing.

B. Rough opening framing for door and window openings.

C. Sheathing.

D. Roof-mounted curbs.

E. Roofing nailers.

F. Preservative treated wood materials.

G. Concealed wood blocking, nailers, and supports.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast-In-Place Concrete: Setting anchors in concrete.

B. Section 05 12 00 - Structural Steel Framing: Tube steel columns.

C. Section 05 40 00 - Cold-Formed Metal Framing

1.03 REFERENCE STANDARDS

A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware 2016a.

B. ASTM D2898 - Standard Test Methods for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing 2010 (Reapproved 2017).

C. AWPA U1 - Use Category System: User Specification for Treated Wood 2018.

D. ICC-ES AC38 - Acceptance Criteria for Water-Resistive Barriers 2016, with Editorial Revision (2019).

E. PS 1 - Structural Plywood 2009 (Revised 2019).

F. PS 20 - American Softwood Lumber Standard 2020.

G. WWPA G-5 - Western Lumber Grading Rules 2017.

1.04 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures.

B. Product Data: Provide technical data on wood preservative materials.

C. Structural Composite Lumber (SCL): Submit manufacturer's published structural data including span tables, marked to indicate which sizes and grades are being used; if structural composite lumber is being substituted for dimension lumber or timbers, submit grading agency structural tables marked for comparison.

D. Manufacturer's Certificate: Certify that wood products supplied for rough carpentry meet or exceed specified requirements.

1.05 QUALITY ASSURANCE

A. Grade Marks: Show applicable association grade mark and trade mark on each piece of material, or furnish certificate of inspection with each shipment, attesting conformance to specified grades.

B. Standard Specifications For Preservative Treatment: Conform to the standard specifications listed hereinafter as published by the American Wood Preservers Association, hereinafter called "AWPA", and the American Wood Preservers Bureau, hereinafter called "AWPB".

1.06 DELIVERY, STORAGE, AND HANDLING

A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

B. Preservative Treated Wood: Prevent exposure to precipitation during shipping, storage, or installation.

PART 2 PRODUCTS

2.01 ROUGH CARPENTRY MATERIALS

A. Framing Lumber Grades (Load bearing, as applicable)
   1. Furnish the following lumber of nominal sizes as shown on Drawings for the work, of the species and grades stipulated in the Structural Notes for same:
      a. Load bearing wall and partition framing studs, headers and plates.
      b. Load bearing roof/ceiling framing - joists, posts, beams, ledgers.
      c. Lateral bracing at wall tops for walls which do not extend to roof structure above.
   2. Moisture treat all members set on concrete slabs on grade and foundation walls as specified herein.
   3. Moisture Content: "S-DRY" (19 % max.) moisture content.

B. Framing Lumber Grades (Non-load bearing)
   1. Furnish the following lumber species and grades for the work specified below, of nominal sizes shown or specified:
      a. Non-load Bearing Wall and Partition Framing Studs and Plates:
         1) Douglas Fir-Larch "No. 2" or Hem-fir "No. 1", S4S.
         2) Moisture treat plates set on slabs-on-grade as specified herein.
      b. Blocking, Backing, and Furring: Douglas Fir-Larch "No. 2" or Hem-fir "No. 1", S4S.
      c. Wood Roof Mounted Curbs:
         1) Hem-fir or Douglas-fir "Standard & Btr.", S4S, for 2 x 4 inch nominal size; Douglas-fir "No. 3", S4S, for 2 x 6 nominal size and larger.
         2) Moisture treat all members as specified herein.
      d. Wood Members for all Other Miscellaneous Rough Carpentry not Specified Otherwise:
         1) Douglas Fir-Larch "No. 2" or Hem-fir "No. 1", S4S.
         2) Moisture treat as specified herein for all members set on concrete slabs on grade.
   2. Moisture Content: "S-DRY" (19 % max.) moisture content.

C. Lumber Grades - Wood Foundation Timbers For Relocated Greenhouse Structure:
   1. Douglas Fir-Larch "No. 3".
   2. Moisture treat all members.

D. Structural Composite Lumber (SCL) Members: Furnish engineered composite lumber members (LVL, LSL, and PSL) evaluated in conformance with ASTM D5456 and set forth in manufacturer's respective Evaluation Report as published by ICC-ES or APA Products Reports; sizes and lengths as indicated on Structural Drawings for the various applications and conditions including roof joists and fascia rim joists.

E. Plywood Grades
   1. Unless otherwise shown or specified, conform to grades of PS 1 for the following:
      a. Exterior & Interior Plywood Wall Sheathing - General Use: APA, Structural I, Exp. 1, grade "C-D" with exterior glue, 1/2 inch thickness with panel span rating of 32/16 for the various conditions/applications unless otherwise shown.

b. Plywood Roof Sheathing: APA, Structural I or II, Exp. 1, grade "C-D" with exterior glue, 5/8 inch thicknesses.

2. Apply APA Grade stamp on all plywood.

F. Nails, Screws & Bolts:

1. Furnish carbon steel bolts, square head, Fed. Spec. FF-B-575C, Type I furnished with square nuts, unless noted otherwise on Structural Drawings.
2. Furnish lag bolts Fed. Spec. FF-B-561C, Type I Grade A, gimlet point, square head, unless noted otherwise on Structural Drawings.
3. Furnish nails, Fed. Spec. FF-N-105B(3), INT AMD 4, Type II, Style as specified and as approved, unless noted otherwise on Structural Drawings.
4. Provide all necessary nails, spikes, screws and bolts with nuts and washers required for proper installation of rough carpentry and carpenter's steel items.
5. Hot-dip galvanize hardware for exterior work or exposed to moisture.

G. Stock Sheet Steel Framing Anchors: Furnish I.B.C. approved zinc-coated sheet steel members, sizes recommended and approved for conditions for use and in locations and of manufacture and types shown on Structural Drawings.

2.02 FACTORY WOOD TREATMENT

A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.

1. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.

B. Preservative Treatment:

1. Manufacturers:
   a. Lonza Group: www.wolmanizedwood.com.
   b. Koppers Performance Chemicals, Inc: www.koppersperformancechemicals.com/.
   c. Viance, LLC: www.treatedwood.com.
2. Preservative Pressure Treatment of Lumber Above Grade: AWPA U1, Use Category UC3B, Commodity Specification A using waterborne preservative.
   a. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
   b. Treat lumber in contact with roofing or flashing.
   c. Treat all lumber set on or against masonry and concrete construction or embedded in cast-in-place or precast concrete.
   d. Treat lumber in other above grade locations as indicated.
3. Preservative Pressure Treatment of Plywood Above Grade: AWPA U1, Use Category UC2 and UC3B, Commodity Specification F using waterborne preservative.
   a. Kiln dry plywood after treatment to maximum moisture content of 19 percent.
   b. Treat plywood in contact with roofing, flashing, or waterproofing.
   c. Treat plywood in contact with masonry or concrete.
   d. Treat plywood in other locations as indicated.

PART 3 EXECUTION

3.01 PREPARATION

A. Where wood framing bears on cementitious foundations, install full width sill flashing continuous over top of foundation, lap ends of flashing minimum of 4 inches (100 mm) and seal.

B. Install sill gasket under sill plate of framed walls bearing on foundations; puncture gasket cleanly to fit tightly around protruding anchor bolts.

C. Coordinate installation of rough carpentry members specified in other sections.

D. Preparation For Pressure Preservative Treatment

1. Incising Materials: All lumber and timber members specified herein to be treated shall be incised by a machine having power driven rolls designed to incise to a uniform depth and continuity of predetermined pattern. Timber or lumber less than 3 inches in the least dimension shall be incised on the wide faces only.
2. Fitting Prior to Treatment: Lumber shall be framed, bored, chamfered, and precut so size and length, where possible, before treatment.
3. Drying Of Treated Material: After treatment, dry lumber to a moisture content of 19% or less.

3.02 ROUGH CARPENTRY INSTALLATION - GENERAL

A. Select material sizes to minimize waste.

B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

D. Discard units of material with defects which might impair the quality of the work and units which are too small to fabricate the work with minimum joints or the optimum joint arrangement.

E. Set carpentry work accurately to required levels and lines, with members plumb and true and accurately cut and fitted.

F. Securely attach carpentry work to substrates by anchoring and fastening as shown and as required by recognized standards. Select fasteners of size that will not penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting of wood; pre-drill as required.

G. Install structural members full length without splices unless otherwise specifically detailed.

H. Make provisions for temporary construction loads, and provide temporary bracing sufficient to maintain structure in true alignment and safe condition until completion of erection and installation of permanent bracing.

I. Form to shapes as shown and cut as required for true line and level of work to be attached. Coordinate location with other work involved.

3.03 INSTALLATION OF ROUGH CARPENTRY ITEMS

A. Rough Framing - General

1. Install all load bearing framing members including beams, support posts, bracing, ledgers, joists, rafters, etc., complete with steel framing anchors, bolts and accessories all as shown; secure as detailed or required for strength and rigidity.
2. Carefully lay out, cut, fit and erect framing as shown on Drawings, together with carpenter's steel items. Do not cut, notch or drill structural members without approval except where shown or as otherwise allowed by IBC Sections 2308.9.10, 2308.9.11 and 2308.10.4.2; reinforce cut members as directed. Structural members shall be installed to provide full contact at all bearing surfaces.
3. Secure with sufficient nails, spikes, bolts, etc., to insure rigidity and permanence; conform to IBC requirements and details shown on Structural Drawings. Unless otherwise shown, conform to IBC Table 2304.9.1 Fastening Schedule for fastening framing members.

4. Framing members set against new and existing concrete and masonry wall construction shall be secured with either epoxy anchors or galvanized lag bolt fasteners with expansion shields, as indicated on Structural Drawings for each condition/application, with anchors located at each end of member and spaced not more than 24 inches o.c. between, unless otherwise noted; fasteners shall provide minimum 1-1/2 inch penetration into concrete and masonry wall structures.
5. Set horizontal and inclined members with crown edge up.
6. Provide for installation and support of plumbing, heating, ventilating and air conditioning work.

B. Stock Sheet Steel Framing Anchors: Install framing anchors where shown on Drawings.

C. Wall & Partition Framing
   1. Studs, Posts and Furring:
      a. Install studs, posts and furring of nominal sizes shown and spaced as noted on Drawings.
      b. Place studs and furring to provide nailing for surfacing materials; double at openings, triple at corners and intersections.
      c. Set all studs along each straight run wall segment (i.e., from corner to corner) with crown edge of each stud member in said wall segment oriented in same direction; no exception.
      d. Install LVL roof joists and rim joists in locations shown on Structural Drawings.
      e. Use three studs at all corners and wall intersections; also at built-up columns where indicated.
   2. Plates:
      a. Install single plates at floors except double plates where shown, double plates at bottom of openings including all window openings. Secure bottom plates to anchor bolts set in concrete; anchor size and spacing for the various shear wall types as indicated in Structural Drawings; bottom plates on concrete labs on grade pressure-treated for moisture and decay as specified herein.
      b. Apply three (3) continuous beads of sealant under all bottom plates of exterior wall infills. Apply two (2) continuous beads of acoustical sealant under all bottom plates of new interior walls
      c. Anchor bottom plates to concrete foundations and slabs with anchor bolts of sizes and spacing as indicated on Structural Drawings; 2 bolts minimum each piece.
      d. Install double plates at ceiling. Arrange plates to form continuous horizontal ties. Splice single plates; stagger ends of double plates.
   3. Blocking: As specified below.

D. Ceiling/Roof Framing
   1. Joists, Beams, Ledgers:
      a. Install LVL roof joists in locations shown on Structural Drawings.
      b. Set framing with crown side up; double headers and trimmers. Double joists under and over partitions running parallel to joists. Where pipes are in partitions, space double joists to provide clearance.
      c. Install all engineered members in various locations and to spacing/configurations shown on Structural Drawings for each application.
      d. Anchor ledgers to new and existing construction as indicated on Drawings.
      e. Block ends between studs where joists and studs are not in contact.
      f. Lap and spike together joists meeting over bearings.
   2. Bridging:
      a. Located as shown, but not more than 8 feet o.c. in joist spans.
      b. Provide nominal 2-inch solid bridging over bearings.

3.04 BLOCKING, NAILERS, AND SUPPORTS

A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, flashings, specialty items, and trim.

3.05 INSTALLATION OF CONSTRUCTION PANELS

A. Plywood Wall Sheathing
   1. Apply with long dimension horizontally, joints over supports and horizontal blocking.
   2. At shear walls, fasten plywood sheathing in accordance with shear wall schedule in Structural Drawings.
   3. For all other applications to steel stud framing, unless otherwise noted on Drawings, secure panels to metal framing using #8-18 (#2 point) flat head screws with minimum 0.285" dia. head, with fasteners spaced 6 inches o.c. at entire perimeter of each sheet and 12 inches o.c. at all intermediate bearings
   4. For all other applications to wood framing, nail with 10d common nails for application to wood stud framing, with fasteners spaced 6 inches o.c. at entire perimeter of each sheet and 12 inches o.c. at all intermediate bearings.

B. Plywood Roof Sheathing
   1. Apply panels with long edges perpendicular to roof framing and with all end joints on bearings. Allow 1/16 inch gap at panel ends and 1/8 inch at panel edges; conform also to applicable APA installation recommendations for panel gaps between edges.
   2. Nail to wood framing in accordance with Structural Drawings.
   3. Contractor shall provide roof protection covering to keep installed plywood roof sheathing and underlying decking completely dry prior to, during and until finished roof covering is installed.

C. All Other Miscellaneous Rough Carpentry Framing
   1. Support Framing:
      a. Install all wood support members complete with steel framing anchors and accessories as shown; secure as detailed or required for strength and rigidity.
      b. Use galvanized common nails where nailing is required.
   2. Plywood: Apply with all edges and end joints on bearings. Nail with 8d common nails at 6 inches o.c. maximum at ends and 10 inches o.c. at all intermediate supports, unless otherwise shown.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Finish carpentry items.

B. Exterior Cedar siding and trim.

C. Interior wood window sill and apron trim at storefront sills set on existing brick wall opening.

D. Interior plastic laminate sill at storefront sills set on existing concrete wall opening.

E. “WD-1” Wood Base

F. Hardware and attachment accessories.

1.02 RELATED REQUIREMENTS

A. Section 06 10 00 - Rough Carpentry: Support framing, grounds, and concealed blocking.

B. Section 06 41 00 - Architectural Wood Casework: Shop fabricated custom cabinet work.

C. Section 08 41 13 - Aluminum Framed Entrances & Storefronts.

D. Section 09 91 00 - Paints and Coatings: Painting and finishing of finish carpentry items.

1.03 REFERENCE STANDARDS

A. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards, U.S. Version 3.1 2017, with Errata (2019).

B. PS 1 - Structural Plywood 2009 (Revised 2019).

C. PS 20 - American Softwood Lumber Standard 2020.

1.04 SUBMITTALS

A. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.

B. Samples: Furnish samples of lumber and plywood upon request, of various species and/or finishes; for Architects approval.

1.05 QUALITY ASSURANCE

A. Grading Rules
   1. Lumber (Softwoods):
      a. For sizing, conform to U.S. Product Standard PS 20-10.
      b. Conform to Western Wood Products Association "Standard Grading Rules for Western Lumber", hereinafter called "WWPA".
   2. Lumber (Other): Conform to the official grading rules of the Association having jurisdiction.
   3. Plywood (Softwood Plywood): Conform to U.S. Dept. of Commerce "Product Standard PS 1-09 for Softwood Plywood-Construction & Industrial" hereinafter called "PS 1".

B. Grade Marks: Furnish with Association grade mark and trade mark on each piece of material, or upon request, furnish certificates of inspection attesting conformance to specified grades.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Storage & Protection - General
   1. Stack level, off floor, in building.
   2. All concrete, tile and other "wet" work shall have been competed not less than 14 days.
   3. Building shall then be dry to approved condition and, after the above noted 14 days, heated to 65 degrees F. minimum for not less than 10 days before finish materials are

placed therein; maintain same minimum temperature after finish materials are delivered; no exceptions.

B. Protect from moisture damage.

PART 2 - PRODUCTS

2.01 MATERIALS - GENERAL

A. Grades, Stock & Detail Finish Lumber & Trim: Provide finish materials of species and grades for items as listed hereinafter:

1. For all interior trim including window and door casings and trim, chair rails, wood base, and the like, provide of "Clear" VG grade Douglas Fir, S4S, as approved.
2. For exterior T&G Cedar finish, provide of Western Red Cedar, "Clear" MG grade, as approved.
3. For all exterior wood trim members, provide of "A" grade or better Western Red Cedar, S4S or S1S2E.
4. All exterior trim to be kiln-dried to a moisture content of m.c. 15; pattern siding unseasoned. All interior trim to be kiln-dried to a moisture content of m.c. 12.

B. Grades Of Sanded Softwood Plywood, General Use

1. Unless otherwise specified, provide conforming to PS 1, Group I Douglas Fir Grade "A" Int. APA rotary cut veneer on exposed face and/or faces with Grade "B" on concealed face veneers; minimum 5-ply for 3/4 inch thickness.
2. Sizes and thicknesses as shown on Drawings or otherwise specified herein.
3. Use for all locations where 'veneer plywood' is shown for exposed interior applications.

C. Nails, Brads & Screws

1. Furnish nails and brads conforming to Fed. Spec. FF-N-105B(3).
2. Furnish screws conforming to Fed. Spec. FF-S-111D, of approved type, material, and finish for work where screws are noted; furnish finishing washers of approved type, finished to match screws where noted.

D. Air & Weather Barrier: Provided as specified in Section 07 27 00, Air Barriers.

E. Exterior Siding Furring Strips: Furnish of 1x4 pressure treated Hem-Fir conforming to requirements of Section 06 10 00.

2.02 EXTERIOR FINISH CARPENTRY ITEMS

A. Wood Trim

1. Provide of cedar as specified hereinabove, of nominal and net sizes shown for the various applications/conditions; include all trim associated with fascias, windows, composite panel siding, storefront/curtain wall framing, inside and outside building corners associated with panel siding, and the like.
2. Construct and form trim to sizes and shapes detailed, of species and grades noted above and as detailed on Drawings. Ease exposed edges where indicated.
3. Saw kerf backs of trim members 5 inches or greater in width; provide 1/8 inch deep kerfs on 2-inch centers. Saw kerf backs of trim members less than 5 inches in width where specifically indicated.
4. Ease exposed edges where indicated.
5. Prior to installation, prime and backprime all members not otherwise shop finished as specified below, Paragraph 3.02A.

B. T&G Pattern Cedar Siding: Furnish of Western Red Cedar, 1 x 4 inch nominal size, grade as specified hereinabove for cedar; center matched T&G, rough-sawn surface on exposed face, back face with "smooth" V-joint pattern, kiln dried to 12% average m.c.; 12-foot lengths.

1. Use for all interior ceilings where "WD" is designated on Reflected Ceiling Plans.
2. Use for all vertical applications at interior column wraps at Healing Room 170.

C. Sheet Metal Flashings
   1. Sheet metal flashings to be incorporated into exterior finish carpentry work are specified under Section 07 62 00; finish carpentry subcontractor for work of this Section shall furnish said flashings as specified, of the various sizes and configurations indicated.
   2. Sheet metal flashings shall have prepainted finish same as specified in Section 07 62 00 for prepainted galvanized flashing sheets; colors as selected by Architect for the various types/applications.

D. Sealant: Furnish paintable one-part siliconized acrylic latex sealant conforming to sealant specifications for same as specified under Section 07 92 00, of color as selected to closely match finish stain/ paint color of siding.

2.03 INTERIOR FINISH CARPENTRY ITEMS

A. Wood Base, Casings & Miscellaneous Trim - General
   1. Provide wood base and miscellaneous trim members of nominal and net sizes and shapes shown for various applications and conditions, of VG Fir or Cedar as designated on Drawings and specified hereinabove.
   2. Recess or saw kerf backs of trim members 5 inches or greater in width with 1/8 inch deep recess as detailed or kerfs on 2-inch centers.
   3. Ease exposed edges where indicated.
   4. All trim members to have clear satin finish as specified under Section 09 91 00.

B. MDO Plywood For Plastic Laminate Window Sills: Furnish APA MDO Ext. grade medium density overlaid plywood, smooth surface without grooves, manufactured in accordance with PS-1-09. Furnish of 3/4 inch thickness. Use for all exposed window sill casings which are to receive plastic laminate finish.

C. Plastic Laminate For Window Sills: Furnish NEMA Standard No. LD3 Type 1 Post-Forming Type, HGP Grade, .040 inch thickness; solid color as selected by Architect; finish texture equal to WilsonArt #60 Matte.

2.04 FABRICATION

A. Shop assemble work for delivery to site, permitting passage through building openings.

B. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify adequacy of backing and support framing.

B. Verify mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work.

3.02 PREPARATION

A. Priming / Backpriming
   1. Before installation, all interior standing and running trim members plus all exterior wood trim and siding members shall be primed and back-primed in a heated place at jobsite, all as specified therefor under Section 09 91 00.

2. Painter subcontractor shall make an adequate quantity of priming material, of applicable types, available to carpenters for priming jobsite cut ends and/or edges as the installation work proceeds.

B. Furring Strips For Wood Siding

1. Attach wood furring strips vertically to wall structures over air and water barrier at all wall substrates to receive T&G Cedar siding finish; place at each corner of wall structure and in between at not more than 16 inch o.c. Stagger ends of each adjoining members to allow air movement through air space behind siding.
2. Secure to each stud wall framing member using 2 inch galvanized flathead screws.

3.03 FINISH CARPENTRY INSTALLATION - GENERAL

A. Install all interior stock and detail finish lumber and carpentry work shown on Drawings and specified hereinafter.

B. Unless otherwise specified, surface all finish lumber on four sides free from machine marks and machine sanded smooth equal to hand sanding, sharp edges slightly eased.

C. Where "vertical grain" is specified, install material with the vertical grain on the major exposed face and/or faces.

D. All runs of running trim less than 12 feet in length shall be of one piece full length. Unless otherwise specified or specifically indicated, 45 degree miter-cut all end and corner joints with tightly sealed joints. Place and fit all finish carpentry in a workmanlike manner, free of all hammer marks, dents, gouges, splits or other defects; set nail heads for puttying.

E. Where splice joints occur in running trim, abutting trim members shall be closely matching in color and grain pattern, as approved by Architect.

F. Verify that backs of lumber members 5 inches or greater in width are saw-kerfed with 1/8 inch wide x 1/8 inch deep continuous kerfs on 2-inch centers and provide same where not previously performed.

G. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch (0.79 mm). Do not use additional overlay trim to conceal larger gaps.

3.04 INSTALLATION OF EXTERIOR FINISH CARPENTRY ITEMS

A. Stock & Detail Finish Lumber & Trim

1. Install all cedar trim members as shown on Drawings and required for finish carpentry work, all to true plumb and/or level as indicated and applicable.
2. Install in as long lengths as practicable, well secured to adjacent construction in proper locations, in true alignment with openings and other construction all joints tight.
3. Install all integral flashings as shown, as trim and siding work proceeds. Apply sealant to underside of flashing members where indicated; use one-part urethane sealant conforming to sealant specifications for same as specified under Section 07 92 00, of color as selected to closely match finish color of flashing.

B. T&G Pattern Cedar Siding

1. Install at exterior wall locations as shown on Drawings, with panels running horizontal. Stagger end laps at least 4 feet.
2. Fit neatly with joints tight, carefully butted at ends.
3. Where ends of panels are set against edge of corner trim, set into continuous bead of sealant applied along inside edge of trim, using sealant as specified above.
4. Blind nail with 5d galvanized finish nails at each furring strip bearing point.
5. Coordinate installation of panels with all other related sheet metal flashings as shown and furnished under work of Section 07 62 00.

3.05 INSTALLATION OF INTERIOR FINISH CARPENTRY ITEMS

A. Stock & Detail Standing & Running Trim - Installation
   1. Install all stock and detail wood bases, casings and running trim shown, furnished as specified herein, all as shown on Drawings and required for finish carpentry work, all to true plumb and/or level as indicated and applicable as approved.
   2. Install trim in as long lengths as practicable (single piece where less than 12 feet in length), well secured to adjacent construction in proper locations, in true alignment with openings and other construction all joints tight.
   3. All casings and trim to be backed out to allow firm tight fit over backing material. Make joints tight, miter casings and moldings at corners, miter or cope running trim at end returns. Mortise head jamb into side jambs.
   4. Where splice joints occur in running trim, abutting trim members shall be closely matching in color and grain pattern, as approved by Architect.
   5. Set nail heads for puttying. Clean up trim after installation by sand papering and remove sharp external corners.

B. MDO Plywood For Plastic Laminate Window Sills: Install at sill locations as detailed, securely fastened to wall construction, ready for laminate finish.

C. Installation Of Plastic Laminate For Sills
   1. Properly prepare backing for installation of plastic laminate, as approved.
   2. Bond plastic laminate with solvent-base contact adhesive to backing as detailed.
   3. Except as otherwise shown, the front edge and exposed ends shall be self-edged with same laminate. Ease exposed edge of overlap sheet.

3.06 TOLERANCES

A. Maximum Variation from True Position: 1/16 inch (1.6 mm).

B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch (0.79 mm).

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Specially fabricated cabinet units.

B. Countertops.

C. Hardware.

D. Factory finishing.

E. Preparation for installing utilities.

F. All casework items shall meet or exceed the standard of construction and material quality set forth in AWS Section 10 "Casework", Custom Grade with 'Flush Overlay" construction.

1.02 RELATED REQUIREMENTS

A. Section 09 65 00 - Resilient Flooring: Rubber base applied to casework bases.

B. Section 12 32 00 – Manufactured Wood Casework: All casework shown in Demonstration Kitchen 159.

C. Rough-in for, furnishing and installation of, and connections to, plumbing and electrical fixtures and fittings to be built into casework covered under respective Plumbing and Electrical Work Contract Documents, as applicable.

1.03 REFERENCE STANDARDS

A. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards, U.S. Version 3.1; Effective July 1, 2017.

B. BHMA A156.9 - American National Standard for Cabinet Hardware 2015.

C. GSA CID A-A-1936 - Adhesive, Contact, Neoprene Rubber 1996a (Validated 2013).

D. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood 2016.

E. NEMA LD 3 - High-Pressure Decorative Laminates 2005.

1.04 DEFINITIONS

A. The following definitions apply to work of this Section.

1. Exposed Exterior Surfaces: As defined in AWS Section 10, Page 308 as all exterior surfaces exposed to view including: All surfaces visible when doors and drawers are closed, including knee spaces; underside of cabinet bottoms over 42 inches above the finished floor including cabinet bottoms behind light valances and the bottom edge of light valances; cabinet tops under 80 inches above the finished floor, or if 80 inches and over and visible from an upper building level or floor; visible front edges of stretchers, ends, divisions, tops, bottoms, fixed shelves, and nailers; front edge band of adjustable shelves exposed to view in open casework or behind transparent doors; sloping tops of cabinets that are visible.

2. Exposed Interior Surfaces: As defined in AWS Section 10, Page 308 as all interior surfaces exposed to view in open casework or behind transparent doors including: Interior faces of shelves (both fixed and adjustable); divisions and partitions (edge band is an Exposed Exterior Surface); interior face of door and applied drawer fronts; interior face of ends (sides), backs, and bottoms (including pull-outs). Also includes interior surfaces of cabinet top members 36 inches or more above the finished floor.

3. Semi-Exposed Surfaces: As defined in AWS Section 10, Page 309 as those interior surfaces only exposed to view when doors or drawers are opened including: Shelves including edge banding; divisions; drawer sides, sub-fronts, backs, and bottoms; the

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underside of cabinet bottoms between 24 inches and 42 inches above the finished floor; security and dust panels or drawer stretchers; interior face of ends (sides), backs, and bottoms (including a bank of drawers). Also includes interior surfaces of cabinet top members 36 inches or more above the finished floor.

4. Concealed Surfaces: As defined in AWS Section 10, Page 309 as those exterior or interior surfaces that are covered or not normally exposed to view.

1.05 SUBMITTALS

A. Fabricator Qualifications: Upon request, furnish proof of ability to conform to the specified AWI Standards. Submit to Architect.

B. Shop Drawings

1. Submit in accordance with Section 01 33 00, shop drawings for casework, showing location of each item, dimensioned plans and elevations, large scale details, anchors and other components. Indicate compliance with specified standards and other specified requirements for materials and workmanship.
2. Minimum Scale of Detail Drawings: 1-1/2 inch to 1 foot.

C. Manufacturer's Data: Submit in accordance with Section 01 33 00, manufacturer's specifications and installation instructions for hardware, plastic laminates, plywood and other materials used in the fabrication of casework, as required to show compliance with these specifications.

D. Samples: Submit samples of the following items required in the casework. Samples will be reviewed for appearance and finish only. Compliance with other requirements is the exclusive responsibility of the Contractor.

1. Plastic Laminate: Submit 3 complete chains of standard sized laminate samples, of each type laminate specified.
2. Oak Hardwood: Submit 2 samples of each size to be provided, 12 inches long, including hardwood flooring material, for type and surface finish.
3. Hardwood Veneer Plywood: Submit 3 samples, 6" square, of full color range.
4. Quartz Solid Surfacing: Submit 3 samples of each color, of pattern specified.
5. Edge Banding: Submit 3 samples of each available color, minimum 3 inches long.
6. Hardware: Submit one sample of each hardware item.

1.06 QUALITY ASSURANCE

A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.

1. Except as otherwise noted, all work in this Section shall be fabricated by one manufacturer and installed by, and under the control and supervision of, the casework manufacturer.

B. Quality Standards: Except as hereinafter specified, for materials and workmanship conform to "Architectural Woodwork Standards" ("AWS") of the Architectural Woodwork Institute, 46179 Westlake Drive, Suite 120, Potomac Falls, VA 20165, hereinafter called "AWI".

C. Dimensions: Verify dimensions by field measurement before fabrication, wherever possible, without delaying the project. Design units to provide for adjustment and fitting of components during field installation.

D. Maximum Moisture Content: Conform to AWS Section 2, Paragraph 1.2.3.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Storage & Protection

1. Protect casework during transit, delivery, storage and handling to prevent damage, soiling and deterioration.

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2. Stack level, off floor in millwork plant, during delivery and after delivery to the building.
3. Do not deliver casework until painting, wet work, grinding and similar operations which could damage, soil or deteriorate casework have been completed in installation areas; if, due to unforeseen circumstances, casework must be stored in other than installation areas, store only in areas which meet the requirements specified for installation areas.
4. Building shall be dry to approved condition and continuously heated for 14 days minimum prior to delivery of casework; heated to 65 degrees F. for 10 days minimum, before finish materials are placed therein; maintain same minimum temperature after materials are received at building; NO exceptions.
5. Protect finished surfaces from soiling and damage during handling and installation. Keep covered with polyethylene film or other protective covering.

1.08 FIELD CONDITIONS

A. During and after installation of custom cabinets, maintain temperature and humidity conditions in building spaces at same levels planned for occupancy.

B. Examination of Substrate & Conditions
   1. The Installer shall examine the substrate and the conditions under which the work under this section is to be performed.
   2. Do not proceed with work under this section until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

C. Coordinate with Contractor for location of backing between studs in walls required for casework installation and anchorage.

PART 2 - PRODUCTS

2.01 CABINETS

A. Quality Standard: Custom Grade, in accordance with AWMAC/WI (NAAWS), unless noted otherwise.

B. Wood Veneer Faced Cabinet:
   1. Exposed Surfaces: HPVA HP-1 Grade B, Maple, plain sliced, random-matched.
   2. Semi-Exposed Surfaces: HPVA HP-1 Grade B, Maple, plain sliced, random-matched.
   3. Concealed Surfaces: Manufacturer's option.

C. Plastic Laminate Faced Cabinets: Custom grade.

2.02 WOOD- & PLASTIC-BASED COMPONENTS

A. Wood fabricated from old growth timber is not permitted.

B. Lumber:
   1. General:
      a. All exposed solid woods shall be Maple, plain sawn, free from all defects and selected for uniformity of figure and grain.
      b. Woods used in the unexposed parts shall be suitable softwoods, sound throughout.
   2. Wood moisture content:
      a. Provide kiln-dried lumber with a 5% to 11% average content range.
      b. Maintain temperature and relative humidity during fabrication, storage and finishing operations so that moisture content values for cabinetwork at time of installation do not exceed the following:
         1) Average moisture content not to exceed 8%.
         2) Moisture content range of 5-10% permitted in individual pieces.

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3. Framing: Shall be of solid softwood, kiln dried to above specifications and selected for strength and quality. Stock shall be a minimum of 3/4 inch in thickness.
4. Joinery: All joints shall be securely glued, pinned and/or screwed together.

C. Softwood Plywood - General Use
1. Provide FSC certified panels conforming to PS 1, Group I Douglas Fir Grade "A" Int. APA rotary cut veneer on exposed face and/or faces with Grade "B" or "C" on concealed face veneers; minimum 5-ply for 3/4 inch thickness.
2. Do not use plywood for plastic laminate backing.
3. Plywood at Solid Surfacing Vanities: Provide conforming to PS 1, APA “Marine” grade, 3/4 inch thickness.

D. Hardwood Veneer Plywood (Particleboard Core) Panels
1. Conform to WI Section 4.
2. Furnish 3-ply "particleboard core" plywood consisting of medium density particleboard core conforming to ANSI A208.1, Grade M-2, 45 lb./cu.ft. minimum density with "Premium" grade plain sliced Maple veneer finish one side and balancing sheet on opposite side.
3. Total thicknesses: 3/4 inch unless otherwise shown.
4. Finish: Match finish specified for wood doors, Section 08 14 16.

E. Medium Density Fiberboard - General Use: Furnish Roseburg Forest Products “Medite II” (541-784-4070) or Arauco "Trupan Plus MDF" (800-268-9830) FSC certified medium density fiberboard, or approved, conforming to ANSI A208.2, Grade 155, MR30 rated, 47 lb./cu.ft. minimum density, made with binder containing no urea formaldehyde; 3/4 inch unless otherwise indicated or specified.

F. Medium Density Fiberboard - Sink Areas: Furnish Roseburg Forest Products “Medex” (541-784-4070) or Arauco "Trupan Vesta NAF MR50" (800-268-9830) FSC certified moisture resistant medium density fiberboard, or approved, conforming to ANSI A208.2, Grade 155, MR50 rated, 47 lb./cu.ft. minimum density, made with binder containing no urea formaldehyde; 3/4 inch unless otherwise indicated or specified.

G. Particleboard - General Use: Furnish Roseburg Forest Products “UltraBlend Plus” (541-784-4070) or Timber Products Company “Encore” (800-676-3339) or Arauco "Duraflake Plus" (800-268-9830) FSC certified particleboard, or approved, conforming to ANSI A208.1, Grade M-2, 46 lb./cu.ft. minimum density, made with binder containing no urea formaldehyde; 3/4 inch unless otherwise indicated or specified.

H. Hardwood Edgebanding: Use solid hardwood edgebanding matching species, color, grain, and grade for exposed portions of cabinetry.

I. Tempered Hardboard: Shall be composition of compressed wood fibers, pressed by hydraulic pressure into homogenous sheets conform to ANSI A135.4, 1/4 inch thickness overall; finish all faces and edges to match color of cabinet liner.

2.03 HIGH PRESSURE PLASTIC LAMINATE MATERIALS

A. Manufacturers:
1. Formica Corporation: www.formica.com.
2. Panolam Industries International, Inc\Nevamar: www.panolam.com.
3. Wilsonart LLC: www.wilsonart.com.
4. Substitutions: See Section 01 61 00 - Common Product Requirements.

B. High Pressure Decorative (Plastic) Laminates
1. General Purpose Grade Plastic Laminate:
a. Furnish NEMA Standard No. LD3 Post-Forming Type, HGP Grade, .040 inch thickness (+/ .005”). Solid colors and multiple colored patterns as specified below.

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b. Use for all countertops and associated splashes, shelf tops, and the like, except where other countertop finishes are indicated.

c. Use approved plastic backing sheet .020 inch thickness on bottom side of all tops with an unsupported area exceeding 4 square feet.

2. Vertical Grade Plastic Laminate: Furnish NEMA Standard No. LD3 Type 2 Vertical Grade, .028 inch thickness, for exposed face frames and ends and exposed faces of hinged doors and drawers and exposed faces of open shelving units and exposed end panels, including their exposed edges; elsewhere as specified above. Finish texture as specified above for general purpose grade.

3. Liner Grade Plastic Laminate (PL-2): Furnish NEMA Standard No. LD3 Cabinet Liner (CL5) Grade, .020 inch thick high pressure melamine laminate with matte finish, color White, permanently fused to core under heat and pressure. Use for casework semi-exposed interior surfaces.

4. Colors/Patterns & Textures: PLAM1 through PLAM3 as designated on casework elevations and related drawings and details and specified therefor on Sheet A-621.

2.04 SPECIALTY SURFACINGS & ACCESSORIES

A. Solid Polymer Surfacing For Countertops (SSF)

1. Acceptable Sheet Products:
   a. WilsonArt "Solid Surface".
   b. El. du Pont Co. "Corian".
   c. Formica "Surell".
   d. Samsug "Staron".
2. Material Thickness: Base material 1/2 inch and 1/4 inch thicknesses, shop laminated as necessary to required thickness for all countertop and window sill nosing components.
3. Finish: Satin finish as standard with manufacturer; where required by sheet manufacturer, final finish shall be field fabricated following manufacturer's written instructions for "satin" finish.
4. Colors/Patterns & Textures: SSC-1 through SSC-5 as designated on casework elevations and related drawings and details and specified therefor on Sheet I-100.
5. Color/Pattern: Solid Surface #9228SS Chilled Earth, or approved.
6. Accessories: Furnish manufacturer's standard color-matched seam adhesive and silicone sealant, plus other anchorage items such as brass inserts, as applicable.

2.05 ACCESSORIES

A. Adhesive: Type recommended by fabricator to suit application.

B. PVC Edge Banding: Furnish of 1/8-inch (3mm) PVC edge banding of color matching plastic laminate or HDPE, as applicable; all exposed corners and edges machine finished with 1/8-inch radius

C. Counter Support Brackets: As detailed and specified in Section 05 50 00.

D. Fasteners: Size and type to suit application.

E. Bolts, Nuts, Washers, Lags, Pins, and Screws: Of size and type to suit application; chrome-plated finish in concealed locations and stainless steel or chrome-plated finish in exposed locations.

1. Furnish finishing washers, of approved type, of finish to match screws, where noted or required for removable panels.

F. Concealed Joint Fasteners: Threaded steel.

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G. Grommets: Standard plastic, painted metal, or rubber grommets for cut-outs, in color to match adjacent surface.

H. Sealant: Furnish sealant conforming to applicable specifications of Section 07 92 00, for application to joints between casework units and adjacent wall surfaces.

2.06 HARDWARE

A. Casework Hardware: Provide the following casework hardware, or other manufacturer's equivalent, as required for proper casework construction and operation. Include fastenings and accessories as required.

1. European Style Hinges: Provide all steel construction with door opening of minimum 125 degree swing, self-closing with 3-way independent screw action adjustment: Hettich #4944, or approved equal. Use for all casework swing doors and for hinged lift-up counter walk-through.
2. Soft-Close Drawer Slides for Thin Drawers: Provide Knape & Vogt No. 4450 Series zinc-plated, soft-close full extension drawer slide with stainless steel ball bearings, cushioned in and out stops and with minimum 65 lb. load capacity, or approved substitute; no plastic or nylon rollers permitted.
3. Soft-Close Drawer Slides for Large Drawers and File Drawers: Provide Knape & Vogt No. 8650FM Series zinc-plated, soft-close full extension heavy duty drawer slide with stainless steel ball bearings, cushioned in and out stops and with minimum 150 lb. load capacity, or approved substitute; no plastic or nylon rollers permitted. Use for all file drawers and for all drawers wider than 24 inches or deeper than 8 inches.
4. Soft-Close Drawer Slides for all Other Drawers: Provide Knape & Vogt No. 8450FM Series zinc-plated, soft-close full extension drawer slide with stainless steel ball bearings, cushioned in and out stops and with minimum 100 lb. load capacity, or approved substitute; no plastic or nylon rollers permitted.
5. Casework Pulls: Provide 4 inch long wire pulls; satin chromium plated.
6. Magnetic Casework Catches: Provide one of the following or approved:
   a. Knape & Vogt No. 916.
   b. Stanley Hardware Div. No. 46; ALD.
   c. EPCO Magnetic 1000LS.
7. Shelf Standards and Brackets: Provide Knape & Vogt heavy duty No. 82 standards and No. 182 brackets.
8. Shelf Clips: Provide third part heavy-duty shelf clips rated to 400 pounds and designed to resist seismic forces; Bainbridge or approved substitute; provide sample to Owner for review.
9. Locks:
   a. Provide at all casework doors and drawers where indicated on Drawings and/or scheduled. Drawer and door locks shall be dead bolt type, for right and left hand door locking and vertical hand drawer locking. Each lock to be re-keyable using cores matching room door locksets; furnish each lock with cores and metal strike plate. Finish shall be US26D.
   b. Cylinders and locks to be “flush” mounted. Provide shims, spacers and cams as required.
   c. Casework within a given room shall be keyed alike, each room to be keyed separately. Master keys to fit all. Provide three (3) individual keys per lock and six (6) master keys. In addition, furnish 12 blank keys. All keying to be in accordance with Owner's Master Key System using removable cylinder cores.
10. Exposed Hardware Finish: Except where specified otherwise or not available, provide exposed hardware with BHMA Code 626 satin chromium plate finish (US26D) where not available, provide either satin aluminum or satin stainless steel finish.

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2.07 FABRICATION

A. Fabrication - General

1. Assembly: Shop assemble cabinets for delivery to site in units easily handled and to permit passage through building openings. Verify all dimensions at building after wall and ceiling finish materials are in place.
2. In this Section, include providing all cabinet hardware required, as specified herein.
3. Unless otherwise noted, provide backs for all cabinetwork.
4. Conform to local Code provisions for anchorage to resist seismic forces.
5. Edging: Fit shelves, doors, and exposed edges with specified edging. Do not use more than one piece for any single length.
6. Fitting: When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide matching trim for scribing and site cutting.
7. Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners.
   a. Apply laminate backing sheet to reverse side of plastic laminate finished surfaces.

B. Wood Casework - Plastic Laminate / Hardwood Finish

1. Grade: For Custom Casework: AWS Section 10 Custom Grade.
2. Face Construction: Casework shall be of the "reveal overlay" type and shall conform to the additional requirements set forth herein, in addition to meeting or exceeding WI published specifications for custom casework as specified above and supplemented hereinafter.
3. Exposed Laminate Faced Exterior & Interior Surfaces & Edges:
   a. All vertical face frame surfaces, including drawer and hinged door faces and exposed top and bottom faces of open shelving units and exposed end panels shall be finished with .028 inch high pressure plastic laminate with 1/8-inch (3mm) PVC edge banding of matching color unless otherwise directed; all exposed corners and edges machine finished with 1/8-inch radius.
   b. Edges of doors and drawers shall be finish in 1/8-inch (3mm) thick PVC edge banding as specified above, of color matching door/drawer faces, permanently bonded to core material.
   c. Front and back edges of all interior adjustable shelves in open base and wall hung cabinet units shall be finished with 1/8-inch (3mm) thick PVC edge banding as specified above, permanently bonded to core material.
   d. All exposed interior surfaces of open units shall be finished with liner grade laminate.
4. Interior Semi-Exposed Shelving at Plastic Laminate Faced Casework: Top and bottom faces and front and back edge surfaces of all interior semi-exposed adjustable shelves behind solid (non-glazed) doors in base and wall hung cabinet units shall be finished with either .030 inch thick "Liner" Grade high pressure melamine laminate or "Permalam" low pressure decorative laminate overlay, White color with matte finish, permanently fused to core under heat and pressure. Bottoms of shelf units shall be drilled to receive shelf clips as specified.
5. Countertops: To comply with the following unless otherwise detailed:
   a. Top assemblies to have continuous tops composed of longest section possible.
   b. Joints shall be secured with splines and mechanical fasteners.
   c. Typically, countertops shall be plastic laminate of solid color .040 inch high pressure plastic laminate with .020 plastic backer sheet; colors as specified and designated for the various locations. Use solid surfacing countertops and other specialty countertops at various counter assemblies as indicated. At countertops with sinks/lavs, laminate shall be face bonded to "MR50" grade MDF as specified above, with balanced construction.

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d. Except as otherwise shown, the front edges shall have a 1-1/2 inch height and shall be edge banded with 1/8 inch (3mm) PVC edge banding.
e. Front edges where half-round edging is indicated shall have solid polymer edge nosing of profile detailed.
f. All exposed face and edge surfaces of back splashes and side splashes of laminate tops shall be finished with same laminate as countertops, provided to the various heights indicated, of 3/4 inch thick core material.
g. Cut-outs in countertops shall be to shapes and sizes shown for the various conditions. Cutouts larger than standard grommet sizes shall be self-edged with plastic laminate or other approved finish material; cut-outs for office equipment cables, computer paper feed and the like shall be finished with plastic grommets (escutcheons) sized to tightly fit openings, of standard color as selected. Grommets for office equipment cables shall be of 1-1/2 inch diameter and furnished complete with slotted cap.
h. Top overhangs shall be as detailed.

6. Enclosure and Divider Panels: To be 3/4 inch thick MDF or particleboard construction with plastic laminate faces and edge bands on exposed edges.
7. Miscellaneous:
   a. Furnish complete with all fittings, accessories, and hardware for each unit, all complete in place.
   b. Tops of all units under 72 inches above finish floor shall be finished with continuous countertop.
   c. Holes for shelving clips shall be drilled on 1-1/4 inch (32mm) centers, no exceptions.
   d. Structural core of shelves up to and including 30-1/2 inch shelf span shall be 3/4 inch MDF with laminate finish. Structural core of shelves over 30-1/2 inch shelf span and all shelve for book storage shall be 1-inch MDF.
   e. At cabinet backs normally concealed, provide back panels and framing therefor to support weight of cabinets and items to be placed therein; conform to local Code provisions for anchoring casework to resist seismic forces.

C. Pre-Cut Openings
1. Fabricate casework with pre-cut openings, wherever possible, to receive hardware, appliances, plumbing fixtures, electrical work and similar items. Locate openings accurately and use templates or roughing-in diagrams for proper size and shape.
2. Smooth edges of cutouts and, where located in countertops and similar exposures, seal edges of cutouts with a water-resistant coating.
3. Cut-outs for equipment cables, electrical cords, computer paper feed and the like shall be finished with plastic grommets sized to tightly fit openings, of standard color as selected.

D. Measurements
1. Before proceeding with fabrication of casework required to be fitted to other construction, obtain measurements and verify dimensions and shop drawing details as required for accurate fit.
2. Where sequence of measuring substrates before fabrication would delay the project, proceed with fabrication (without field measurements) and provide ample borders and edges to allow for subsequent scribing and trimming of casework for accurate fit.

2.08 SHOP FINISHING

A. On items to receive transparent finishes, use wood filler matching or blending with surrounding surfaces and of types recommended for applied finishes.

B. Wood Finish
1. General:

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a. Provide finish system specified hereinafter, or approved proprietary system, of color stain to match color of existing wood casework and trim, as approved.
b. Apply finish after fitting and matching work is completed.
c. Final finish to match the approved sample.

2. Finish system: WI Finish System -11, custom grade for open grain finish, except as modified herein below:
a. Fine sand to provide clean smooth base.
b. One coat clear vinyl sealer, sandable, for catalyzed polyurethane system.
c. One coat stain, compatible with catalyzed polyurethane system; color as selected by Architect.
d. Apply approved filler compound over fastener heads.
e. Fine sand with 220 grit stearated paper.
f. Two coats clear high solids catalyzed polyurethane; 20% solids by volume minimum; semi-gloss finish.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examination Of Substrate & Conditions
1. The installer shall examine the substrate and the temperature and humidity conditions under which the work under this section is to be performed, and notify the Contractor in writing of unsatisfactory conditions.
2. Verify adequacy of backing and support framing.
3. Verify location and sizes of utility rough-in associated with work of this section.
4. Do not proceed with work under this section until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

3.02 PREPARATION

A. General: Condition casework to average prevailing humidity conditions in installation areas prior to installing.

B. Pre-Installation Meeting
1. Meet at project site prior to delivery of casework and review coordination .and environmental controls required for proper installation and ambient conditioning in areas to receive work.
2. Include in meeting the Contractor, Architect and Owner Representative, installers of casework, wet work such as painting, electrical work, and firms or persons responsible for continued operation (whether temporary or permanent) of HVAC system as required to maintain temperature and humidity conditions.
3. Proceed with casework installation only when everyone concerned agrees that required ambient conditions can be properly maintained.

3.03 INSTALLATION

A. Casework Installation - General
1. Except as otherwise specified herein, all work in this Section shall be installed under the control and supervision of the casework manufacturer with factory-trained mechanics in his employ. Conform to governing codes and ordinances for all installation and anchorage requirements.
2. Set and secure custom cabinets in place, assuring that they are rigid, plumb, and level. Install to a tolerance of 1/8-inch in 8 feet for plumb and level (including tops) and

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with no variations in flushness of adjoining surfaces; shim as required using concealed shims.

3. Install cabinets without distortion so that 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.
4. Use fixture attachments in concealed locations for wall mounted components.
5. Use concealed joint fasteners to align and secure adjoining cabinet units.
6. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch (0.79 mm). Do not use additional overlay trim for this purpose.
7. Secure cabinets to floor using appropriate angles and anchorages. Secure casework to backing built-into wall framing. Attach securely in place with uniform joints providing for thermal and building movements.
8. Countersink anchorage devices at exposed locations. Conceal with solid wood plugs of species to match surrounding wood; finish flush with surrounding surfaces.
9. Install counters in a manner consistent with the specified quality grade to be plumb, level, true and straight with no distortions. Anchor tops securely to base units and knee braces as applicable and indicated. After installation of tops, joints shall be carefully dressed and made smooth, surface scratches removed, and entire surface cleaned and polished.
10. Fill or cover by approved means all gaps and top of tall and upper cabinet units where they adjoin back and end walls, thus preventing the possibility of paper falling behind these units. Install filler strips at underside of all upper casework.

3.04 ADJUST, CLEAN, FINISH & PROTECTION

A. Clean and adjust hardware.

B. Repair damaged and defective casework where possible to eliminate defects functionally and visually; touchup any abraded factory-finished surfaces to match the original finish. Where not possible to repair, replace casework. Adjust joinery for uniform appearance.

C. Provide final protection and maintain conditions, in a manner acceptable to Fabricator and Installer, which ensures manufactured cabinets and casework being without damage or deterioration at time of substantial completion.

D. Touchup of surfaces damaged by others after completing casework installation shall be performed at the expense of the trade causing such damage.

END OF SECTION

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PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Water repellents applied to exterior, masonry surfaces.

1.02 RELATED REQUIREMENTS

A. Section 04 01 00 - Maintenance of Masonry: Tuckpointing and cleaning of existing brick veneer to receive water repellent treatment specified herein.

1.03 REFERENCE STANDARDS

A. ASTM C140/C140M - Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units 2020a.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a meeting at least one week prior to starting work; require attendance of affected installers; invite Architect and Owner.

1.05 SUBMITTALS

A. Product Data: Provide product description, details of tests performed, limitations, and chemical composition.

B. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention; cautionary procedures required during application.

C. Manufacturer's Field Reports: Report whether manufacturer's "best practices" are being followed; if not, state corrective recommendations. Email report to Architect the same day as inspection occurs; mail report on manufacturer's letterhead to Architect within 2 days after inspection.

D. Installer's Qualification Statement.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years documented experience.

B. Installer Qualifications: Company specializing in performing work of type specified and with at least three years of documented experience and approved by manufacturer.

C. Owner reserves the right to provide continuous independent inspection of surface preparation and application of water repellent.

1.07 MOCK-UP

A. Prepare representative surface 36 by 36 inches (0.91 by 0.91 m) in size using specified materials and preparation and application methods on surfaces identical to those to be coated; approved mock-up constitutes standard for workmanship.

B. For proposed substitutions, prepare side-by-side mock-ups of specified and substitute products.

C. Locate where directed.

D. Mock-up may remain as part of the Work.

E. Use mock-up for pre-application testing specified below.

F. Pre-Application Testing
   1. Test Panel:
      a. Use mock-up panel specified above.
      b. Apply water repellent coating at a rate as recommended by coating manufacturer.

c. Allow test area to cure not less than five (5) days.

2. Testing:
   a. Following the five day cure period, Owner's special inspector shall test such test area surface by the Rilem uptake tube test using RILEM 25 PEM Method II.4.
   b. Testing at masonry surfaces shall occur on respective concrete masonry unit surface and over an associated mortar joint.
   c. Results of such tests shall be considered acceptable where the results are 0.5 milliliters or less of absorption for twenty minutes of testing.
   d. Test results of pre-application testing shall be used to make adjustments in coverage rates, if necessary to meet performance testing.

1.08 DELIVERY STORAGE AND HANDLING

A. Packing and Shipping: Deliver products in original unopened packaging with legible manufacturer's identification.

B. Storage and Protection: Comply with manufacturer's recommendations.

1.09 FIELD CONDITIONS

A. Protect liquid materials from freezing.

B. Do not apply water repellent when ambient temperature is lower than 50 degrees F (10 degrees C) or higher than 100 degrees F (38 degrees C).

C. Do not apply water repellents when wind velocity is higher than 10 mph.

1.10 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Correct defective Work within a five year period after Date of Substantial Completion.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Silane, Siloxane, Silane-Siloxane Blend, and Siliconate Water Repellents:
   1. BASF Construction Chemicals: www.buildingsystems.basf.com.
   2. Dayton Superior Corporation: www.daytonsuperior.com.
   3. Evonik Corporation; Protectosil CHEM-TRETE BSM 400: www.evonik.com.
   4. Pecora Corporation; KlereSeal 940-S VOC Silane Penetrating Sealer: www.pecora.com.
   5. PROSOCO, Inc; Weather Seal H40: www.prosoco.com.
   6. Sherwin-Williams Company; Loxon 40 percent Low VOC Silane Water Repellant, with VOC of 343 g/L or less: www.sherwin-williams.com.
   7. Tnemec Inc; Prime-A-Pell Plus V662, with VOC of 400 g/L or less: www.tnemec.com.

2.02 MATERIALS

A. Water Repellent: Silane, siloxane, silane-siloxane blend, or siliconate that reacts chemically with concrete and masonry. Non-glossy, colorless, penetrating, water-vapor-permeable, non-yellowing sealer, that dries invisibly leaving appearance of substrate unchanged.
   1. Applications: Vertical brick veneer surfaces.
   2. Number of Coats: As determined by mock-up testing.
   3. Moisture Absorption When Applied to Masonry: Five percent, maximum, when tested in accordance with ASTM C140 using masonry sample completely coated with water repellent.
   4. Maintains dry appearance when wetted.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify joint sealants are installed and cured.

C. Verify surfaces to be coated are dry, clean, and free of efflorescence, oil, or other matter detrimental to application of water repellent.

3.02 PREPARATION

A. Protection of Adjacent Work:
   1. Protect adjacent landscaping, property, and vehicles from drips and overspray.
   2. Protect adjacent surfaces not intended to receive water repellent.

B. Prepare surfaces to be coated as recommended by water repellent manufacturer for best results.

C. Do not start work until masonry mortar substrate is cured a minimum of 60 days.

D. Remove loose particles and foreign matter.

E. Allow surfaces to dry completely to degree recommended by water repellent manufacturer before starting coating work.

F. Pre-Application Testing
   1. Test Panel:
      a. Use mock-up panel specified above.
      b. Apply water repellent coating at a rate as recommended by coating manufacturer.
      c. Allow test area to cure not less than five (5) days.
   2. Testing:
      a. Following the five day cure period, Owner’s special inspector shall test such test area surface by the Rilem uptake tube test using RILEM 25 PEM Method II.4.
      b. Testing at masonry surfaces shall occur on respective brick surface and over an associated mortar joint.
      c. Results of such tests shall be considered acceptable where the results are 0.5 milliliters or less of absorption for twenty minutes of testing.
   3. Test results of pre-application testing shall be used to make adjustments in coverage rates, if necessary to meet performance testing.

3.03 APPLICATION

A. Product shall be applied as supplied by the manufacturer without dilution or alteration.

B. Apply water repellent in accordance with manufacturer's instructions, using procedures and application methods recommended as producing the best results.

C. Apply at rate recommended by manufacturer and based upon results of test panel(s), applied continuously over entire surface.

D. Unless manufacturer’s written instructions specify otherwise, apply water repellent as follows:
   1. In general, apply “wet-on-wet” to a visibly dry and absorbent surface, starting with a saturating application from the bottom up.
   2. Apply in a uniform manner and of sufficient material to create a 6-inch to 8-inch rundown below the spray contact point.
   3. Allow the initial application to penetrate the masonry surface for 5 - 10 minutes; then reapply additional material in same saturating manner as first application.

E. Remove water repellent from unintended surfaces immediately by a method instructed by water repellent manufacturer.

F. Provide manufacturer's field service representative to inspect preparation and application work continuously during entire application period to ensure that manufacturer's "best practices" for preparation and application are being followed.

3.04 FIELD QUALITY CONTROL

A. Post-Application Testing

1. For each wall surface following application and curing of repellent coating, Owner’s special inspector shall test such wall surface at various locations for proper material application compliance. Such testing shall consist of rilem uptake tube test as performed for pre-application testing.
2. For any surface where such testing fails to meet same performance testing as specified for pre-application testing, re-apply repellent coating as directed by Architect. Such areas shall be retested until required performance is met, at Contractor’s expense.

B. Manufacturer’s Field Services: Furnish written certification that surface preparation method and final condition has manufacturer’s approval and comply with the warranty.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Board cavity wall insulation.

B. Thermal batt insulation in exterior framed wall construction.

C. Acoustical batt insulation at interior framed wall assemblies

1.02 RELATED REQUIREMENTS

A. Section 05 40 00 - Cold Formed Metal Framing.

B. Section 06 10 00 - Rough Carpentry.

C. Section 07 27 00 - Air Barriers.

D. Section 07 42 13 - Metal Wall Panels.

E. Section 07 54 00 - Thermoplastic Membrane Roofing: Rigid insulation under membrane roofing, over plywood roof deck.

1.03 SUBMITTALS

A. Manufacturer's Data: Submit in accordance with Section 01 33 00, brochures for the various insulation products.

1.04 PRODUCT DELIVERY, STORAGE & HANDLING

A. Delivery & Protection Of Materials: Deliver materials in unbroken containers labeled with manufacturer's name and "R" value. Do NOT break seals or use materials until inspected by Architect.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Unfaced Mineral Fiber Glass Thermal Batts

1. General: Furnish conforming to ASTM C665 Type I unfaced glass mineral wool insulation, widths as required for tight friction fit between the various wood framing members spaced as indicated, and to thicknesses required for resistance (R) values indicated on Drawings as specified below.
2. Insulation Resistance Values: Furnish insulation of thickness required to attain following resistance (R) value as established by the National Mineral Wool Insulation Association:
   a. R-13 in new exterior 3-1/2 inch metal stud wall framing.
   b. R-21 in 6 inch exterior metal stud wall framing.

B. Mineral Fiber Sound Blankets: Furnish unfaced mineral rock wool or glass wool blankets conforming to ASTM C665 Type I, equal to Owens Corning “Sound Attenuation Batts”, or USG Interiors "Thermafiber" batts, or Manville "Sound-SHIELD Sound Control" batts, 3 inch and 6 inch thicknesses as indicated for each respective wall type; widths as required for respective wall framing.

C. Rigid Insulation Board

1. Furnish similar to Dow Chemical Co. "Styrofoam SM" extruded polystyrene foam board insulation.
   a. Exterior Cavity Wall Applications: Two inch (2") thick layer for R-10. Furnish in 16 inch wide panels where applied horizontally with "Z" furring strips (Wall Type ES-1). Furnish in 4 foot wide panels where applied to inside face of existing CMU wall surfaces (Wall Type EM4)

2. Material shall have a minimum resistance (R) value of 5.0 per inch thickness and a vertical minimum compressive strength of 25 psi when tested in accordance with ASTM D1621, and a maximum water absorption (% by volume) of 0.3 conforming to ASTM C272.
3. Material shall have a flame spread rating of 75 or less and a smoke development of 450 or less when tested in accordance with ASTM E84.
4. Furnish water-based mastic as recommended by insulation manufacturer.

D. Vapor Barrier
1. Furnish Certainteed MemBrain, Polyimide film vapor retarder for use with unfaced, vapor permeable glass fiber and mineral wool insulation in wall and ceiling cavities, or approved.
a. Water Vapor Permeance:
1) ASTM E 86, dry cup method: 1.0 perms (57ng/Pa*s*m2).
2) ASTM E 86, wet cup method: 10.0 perms (1144ng/Pa*s*m2).
b. Fire Hazard Classification: ASTM E 84:
1) Maximum Flame Spread Index; 20.
2) Maximum Smoke Developed Index; 55.

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

A. Inspection
1. Prior to installation of work in this Section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where installation of the work of this Section may properly commence.
2. Verify that the insulation systems may be installed in accordance with the original design and the manufacturer’s recommendations.

3.02 INSTALLATION

A. Mineral Fiber Glass Thermal Batts
1. Install batts fit tight between framing in locations shown on Drawings, of the various insulation thicknesses as specified above for the various applications and required to attain resistance (R) values specified and indicated. Note: General locations of thermal insulation are shown on the Drawings.
2. All penetrations through insulation vapor barrier shall be sealed against air infiltration in accordance with State and local energy code requirements and regulations.

B. Mineral Wool Blankets - Sound
1. In Framing: Fit tight between stud wall framing at all interior wall assemblies; install to thicknesses indicated for each wall type. Fit insulation tightly around light fixtures, ducts and other wall penetrations.
2. At Door Openings: In sound-retardant walls, pack cut strips tight of sound insulation between wall studs and door and relite frames at head, sides and at sills, as applicable.

C. Rigid Cavity Wall Insulation Board
1. Install against exterior face of plywood wall sheathing substrate following application of water-resistant air barrier, with joints tight between adjacent sheets. Apply panels horizontally, integral with metal "Z" furring spaced 16 inches o.c.
2. Install against interior face of existing CMU wall surface as shown, with joints tight between adjacent sheets, ready for subsequent application of metal stud wall framing.
3. Install insulation tight against each wall surfaces and, if needed, secure in place with water-based mastic as recommended by insulation manufacturer.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Fluid-Applied Air and Water-Resistive Barrier (Air Barrier) for application to the following wall substrates:
   1. New plywood wall sheathing
   2. Existing brick masonry wall surfaces, concealed behind other exterior wall finishes.

1.02 RELATED REQUIREMENTS

A. Section 07 54 00 - Thermoplastic Membrane Roofing: Vapor retarder installed as part of single-ply roofing system.

1.03 DEFINITIONS

A. Weather Barrier: Assemblies that form either water-resistive barriers, air barriers, or vapor retarders.

B. Air Barrier: Air tight barrier made of material that is relatively air impermeable but water vapor permeable, both to the degree specified, with sealed seams and with sealed joints to adjacent surfaces. Note: For the purposes of this specification, vapor impermeable air barriers are classified as vapor retarders.

C. Water-Resistive Barrier: Water-shedding barrier made of material that is moisture resistant, to the degree specified, intended to be installed to shed water without sealed seams.

1.04 REFERENCE STANDARDS

A. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension 2016, with Editorial Revision (2021).

B. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection 2020.

C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2021a.

D. ASTM E2178 - Standard Test Method for Determining Air Leakage Rate and Calculation of Air Permeance of Building Materials 2021a.

1.05 SUBMITTALS

A. Product Data: Provide data on material characteristics.

B. Shop Drawings: Provide drawings of special joint conditions.

C. ABAA Field Quality Control Submittals: Submit third-party reports of testing and inspection required by ABAA Quality Assurance Program (QAP).

D. Manufacturer's Installation Instructions: Indicate preparation.

E. ABAA Manufacturer Qualification: Submit documentation of current evaluation of proposed manufacturer and materials.

F. ABAA Installer Qualification: Submit documentation of current contractor accreditation and current installer certification; keep copies of each contractor accreditation and installer certification on site during and after installation, and present on-site documentation upon request.

G. Testing Agency Qualification Statement.

H. Testing Agency Findings: Submit testing findings to Owner and local Building Department in accordance with the Washington State Energy Code.

1.06 QUALITY ASSURANCE

A. Air Barrier Association of America (ABAA) Quality Assurance Program (QAP); www.airbarrier.org:
   1. Installer Qualification: Use accredited contractor, certified installers, evaluated materials, and third-party field quality control audit.
   2. Manufacturer Qualification: Use evaluated materials from a single manufacturer regularly engaged in air barrier material manufacture, and use secondary materials approved in writing by primary material manufacturer.

B. Testing Agency Qualifications: Independent testing firm contracted by the General Contractor shall specialize in performing testing and inspections of the weather barrier type specified in this section.

1.07 FIELD CONDITIONS

A. Maintain temperature and humidity recommended by the materials manufacturers before, during and after installation.

PART 2 - PRODUCTS

2.01 AIR BARRIER MATERIALS (WATER VAPOR PERMEABLE AND WATER-RESISTIVE)

A. Air Barrier, Fluid Applied: Vapor permeable, elastomeric waterproofing.
   1. Air Barrier Membrane:
      a. Material: Water-based polymer-modified bitumen.
      b. Dry Film Thickness (DFT): 30 mil, 0.030 inch (0.762 mm), minimum.
      c. Air Permeance: 0.004 cubic feet per minute per square foot (0.02 L/s/sq m), maximum, when tested in accordance with ASTM E2178.
      d. Water Vapor Permeance: 5 perms (287 ng/(Pa s sq m)), minimum, when tested in accordance with ASTM E96/E96M, Procedure B.
      e. Ultraviolet (UV) and Weathering Resistance: Approved in writing by manufacturer for up to six months of weather exposure.
      f. Elongation: 300 percent, minimum, when tested in accordance with ASTM D412.
      g. Surface Burning Characteristics: Flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84.
      h. Nail Sealability: Pass, when tested in accordance with ASTM D1970/D1970M.
      i. VOC Content: 100 g per L or less.
      j. Manufacturers:
         1) Tremco Commercial Sealants & Waterproofing; ExoAir 220 : www.tremcosealants.com.
         2) Substitutions: See Section 01 61 00 - Common Product Requirements.

2.02 ACCESSORIES

A. Sealants, Tapes, and Accessories for Sealing Weather Barrier and Sealing Weather Barrier to Adjacent Substrates: As specified or as recommended by weather barrier manufacturer.

B. Flexible Flashing: Self-adhesive sheet flashing complying with ASTM D1970/D1970M, except slip resistance requirement is waived if not installed on a roof.
   1. Composition: Any material that meets physical requirements of ASTM D1970/D1970M with exceptions indicated.
   2. Thickness: 70 mil, 0.070 inch (1.8 mm), nominal.
   3. Manufacturers:
      a. DuPont Building Innovations; FlexWrap NF: www.dupont.com.

b. Fortifiber Building Systems Group; FortiFlash Commercial: www.fortifiber.com.
c. Substitutions: See Section 01 61 00 - Common Product Requirements.

C. Pre-formed Transition Membrane: Semi-rigid silicone or polyester composition, tapered edges, tear resistant.
1. Manufacturers:
a. Tremco Commercial Sealants & Waterproofing; ProGlaze ETA System 1: www.tremcosealants.com.
b. Substitutions: See Section 01 61 00 - Common Product Requirements.

D. Liquid Flashing: One part, fast curing, non-sag, elastomeric, gun grade, trowelable liquid flashing.
1. Manufacturers:
a. Master Wall Inc; SuperiorFlash: www.masterwall.com.
b. Momentive Performance Materials, Inc./GE Construction Sealants; GE Elemax 5000 Liquid Flashing: www.siliconeforbuilding.com.
c. DuPont Building Innovations; Tyvek Fluid Applied Flashing and Joint Compound: www.dupont.com.
d. Tremco Commercial Sealants & Waterproofing; Dymonic 100: www.tremcosealants.com.
e. Substitutions: See Section 01 61 00 - Common Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces and conditions are ready to accept the work of this section.

3.02 PREPARATION

A. Remove projections, protruding fasteners, and loose or foreign matter that might interfere with proper installation.

B. Clean and prime substrate surfaces to receive adhesives in accordance with manufacturer's instructions.

3.03 INSTALLATION

A. Install materials in accordance with manufacturer's instructions.

B. Air & Water-Resistive Barriers: Install continuous air tight barrier over surfaces indicated, with sealed seams and with sealed joints to adjacent surfaces.

C. Apply sealants and adhesives within recommended application temperature ranges. Consult manufacturer if temperature is out of this range.

D. Coatings:
1. Prepare substrate in manner recommended by coating manufacturer; treat joints in substrate and between dissimilar materials as recommended by manufacturer.
2. Where exterior masonry veneer is to be installed, install masonry anchors before installing weather barrier over masonry; seal around anchors air tight.
3. Use flashing to seal to adjacent construction and to bridge joints.

E. Openings and Penetrations in Exterior Weather Barriers:
1. Install flashing over sills, covering entire sill frame member, extending at least 5 inches (125 mm) onto weather barrier and at least 6 inches (150 mm) up jambs; mechanically fasten stretched edges.

2. At openings to be filled with frames having nailing flanges, seal head and jamb flanges using a continuous bead of sealant compressed by flange and cover flanges with sealing tape at least 4 inches (100 mm) wide; do not seal sill flange.
3. At openings to be filled with non-flanged frames, seal weather barrier to each side of opening framing, using flashing at least 9 inches (230 mm) wide, covering entire depth of framing.
4. At head of openings, install flashing under weather barrier extending at least 2 inches (50 mm) beyond face of jambs; seal weather barrier to flashing.
5. At interior face of openings, seal gap between window/door frame and rough framing, using joint sealant over backer rod.
6. Service and Other Penetrations: Form flashing around penetrating item and seal to weather barrier surface.

3.04 FIELD QUALITY CONTROL

A. See Section 01 45 29 - Testing Laboratory Services Provided By Owner.

B. Coordination of ABAA Tests and Inspections:
   1. Provide testing and inspection required by ABAA QAP.
   2. Notify ABAA in writing of schedule for air barrier work, and allow adequate time for testing and inspection.
   3. Cooperate with ABAA testing agency.
   4. Allow access to air barrier work areas and staging.
   5. Do not cover air barrier work until tested, inspected, and accepted.

C. Take digital photographs of each portion of the installation prior to covering up.

3.05 PROTECTION

A. Do not leave materials exposed to weather longer than recommended by manufacturer.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Manufactured metal panels for walls with related flashings and accessory components.

1.02 RELATED REQUIREMENTS

A. Section 05 40 00 - Cold-Formed Metal Framing.

B. Section 06 10 00 - Rough Carpentry: Wall panel substrate.

C. Section 07 25 00 - Weather Barriers: Weather barrier under wall panels, over gypsum sheathing substrate.

D. Section 07 27 00 - Air Barriers: Air and water barrier under wall panels, over plywood sheathing substrate.

E. Section 07 46 23 - Wood Siding.

F. 07 92 00 - Joint Sealants.

1.03 REFERENCE STANDARDS

A. ASTM A 792/A 792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process; 2006a.

1.04 DESIGN REQUIREMENTS

A. Movement: Accommodate movement within system without damage to components or deterioration of seals, movement within system; movement between system and perimeter components when subject to seasonal temperature cycling; dynamic loading and release of loads; and deflection of structural support framing.

B. Drainage: Provide positive drainage to exterior for moisture entering or condensation occurring within panel system.

1.05 SUBMITTALS

A. Shop Drawings: Include layouts of roof panels, details of edge and penetration conditions, spacing and type of connections, flashings, underlayments, and special conditions.

1. Show work to be field-fabricated or field-assembled.

B. Selection Samples: For each siding panel type specified, submit 12" long panel samples representing manufacturer's full range of available colors.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

B. Installer Qualifications: Company specializing in performing the work of this section with minimum 3 years of experience.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Protect panels from accelerated weathering by removing or venting sheet plastic shipping wrap.

B. Store prefinished material off ground and protected from weather. Prevent twisting, bending, or abrasion, and provide ventilation to stored materials. Slope metal sheets to ensure drainage.

C. Prevent contact with materials that may cause discoloration or staining of products.

1.08 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Correct defective work within a five year period after Substantial Completion for degradation of panel finish, including color fading caused by exposure to weather.

C. Correct defective Work within a five year period after Substantial Completion, including defects in water tightness and integrity of seals.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Siding Panels:
   1. Base Metal:
      a. Material: Aluminum-Zinc Alloy-Coated Steel.
      b. Manufacturing Standard: ASTM A792, Grade 40.
      c. Minimum Yield Strength: 40,000 psi.
      d. Thicknesses: 22 and 24 gauge as specified.
      e. Protective Coating: AZ50 Zincalume or Galvalume.
      f. Protective Coating Components:
         1) Zinc = 45%.
         2) Aluminum Alloy = 55%.
      g. Protective Coating Thickness: 1.9 mils.
   2. Exterior (Exposed) Finish:
      a. Primer Coat Material: Baked-on epoxy primer.
      b. Minimum Primer Coat Dry Film Thickness: 0.2 mils.
      c. Finish Coat Material: 70% "Kynar 500" baked-on finish.
      d. Minimum Finish Coat Dry Film Thickness: 0.8 mils.
      e. Minimum total Exterior Finish Dry Film Thickness: 1.0 mils.
      f. Colors: As specified below for the various panel types.
   3. Interior (Concealed) Finish:
      a. Primer Coat Material: Baked-on epoxy primer.
      b. Minimum Primer Coat Dry Film Thickness: 0.15 mils.
      c. Finish Coat Material: Polyester paint.
      d. Minimum Finish Coat Dry Film Thickness: 0.35 mils.
      e. Minimum total Interior Finish Dry Film Thickness: 0.5 mils.
      f. Color: White

2.02 MANUFACTURED METAL PANELS

A. Siding Panels:
   1. Configuration - Siding Panels:
      a. Pattern: Corrugated.
      b. Corrugation Spacing: 2-2/3 inches o.c.
      c. Corrugation Height: 7/8 inches.
      d. Panel Width: 34-2/3 inches (32 inches net).
      e. Panel Length: Panels to be one sheet full length for runs up to 30 feet, without intermediate seams.
      f. Fastening Method: Exposed fasteners with neoprene washers.
      g. Panel Standard of Manufacturer: AEP Span, Inc. “Nu-Wave Corrugated”, or approved.
      h. Color: AEP Span DuraTech color, or approved, as selected by Architect.

B. Internal and External Corners: Same material, thickness, and finish as exterior sheets.

C. Trim, Closure Pieces, Caps, Flashings, Facias, and Infills: Same material, thickness and finish as exterior sheets; brake formed to required profiles.

D. Anchors: Stainless steel.

2.03 ACCESSORIES

A. Furring Strips: Furnish as specified in Section 06 10 00 for pressure treated lumber, of nominal 1" x 4" size.

B. Gaskets: Manufacturer's standard type suitable for use with system, permanently resilient; ultraviolet and ozone resistant.

C. Sealants: Manufacturer's standard type suitable for use with installation of system; non-staining.

D. Fasteners: Manufacturer's standard type to suit application; with soft neoprene washers, steel, hot dip galvanized. Fastener cap same color as exterior panel.

E. Field Touch-up Paint: As recommended by panel manufacturer.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that building framing members are ready to receive panels.

B. Verify that water-resistive air barrier has been installed over substrate completely and correctly.

3.02 PREPARATION

A. Furring Strips For Metal Siding Attachment

1. Attach furring strips vertically to wall structures over weather barrier at all wall substrates to receive metal siding finish, installed not more than 16 inches o.c.; place at each corner of wall structure and each side, above and below window and door openings, as applicable.
2. Secure to masonry substrate using 3 inch long masonry anchors.

3.03 INSTALLATION

A. Installation - General:

1. Install panels on walls with standard corrosion resistant fasteners with neoprene washers, installed in accordance with manufacturer's instructions.
2. Fasten panels to furring strips; aligned, level, and plumb.
3. Locate joints over supports. Lap panel ends minimum 2 inches (50 mm).
4. Seal and place gaskets to prevent weather penetration. Maintain neat appearance.

B. Installation Of Metal Siding Components

1. Secure siding panels to the various wall surfaces in locations shown, installed with panels set to true horizontal building lines.
2. Follow the various manufacturers written instructions and recommendations, in addition to the following:
    a. Lap panel ribs and seams away from prevailing wind direction; i.e., progress from east to west or from north to south.
    b. Prior to installing panel, apply sealant compound bead or sealant tape on underside of overlapping ribs.
    c. Do not stretch or compress panel side-lap interlocks.

d. Secure panel without warp or deflection.

3. Install all flashings, closures, trim and other flashings and accessories shown or otherwise required to provide a watertight and weathertight installation.
4. Touchup damaged factory-finish coating using same material as factory-finish protected metal coating.

3.04 TOLERANCES

A. Maximum Offset From True Alignment Between Adjacent Members Butting or In Line: 1/16 inch (1.6 mm).

B. Maximum Variation from Plane or Location Indicated on Drawings: 1/4 inch (6 mm).

3.05 CLEANING

A. Remove site cuttings from finish surfaces.

B. Clean and wash prefinished surfaces with mild soap and water; rinse with clean water.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. In general, at single-story Building No. 1 new pop-up roof deck, provide fully adhered single-ply PVC sheet membrane roofing as specified herein, complete with cover board over rigid foam insulation mechanically fastened over plywood roof deck. This portion of roofing work shall be provided with 20 year warranty as specified below.

B. In addition, patch existing roofing assembly along roof perimeter parapet walls as indicated on Roof Plan where new parapet wall cap flashings and associated roofing work occurs. This portion of roofing work shall be warranted water-tight by roofing contractor for a period of 5 years as specified below.

C. In addition, at existing two-story Building No. 2, patch existing roofing assembly along roof perimeter where new gutter and associated downspout work occurs. This roof assembly was installed in March of this year by Scholten Roofing (Lyndon, WA). As a result, this portion of roofing work shall be performed by same roofing contractor or a roofing contractor certified by existing roofing assembly manufacturer so as to maintain existing 20 year roofing warranty.

D. Insulation, flat and tapered.

E. Vapor retarder.

F. Deck sheathing.

G. Roofing membrane flashings and membrane clad metal flashings.

H. Section 02 41 19 - Selective Building Remodel Demolition.

I. Section 06 10 00 - Rough Carpentry: Plywood roof sheathing.

J. Section 07 62 00 - Sheet Metal Flashing and Trim not otherwise specified herein

1.02 REFERENCE STANDARDS

A. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus 2019.

B. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation 2019.

C. ASTM D6878/D6878M - Standard Specification for Thermoplastic Polyolefin Based Sheet Roofing 2019.

D. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials 2016.

E. ASTM E1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces 2011 (Reapproved 2019).

F. FM DS 1-28 - Wind Design 2016.

G. UL (DIR) - Online Certifications Directory Current Edition.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Pre-Application Coordination Meeting

1. Approximately two weeks prior to scheduled commencement of roofing installation and associated work for the various roofing areas, roofing contractor shall conduct a pre-application coordination meeting at the jobsite to be attended by the Roofing Contractor, Sheet Metal and other applicable subcontractors, Roofing Manufacturer's Representative, Inspector, and the Architect.
2. Contractor shall coordinate the date for the Coordination Meeting so that all required parties are in attendance.

3. Purpose of meeting shall be to review requirements of the Contract Documents to assure that details are correct and that materials shall be installed properly including:
    a. Review and finalize construction schedule related to roofing work and verify availability of materials, Installer's personnel, equipment and facilities needed to make progress and avoid delays.
    b. Review weather and forecasted weather conditions, and procedures for coping with unfavorable conditions, including possibility of temporary roofing (if not a mandatory requirement).
    c. Review roofing system requirements (drawings, specifications and other contract documents).
    d. Review required guarantee and submittal requirements, both completed and yet to be completed.
    e. Review required inspection, certifying and material usage accounting procedures.
    f. Review regulatory requirements.
4. Do not commence work of this Section until documents required have had their final review by the Architect.
5. Roofing contractor shall submit the Pre-installation Notification form to the manufacturer with all necessary drawings and proposed details, for approval prior to any roofing work or materials delivered to the job site.

B. Work Start Notice
1. Notify Special Inspector and Owner's representative 24 hours before starting work and when starting again after required work postponement.
2. Notify roofing manufacturer per their instructions.

C. Inspections: Factory technical representative shall make final inspection of installed roofing assemblies as required to acquire Owner a minimum 15-year labor and material warranty specified herein.

1.04 SUBMITTALS

A. Submittals- General: Submit the following a minimum of one week prior to Coordination Meeting:
1. Samples to include:
    a. Sheet membrane products.
    b. Roof insulation products.
    c. Fasteners (bagged and labeled).
    d. Color sample.
2. Copy of guarantee application submitted to and initially approved by the Manufacturer.
3. Letter of certification from the primary Manufacturer stating that the system specified or proposed is appropriate for the geographical area and type deck, that the specified requirements are either acceptable or exceed their requirements for the specified guarantees. Any items not acceptable or detrimental to system performance shall be noted prior to bid for review and clarification.
4. Approved applicator certification letter from Manufacturer documenting at least three (3) years of approval, including current approval.
5. Current product literature, installation specifications, and details.

B. Product Data: Provide data indicating membrane materials, flashing materials, insulation, vapor retarder, surfacing, and fasteners.

C. Manufacturer's Installation Instructions: Indicate membrane seaming precautions and perimeter conditions requiring special attention.

D. Warranty Documentation:
   1. Submit manufacturer warranty for new work and ensure that forms have been completed in Owner's name and registered with manufacturer.
   2. Submit installer's certification that installation complies with warranty conditions for roofing membrane.

E. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

A. General
   1. Where these specifications differ from membrane manufacturer's specific requirements for minimum twenty (20) year warranty, roofing subcontractor shall provide such materials in conformance to membrane manufacturer's requirements, as approved by Architect.
   2. This roofing system shall be applied only by an applicator authorized by the roofing manufacturer.
   3. Upon completion of the installation, and the delivery to the roofing manufacturer by the applicator of a certification that all work has been done in strict accordance with the contract specifications and roofing manufacturer's requirements, an inspection shall be made by a technical representative of the roofing manufacturer to observe the installed roof system.
   4. There shall be no deviation made from the contract specification or the approved shop drawings without prior written approval by the Architect and roofing manufacturer.
   5. All work pertaining to the installation of the roofing system and associated flashings shall only be completed by applicator personnel trained and authorized by roofing manufacturer in those procedures.

B. Installer Qualifications
   1. A single Installer ("Roofer") shall perform the work of this section; and shall have a minimum of three (3) years documented approval by the primary roofing manufacturer, capable of maintaining and providing the specified guarantees.
   2. All work pertaining to the installation of the roofing system and associated flashings shall only be completed by applicator personnel trained and authorized by roofing manufacturer in those procedures. All workmen shall be factory certified.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's original containers, dry and undamaged, with seals and labels intact.

B. Store materials in weather protected environment, clear of ground and moisture.

C. Ensure storage and staging of materials does not exceed static and dynamic load-bearing capacities of roof decking.

D. Protect foam insulation from direct exposure to sunlight.

E. Single-ply adhesives shall be stored at temperatures above 40 degrees F.

F. All flammable materials shall be stored in a cool, dry area away from sparks and open flames.

G. The loading of the storage area shall not exceed the allowable load for the structure.

1.07 JOB CONDITIONS

A. Weather Conditions
   1. Work shall not proceed under conditions of inclement weather such as precipitation or high winds, or when such conditions appear imminent.

2. Single-ply materials may be installed under certain adverse weather conditions (temperature, moisture, humidity), but consultation with the manufacturer is advised since production costs may be affected and certain precautions recommended.
3. Proceed with roofing work only when existing and forecasted weather conditions will permit work to be performed in accordance with manufacturers' recommendations and warranty requirements.

B. Protection: Special care shall be exercised when trafficking is necessary over new recently installed roofing. Traffic over these roof areas shall be minimized whenever possible. Provide special protection measures when significant traffic is required over new roofing. Contractor shall be responsible for patching of any installed membrane which is damaged during any sequence of the work.

C. Miscellaneous Job Conditions
1. All surfaces to receive insulation, membrane, or flashing shall be thoroughly dry. Should surface moisture occur, the Contractor shall provide the necessary equipment to dry the surface prior to application.
a. All new and temporary construction, including equipment and accessories, shall be secured in such a manner, at all times, as to preclude wind blow-off or wind damage.
b. Prior to and during application, all dirt, debris, and dust shall be removed from surfaces either by vacuuming, sweeping, blowing with compressed air, and/or similar methods.
c. Only as much of the new roofing as can be made weather-tight each day, including all flashing and detail work, shall be installed. All seams shall be cleaned and heat-welded before leaving the jobsite.

1.08 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Building No. 1 System Warranty - New Raised Roof Deck: Provide manufacturer's system warranty agreeing to repair or replace roofing that leaks or is damaged due to wind or other natural causes.
1. Warranty Term: 20 years.
2. For repair and replacement include costs of both material and labor in warranty.

C. Building No. 1 System Warranty - Existing Roof Deck Perimeter Work: Furnish 5-year workmanship warranty for both labor and materials covering removal and replacement of any work related to roofing, flashings, or metal work found to be defective or otherwise not in accordance with the Contract Documents, signed and countersigned by Installer (Roofer) and Contractor.

D. Building No. 2 System Warranty: Provide certification from roofing manufacturer certifying continuance of existing 20 year roofing warranty.

PART 2 PRODUCTS

2.01 ROOFING MEMBRANE AND ASSOCIATED MATERIALS FOR PATCHING EXISTING ROOFING

A. Where existing roofing products differ from those specified herein for new roofing work, provide to match the existing roofing materials and assembly to the greatest extent possible at roof repair work.

2.02 MANUFACTURERS - NEW ROOFING WORK

A. Thermoplastic Polyvinyl Chloride (PVC) Membrane Roofing Materials:
1. Carlisle Roofing Systems, Inc; Sure-Flex PVC KEE: www.carlisle-syntec.com.
2. Sika Corporation Roofing; Sarnafil PVC: usa.sarnafil.sika.com.

3. Versico Roofing Systems; VersiFlex PVC: www.versico.com.
4. Substitutions: See Section 01 61 00 - Common Product Requirements.

B. Insulation:
1. Carlisle SynTec; SecurShield Insulation: www.carlisle-syntec.com/#sle.
2. Atlas Roofing Corporation: www.atlasroofing.com.
3. GAF Materials Corporation: www.gaf.com.
4. Versico Roofing Systems; SecurShield Insulation: www.versico.com.

2.03 ROOFING MEMBRANE AND ASSOCIATED MATERIALS

A. Roofing Assembly Requirements:
1. Solar Reflectance Index (SRI): Minimum of 64 based on three-year aged value; if three-year aged data is not available, minimum of 82 initial value.
a. Calculate SRI in accordance with ASTM E1980.
b. Field applied coating may not be used to achieve specified SRI.
2. Roof Covering External Fire Resistance Classification: UL (FRD) Class A.
3. Reinforcing: Internal fabric.
4. Thickness: 0.060 inch, minimum.
5. Color: White.

B. Seaming Materials: As recommended by membrane manufacturer.

C. Membrane Fasteners: As recommended and approved by membrane manufacturer.

D. Flexible Flashing Material: Same material as membrane.

2.04 INSULATION AND ASSOCIATED MATERIALS

A. Polyisocyanurate Board Insulation: Rigid cellular foam, complying with ASTM C1289, Type II, Class 2, polymer bonded glass fiber mat both faces and with the following characteristics:
1. Board Size: 48 by 48 inch and 48 by 96 inch, at Contractor's option
2. Board Thickness: 2.7 inch (69 mm) maximum per layer.
3. Thermal Resistance: Total R-value of R-38.
4. System Description At Plywood Roof Deck:
a. Vapor Retarder: As specified below.
b. Flat Boardstock Insulation: Furnish over entire roof deck over vapor retarder membrane three (3) layers having an overall nominal thickness of 6.7 inches or greater and an overall thermal resistance "R" factor of 38.0 or greater. No single layer shall exceed a thickness of 2.7 inches.
c. Pre-Cut Crickets: Furnish cricket panels of sizes required to form crickets to full lengths and shapes indicated in each case. Cricket system shall be manufactured to provide net 1/2 inch per foot slope in directions indicated.
d. Insulation Cover Board: As specified below.

B. Insulation Cover Board: Glass mat faced gypsum panels, ASTM C1177/C1177M, fire resistant type, 5/8 inch (16 mm) thick.
1. Manufacturers:
a. Georgia-Pacific; DensDeck Prime: www.densdeck.com.
b. National Gypsum Company; DEXcell FA Glass Mat Roof Board: www.nationalgypsum.com.
c. Substitutions: See Section 01 61 00 - Common Product Requirements.

2.05 ACCESSORIES

A. Vapor Retarder Sheeting:
   1. General: Use for application over bare plywood roof sheathing, under insulation.
   2. Material: Shall consist of a reinforced composite aluminum foil with a self-adhesive SBS backing and removable poly release film; 0.015 inch overall thickness.

B. Stack Boots: Prefabricated flexible boot and collar for pipe stacks through membrane; same material as membrane.

C. Sheathing Joint Tape: Paper type, 2 inch wide, self-adhering.

D. Insulation Joint Tape: Glass fiber reinforced type as recommended by insulation manufacturer, compatible with roofing materials; 6 inches (150 mm) wide; self-adhering.

E. Insulation & Cover Board Fasteners: Appropriate for purpose intended and approved by Factory Mutual and roofing manufacturer; furnish with corrosion-resistant plates for securement of insulation and cover board.

F. Furnish prefabricated PVC membrane inside/outside corners and vent stacks.

G. Furnish termination bars as required for terminating and securing membrane to roof deck at roof perimeter edges in compliance with FM I-90 wind uplift requirements.

H. Surface Conditioner for Adhesives: Compatible with membrane and adhesives.

I. Fall Restraint Posts: Furnish as specified in Section 11 81 29.

J. Sealants: As recommended by membrane manufacturer.

PART 3 EXECUTION

3.01 INSTALLATION - GENERAL

A. Fall Restraint Anchors: Anchors shall be secured to roof deck according to manufacturer's instructions and recommendations; locations as indicated on roof plan.

3.02 EXAMINATION

A. Verify that surfaces and site conditions are ready to receive work.

B. Verify deck is supported and secure.

C. Verify deck is clean and smooth, flat, free of depressions, waves, or projections, properly sloped and suitable for installation of roof system.

D. Verify deck surfaces are dry and free of snow or ice.

E. Verify that roof openings, curbs, and penetrations through roof are solidly set, and cant strips are in place.

3.03 INSTALLATION - EXISTING ROOFING

A. Perform work in accordance with NRCA Roofing and Waterproofing Manual and manufacturer's instructions as required to maintain existing roofing warranty. Extend new roofing out over existing roofing, with initial layer of multi-layered assembly extending minimum 8 inches onto existing roofing. Each subsequent membrane shall extend as additional 6 inches onto existing roofing membrane.

B. Match thickness of existing insulation including cover board where patching occurs. Top surface of insulation shall be flush with adjacent roofing surface.

C. Existing membrane surfaces to be covered with new roofing assembly shall be primed with appropriate primer.

D. Extend new roofing out over existing roofing minimum 12 inches, unless otherwise directed by roofing manufacturer.

3.04 ROOFING INSTALLATION - GENERAL

A. Perform work in accordance with manufacturer's instructions, NRCA (RM), and NRCA (WM) applicable requirements.

B. Do not apply roofing membrane during cold or wet weather conditions.

C. Do not apply roofing membrane when ambient temperature is outside the temperature range recommended by manufacturer.

D. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.

E. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.

3.05 INSTALLATION OF VAPOR RETARDER & INSULATION ASSEMBLIES

A. Installation Of Rigid Insulation & Cover Board

1. General: Apply only as much insulation as can be covered the same day with roofing membrane. At the conclusion of each day's work, seal exposed edges of the insulation. Cut and remove seal upon continuation of the work.
2. Installation - Plywood Roof Deck Areas:
    a. Apply flat boardstock insulation panels in maximum 2.7-inch thick layers with all edges butt snugly and joints staggered. Stagger joints in succeeding layer minimum 12 inches from joints in lower layer.
    b. Boards shall be cut accurately to fit neatly around all penetrations. Small pieces and scraps of insulation will not be allowed. Voids over 1/4 inch in width shall be filled by appropriate method.
    c. Cricket assemblies shall be installed where indicated, in strict accordance with cricket manufacturer's written instructions, having a minimum net 1/2 inch per foot slope in all cases.
    d. Install cover board following same application method as specified above for flat boardstock insulation, with both the long and short joints offset from the joints in the foam board layer a minimum of 12 inches. Install with pre-primed surface facing up.
    e. Mechanically fastened entire assembly to plywood roof deck in accordance with manufacturer's recommendations, codes and insurance requirements to comply with Factory Mutual I-90 wind uplift requirements, ready for fully adhered application of roofing membrane

3.06 INSTALLATION - MEMBRANE

A. General

1. Have a copy of the manufacturer's latest printed specifications at the jobsite for reference.
2. Manufacturer's technical representative shall be responsible for inspection of the work to assure the quality of the work.
3. Rolls of roofing sheet material shall be stored and handled according to the manufacturer's recommendations; they should also be unrolled and laid down according to manufacturer's instructions. Shingle joints on sloped substrate in direction of drainage.
4. Membrane shall be anchored in a manner that insures proper load transfer of membrane stresses while maintaining water-tight integrity.
5. All membrane surfaces to be welded shall be clean and dry; solvent and heat welding shall be according to manufacturer's recommendations.

6. Seams shall be checked by roofing subcontractor for watertight integrity and sealed the same day.

B. Inspection: Applicator shall examine surfaces scheduled to receive single-ply membrane for defects such as excessive surface roughness, contaminated surfaces, structurally unsound substrates, etc., that will adversely affect execution and quality of work. Work shall not commence until all defects are remedied.

C. Preparation
1. Surfaces scheduled to receive single-ply membrane roofing shall be free of physical contact with any bituminous surfaces, clean and smooth.
2. Conform to the manufacturer's instructions and specifications as if included herein verbatim, for the installation of glass fiber tape at all joints between insulation board panels which are to receive application of single-ply sheets.

D. Primer & Adhesive Installation At Roof Perimeters & Parapet Walls
1. Conform to the manufacturer's instructions, and specifications as if included herein verbatim.
2. Do not apply adhesive in the lap area.

E. Membrane Installation - Fully Adhered
1. Position sheet so as to lap the next sheet 4 inches minimum when hand welding; machine (automatic) welding laps to be 3 inches minimum. Make all joints watertight with approved electric hot air welding equipment approved by the membrane manufacturer.
2. Width of weld to be approximately 1-1/2 inches.
3. Lay sheets into adhesive and press or roll down to substrate in accordance with the manufacturer's instructions.
4. Install perimeter strips continuous along all roof perimeter edges and other vertical wall intersections as required per manufacturer's FM-190 requirements, fastened to roof deck as per manufacturer's recommendations.

F. Roll out membrane, free from wrinkles or tears. Place sheet into place without stretching.

G. Shingle joints on sloped substrate in direction of drainage.

H. Hot-Air Welding Of Lap Areas
1. General:
a. All seams shall be hot-air welded. Seam overlaps shall be a minimum 1-1/2 inches wide when automatic machine welding, and 3 inches wide when hand welding.
b. Welding equipment shall be provided by or approved by roofing manufacturer. All mechanics intending to use the equipment shall have successfully completed a training course provided by a manufacturer's technical representative prior to welding.
c. All membrane to be welded shall be clean and dry. No adhesive shall be in the seam area.
2. Hand Welding: Hand welded seams shall be completed in three stages. Hot-air welding equipment shall be allowed to warm up for at least one minute prior to welding.
a. The seam shall be tack-welded every 3 feet to hold the membrane in place.
b. The back edge of the seam shall be welded with a narrow but continuous weld to prevent loss of hot air during the final welding.
c. The nozzle shall be inserted into the seam at a 45 degree angle. Once the proper welding temperature has been reached and the membrane begins to 'flow', the hand roller is positioned perpendicular to the nozzle and pressed lightly. For straight seams, the 1-1/2 inch wide nozzle shall be used. For corners and compound connections, the 3/4 inch wide nozzle shall be used.

3. Machine Welding: Machine welded seams are achieved by the use of manufacturer's automatic welding equipment. When using this equipment, manufacturer's instructions shall be followed and local codes for electric supply, grounding, and over current protection observed. The automatic welding machines require 218 to 230 volts at 30 amps.
4. Quality Control of Welded Seams: As specified below.

I. Flashings

1. Apply membrane flashings separately from roofing membrane where required for parapet walls, seismic expansion joints, thru-wall scuppers, curbs and other roof penetrations including drain and pipe penetrations. Extend up and over parapet walls, down outside face as necessary for subsequent securement behind cap flashing continuous cleats.
2. All flashings shall extend a minimum of 8 inches above insulation level unless previously accepted by Architect and roofing manufacturer. Flashings shall be terminated according to roofing manufacturer's recommended details; extend up under reglets to fully engage reglet counterflashings.
3. Fully adhere flashings to substrates, hot-air welded at joints, junctures of roofing membrane, and at junctures with coated sheet metal flashings where installed.
4. Install metal screw-type clamps at pipe and conduit flashings and apply sealant as shown on membrane manufacturer's applicable details.
5. All interior and exterior corners and miters shall be cut and hot-air welded into place.

J. Coated Metal Flashings

1. Apply membrane flashings separately from roofing membrane where required for thru-wall scuppers, new fascia gutters and other flashing applications.
2. Fully adhere flashings to substrates, hot-air welded at joints and junctures of roofing membrane. Install metal screw-type clamps at pipe and conduit flashings and apply sealant as shown on membrane manufacturer's applicable details.

3.07 FIELD QUALITY CONTROL

A. Quality Control Of Welded Seams

1. All completed welded seams shall be checked after cooling for continuity using a rounded screwdriver or other suitable blunt object by the roofing contractor.
2. Visible evidence that welding is proceeding acceptably is smoke during the welding operation, shiny membrane surfaces, and an uninterrupted flow of black material from the edge of completed joints.
3. On-site evaluation of welded seams shall be made daily by the roofing contractor at locations as directed by the Architect or membrane manufacturer's representative. Two-inch wide cross-sectional samples shall be taken three times a day minimum through completed seams. Correct welds display failure from shearing of the membrane prior to separation of the weld.
4. Each test cut shall be patched by the roofing contractor at no extra charge to the Owner.
5. All field welded seams shall be left exposed until inspected and accepted by the roofing manufacturer's representative.

3.08 PROTECTION

A. Protect installed roofing and flashings from construction operations.

B. Where traffic must continue over finished roof membrane, protect surfaces using durable materials.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fabricated sheet metal items, including flashings, counterflashings, gutters, and downspouts.

B. Sealants for joints within sheet metal fabrications.

1.02 RELATED REQUIREMENTS

A. Section 07 42 13 - Metal Wall Panels: Pre-formed metal siding including associated flashings.

B. Section 07 54 00 - Thermoplastic Membrane Roofing.

C. Section 07 92 00 - Joint Sealants: Sealing non-lap joints between sheet metal fabrications and adjacent construction.

D. Section 08 41 13 - Aluminum-Framed Entrances And Storefronts including associated flashings.

1.03 REFERENCE STANDARDS

A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2017.

B. SMACNA (ASMM) - Architectural Sheet Metal Manual 2012.

1.04 SUBMITTALS

A. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.

B. Submit verification color samples of pre-finished metal for color approval.

1.05 QUALITY ASSURANCE

A. Perform work in accordance with SMACNA Architectural Sheet Metal Manual requirements, hereinafter in this Section called "Standard Manual", together with standard details, and standard details except as otherwise indicated.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

B. Prevent contact with materials that could cause discoloration or staining.

1.07 JOB CONDITIONS

A. Coordination: Coordinate metal flashing and trim work with interfacing of the installation of roofing and other adjoining substrate work for proper sequencing of each installation. Ensure best possible weather resistance and durability of the work and protection of materials and finishes.

B. Electrolytic Protection: Wherever metals of different galvanic range are to be in contacts provide industry-approved separation by bituminous paint coats, bitumen saturated felts, or tinning, as applicable and approved.

1.08 WARRANTY

A. Warranty

1. Furnish prepainted sheet metal manufacturer's standard duly executed 20-year minimum warranty covering color fade, chalk, and film integrity of factory painted sheet metal finish.
2. Warranty all roof flashings and sheet metal assemblies specified herein watertight and weather-tight for five (5) years from date of substantial completion.

PART 2 PRODUCTS

2.01 SHEET MATERIALS

A. Prepainted Flashing Sheets: Furnish zinc-aluminum coated sheet steel complying with ASTM A792, Grade 40, AZ50 'Zincalume" or "Galvalume" coated; primed on both sides and finished one side with 70% 'Kynar 500' baked-on coating, or approved, 1 mil thickness; 22 gauge thickness unless otherwise noted or specified. Allow for one color to be selected by Architect for various items as determined by Architect during shop drawing review; color as selected from colors equal to AEP Span 'Cool' DuraTech 5000 Premium Fluoropolymer (PVDF) Coating, or approved.

B. Stainless Steel: ASTM A 666 Type 304, soft temper, 18 gauge thickness unless otherwise indicated; smooth No. 4 finish.

2.02 ACCESSORIES

A. Solder
   1. Furnish conforming to Fed. Spec. QQ-S-571D, Type AC, Composition Sn50 unless otherwise specified.
   2. For soldering stainless steel, use 50-50 percent block tin and pig lead (minimum) ASTM B32.

B. Soldering Flux: Furnish conforming to Fed. Spec. O-F-506C Type AC or of type recommended by the industry for type of metal being soldered.

C. Fasteners: Stainless steel, same material and finish as flashing metal, with soft neoprene washers.

D. Fastening & Miscellaneous Materials
   1. Metal, - General: For steel work, furnish of SAE 1010 analysis, except furnish SAE 1018 or 1020 where case hardened materials are required zinc-coat steel fastenings in accordance with ASTM A153 Class D.
   2. Screws and Washers:
      a. Unless otherwise noted or shown, furnish of slotted panhead thread forming ASA Type A, of material specified hereinabove, as applicable; use screws for exposed applications.
      b. Where thread-cutting screws are required, use ASA Type B, of material specified hereinabove, as applicable.
      c. For exterior exposed screws, use dished type plain periphery washers of same material as specified hereinabove, as applicable, plus approved neoprene washer under each metal washer.
      d. Lengths and gauges as required and approved for secure and permanent fastening.
   3. Bolts, Nuts and Washers:
      a. Except as otherwise noted or shown, furnish standard hexagon head or square head bolts, of sizes shown and required for secure and permanent fastening of the work, of material specified hereinabove, as applicable, complete with flat washers and nuts of same material.
      b. On exterior exposed work, include dished type plain periphery metal washers, of same material as bolt, plus approved neoprene washer under each metal washer.
   4. Nails: Furnish large headed annularly grooved nails of materials specified hereinabove, as applicable; use nails generally only for concealed application. Where absolutely necessary to expose nail heads, provide approved neoprene washer under head.
   5. Cleats: Same metal and one gauge heavier than sheet being anchored, continuous, punched for anchors spaced 12 inches o.c.

6. Sealant: For all sealant applications associated with sheet metal flashings specified herein furnish as specified in Section 07 92 00.
7. Metal Accessories: Provide sheet metal clips, straps, anchoring devices and similar accessory units as required for installation of work, matching or compatible with material being installed, non-corrosive, size and gauge required for performance.

2.03 FABRICATION - GENERAL

A. Metal Fabrications - General
   1. General:
      a. Comply with details shown, and with applicable requirements of the SMACNA "Architectural Sheet Metal Manual" and other recognized industry practices. Comply also with material manufacturer instructions and recommendations.
      b. Shop-fabricate work to greatest extent possible. Neatly form all work to size, shape and dimensions shown or required to fit substrates; make all angles and lines in true alignment. Verify all dimensions at the building.
      c. Fabricate for waterproof and weather-resistant performance; with expansion provisions for running work, sufficient to permanently prevent leakage, damage or deterioration of the work.
      d. Unless otherwise specified, fabricate items in 10 feet maximum sheet lengths, as approved, and hold number of joints to a minimum. Shop form, lap, rivet and solder corners and angles into one piece 18 to 24 inches each way from corner or angle.
      e. After soldering, remove all flux or acid with neutralizing chemical, wash surface with water and then let dry, ready for shop painting and installation.
      f. 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 1/2 hems; hem all drip legs of copings and flashings at 45 degrees.
   2. Seams: Form material with standing seams, except where otherwise indicated. At moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.
   3. Sealant Joints: Where movable, non-expansion type joints are indicated or required for proper performance of work, form metal to provide for proper installation of elastomeric sealant, in compliance with industry standards.
   4. Separations: Provide for separation of metal from non-compatible metal or corrosive substrates by coating concealed surfaces at locations of contact, with bituminous coating or other permanent separation as recommended by manufacturer/fabricator.

B. Form sections true to shape, accurate in size, square, and free from distortion or defects.

C. Form pieces in longest possible lengths.

D. Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip. Hem exposed edges on underside 1/2 inch (13 mm); miter and seam corners.

E. Fabricate corners from one piece with minimum 18 inch (450 mm) long legs; seam for rigidity, seal with sealant.

F. Fabricate vertical faces with bottom edge formed outward 1/4 inch (6 mm) and hemmed to form drip.

2.04 DOWNSPOUT FABRICATION

A. Canopy & Roof Edge Fascia Gutters
   1. General:
      a. Furnish gutter assemblies of 22 gauge prefinished sheet steel as specified above, of size, shape and lengths shown and indicated on Drawings and Details.

b. Fascia gutters shall be in accordance with the Standard Manual Page 1.13, Style F, with gutter beads as shown on the Standard Manual Page 1.12, as applicable.

c. Typically, gutters shall be continuous type with a maximum length of 50 feet between expansion joints. All field joints, except joints between continuous gutter sections and gutter corner sections, shall be expansion type joints conforming to subparagraph "2." below. Field joints between continuous gutter sections and gutter corner sections shall conform to subparagraph “3.” Below.

2. Expansion Joints and Covers: Form and fabricate expansion joints similar to that shown on Figure 1-6 of the Standard Manual, page 1.23, consisting of a 2-1/2 inch lap joint continuous around back, bottom and front, with full bed of sealant (refer to Section 07 92 00) applied throughout entire lap joint and with double rows of 'solid' rivets (extending front to back) with rivets in each row spaced on 1-inch centers and rows centered at 1/3 points within lap joint.

3. Field Joints and Corner Sections: Fabricate field joints at inside and outside corner sections consisting of a 2-1/2 inch lap joint continuous around back, bottom and front with continuous strips of Norton Performance Plastics Corp. (800-724-0883) “Norex” butyl coated PVC foam tape extending front to back along each edge of lap joint area and with a double row of solid rivets (extending front to back) with rivets in each row spaced on 1-inch centers and rows spaced approximately 1-1/4 inches apart and centered within lap joint. Foam tape shall be 1/8 inch thick (before compression) x 1/2 inch wide.

4. Hanging Devices for Fascia Gutters - Brackets and Spacer Bars:

a. Furnish spacer straps of 1/8 inch x 1-1/4 inch galvanized steel bent flat bar similar to that shown on Figure 1-13A of the Standard Manual, pages 1.37 and 1.38, complete with fasteners as indicated.

b. Furnish brackets of 1/8 inch x 1-1/4 inch galvanized steel bent flat bar, finish painted to match color of gutter, constructed similar to that shown on Figure 1-13A of the Standard Manual, pages 1.37 and 1.38, complete with fasteners as indicated.

5. Gutter Outlet Tubes:

a. Furnish round shaped outlet tubes constructed in accordance with the Standard Manual Page 1.59 Figure 1-24C, of size required for associated downspouts.

b. Furnish 1/4 inch mesh stainless steel hardware cloth formed to suit outlet tube, similar to Standard Manual Page 1.59, Figure 1-24D, extending 1 inch into outlet tube and to 4 inches above top of outlet tube.

B. Plastic Downspout Piping & Accessories

1. Furnish schedule 40 PVC pipe downspouts with fittings, of diameter size shown.

2. Furnish standard fittings for angled connections in approved manner to provide downspout piping of configurations shown or otherwise required for new scupper conductor head conditions. All connections between tube sections and fittings to be solvent welded and watertight.

3. Furnish 16 ga. x 3 inch galvanized steel downspout piping hangers and straps, finish painted to match color of downspout, not less than one top and bottom and one each 10 feet of vertical run, elsewhere where indicated, constructed conforming to the Standard Manual Page 1.81, Figure 1-35J for round downspouts.

4. Furnish screws, of type approved or as otherwise indicated, for wall material behind hangers.

2.05 FABRICATED SHEET METAL ITEMS

A. Wall Cap Flashings (Copings)

1. Furnish cap flashings of 22 gauge prepainted zincalume or galvalume sheet steel as specified above, color as selected.

2. Construct of sizes and configurations shown for various parapet wall conditions. Conform to general design data and instructions shown, as applicable, in the Standard Manual

pages 3.1 - 3.19, as applicable for the various conditions, with standing seam joints conforming to Table 3-1, pages 3.3 and 3.4, together with Figure 3-1, page 3.2.

3. Form vertical legs with 45 degree hemmed drip at bottom edge.
4. Use continuous cleat at each down leg, secured over flexible flashing.

B. Miscellaneous Drip Flashings: Furnish 24 gauge prepainted galvanized steel sheet metal "Z" flashing of the various sizes and shapes shown at the various siding base conditions, and the like, all as indicated on Drawings. Form drip flashings with 45 degree hemmed drip at bottom edge where indicated.

C. Replacement Thru-Wall Overflow Scuppers

1. Furnish new thru-wall type overflow scuppers of 18 gauge stainless sheet metal, of size and configuration required to conform to existing thru-wall opening, constructed in accordance with Standard Manual Pages 1.70 and 1.71, Figure 1-30, except provide with stainless steel angle wall flange at wall outlet side.
2. All joints shall be continuously welded watertight with exposed joints ground smooth to form clean, neat appearance.

D. Thru-Wall Scuppers & Conductor Heads

1. Furnish thru-wall type scuppers of 18 gauge stainless sheet metal, of size and configuration shown, constructed in accordance with Standard Manual Pages 1.62 through 1.65, Figures 1-26 and 1-27, as applicable, and as otherwise modified by drawing details.
2. Furnish scupper conductor heads of same gauge stainless steel, of size and configuration shown; construct in accordance with Standard Manual pages 1.60 through 1.65, with scupper head design conforming to Figure 1-25C with overflow outlet.
3. All joints shall be continuously welded watertight with exposed joints ground smooth to form clean, neat appearance.

E. Miscellaneous Prepainted Flashings

1. Furnish all other miscellaneous flashings shown on the drawings but not specifically specified above, constructed of 22 gauge prepainted zincalume or galvalume sheet steel sheet metal, of configurations and sizes as shown.
2. Fabricate miscellaneous formed flashing units with formed joint covers of same material as flashings, for installation behind main members where possible. Fabricate mitered, riveted and soldered corner units.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify nailing strips are located.

B. Verify roofing termination and base flashings are in place, sealed, and secure.

3.02 PREPARATION

A. General: Examine all surfaces to be covered with sheet metal; report any improper of defective previous work and do not proceed with work under this Section until previous defective work is corrected.

B. Install starter and edge strips, and cleats before starting installation.

3.03 INSTALLATION

A. Sheet Metal Workmanship

1. Except as otherwise shown or specified, comply with the recommendations and instructions of the manufacturer of the sheet metal being installed, and with SMACNA "Architectural Sheet Metal Manual".

2. Fabricate and install work with lines and corners of exposed units true and accurate. Form exposed faces flat and free of buckles, excessive waves and avoidable tool marks, considering the temper and reflectivity of the metal. Provide uniform, neat seams with minimum exposure of solder, welds and sealant. Except as otherwise shown, fold back the sheet metal to form a hem on the concealed side of exposed edges.
3. Anchor units of work securely in place by methods indicated, providing for thermal expansion of metal units; conceal fasteners and expansion provisions wherever possible in exposed work, and locate so as to minimize the possibility of leakage. Cover and seal work as required for a watertight installation.
4. Provide cleat-type anchorages for metal flashing and trim wherever practical, arranged to relieve stresses from building movement and thermal expansion. Erect all work straight, sharp, plumb and level in true plane free of bulges and waves.
5. Install work with laps, joints and seams which will be permanently watertight and weatherproof; make all lap joints with opening away from prevailing winds; laps 3 inches minimum. Install sealant as shown as work proceeds.

B. Canopy Gutters
1. General: Install gutters as detailed and in proper locations shown, securely anchored to adjacent construction. Install gutters to provide positive drainage to outlet tubes.
2. Expansion Joints and Covers: Install conforming to subparagraph 2.04A.2 above and to Standard Manual Pages 1.22 through 1.25 for general expansion provisions and dimensions to allow for expansion.
3. Field Joint Including Corner Sections: Install conforming to subparagraph 2.04A.3 above.
4. Gutter Outlets: Install hardware cloth formed to suit outlet tube extending 1 inch into outlet tube and to 4 inches above top of outlet tube.

C. Fascia Gutters
1. General: Install gutter as detailed and in proper location shown, securely anchored to adjacent construction. Install gutter to provide positive drainage to outlet tubes.
2. Expansion Joints and Covers: Install conforming to subparagraph 2.04A.2 above and to Standard Manual Pages 1.22 through 1.25 for general expansion provisions and dimensions to allow for expansion.
3. Field Joint Including Corner Sections: Install conforming to subparagraph 2.04A.3 above.
4. Rectangular Gutter Brackets and Spacers: Space concealed strap brackets 3 feet maximum o.c; space spacers alternately with brackets (i.e., offset 18 inches).
5. Gutter Outlets: Install hardware cloth formed to suit outlet tube extending 1 inch into outlet tube and to 4 inches above top of outlet tube.

D. Plastic Downspout Piping & Accessories
1. Fit downspout over outlet tubes from new scupper conductor heads. Fit upper pieces well into lower pieces. Erect vertical runs to true vertical, downward sloped or angled sections all to same angle, as approved.
2. Field joints shall be made with standard fittings with all connections between tube sections and fittings solvent welded watertight.
3. Install downspout hangers perpendicular to downspout direction in approved locations; securely anchor to walls and to downspouts as shown in the Figures referenced hereinabove.
4. Connect downspouts into existing storm sewer line inlets as detailed.

E. Parapet Wall Cap Flashings (Copings)
1. Install continuous along walls as shown, of the various configurations indicated for the various wall conditions, installed over single-ply roofing membrane or flexible flashing membrane, as applicable, with joints conforming to Standard Manual and Details as

referenced above. Install complete with mitered and welded corner sections and custom formed wall termination, wall intersection, and reveal sections as detailed.

2. Securely anchor to adjacent construction as shown using concealed cleats at outside down leg and screws with metal washers and neoprene gaskets at inside leg, unless otherwise specifically indicated. Set cleats in continuous bead of sealant.
3. Apply cleats over flexible flashing membrane. At exterior side, trim back flexible flashing membrane in alignment with bend in cleat and apply a continuous bead of sealant along bottom of cleat, concealing trimmed edge of roofing memebrane and providing an air and water-tight seal between cleat and building wall finished surface.

F. Thru-Wall Scuppers & Conductor Heads: Install scuppers and conductor heads at designated roof locations shown on Drawings, conforming to Standard Manual as referenced and as detailed. Make watertight connections between scupper and adjacent wall construction and roofing assembly.

G. Thru-Wall Overflow Scuppers: Install overflow scuppers at designated roof locations shown on Drawings, conforming to Standard Manual as referenced and as detailed. Make watertight connections between scupper and adjacent wall construction and roofing assembly.

H. Install all other miscellaneous flashings shown on the Drawings, securely anchored to adjacent construction.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Nonsag gunnable joint sealants.

B. Self-leveling pourable joint sealants.

C. Joint backings and accessories.

1.02 RELATED REQUIREMENTS

A. Section 07 27 00 - Air Barriers.

B. Section 07 62 00 - Sheet Metal Flashing & Trim: Sealants required in conjunction with sheet metal flashings and trim.

C. Section 08 80 00 - Glass And Glazing: Glazing sealants and accessories.

D. Section 09 29 00 - Gypsum Board: Acoustic sealant.

1.03 REFERENCE STANDARDS

A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer 2015.

B. ASTM C920 - Standard Specification for Elastomeric Joint Sealants 2014.

C. ASTM C1193 - Standard Guide for Use of Joint Sealants 2013.

1.04 SUBMITTALS

A. Product Data for Sealants: Submit manufacturer's technical data sheets for each product to be used, that includes the following.

1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
2. List of backing materials approved for use with the specific product.
3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
4. Substrates the product should not be used on.

B. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.

C. Manufacturer's Installation Instructions: Indicate special procedures and surface preparation

1.05 QUALITY ASSURANCE

A. Single Source Responsibility: Obtain joint sealant materials from a single manufacturer for each different product required.

B. Maintain one copy of each referenced document covering installation requirements on site.

C. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years experience.

D. Applicator Qualifications: Company specializing in performing the work of this section with minimum three years documented experience and approved by manufacturer.

1.06 FIELD CONDITIONS

A. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

B. Weather & Temperature Conditions: Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

1. Do no exterior priming or sealant work when raining or snowing or when moisture therefrom or dew is present on surfaces.
2. Install sealants only when ambient temperatures are within the limits of 40 to 100 degrees.

C. Environmental Conditions: Do not install solvent based or other high odor sealants in enclosed building spaces or near air intake grills at occupied buildings.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Non-Sag Sealants: Permits application in joints on vertical surfaces without sagging or slumping.
1. Bostik Inc: www.bostik-us.com.
2. Dow Chemical Company: consumer.dow.com/en-us/industry/ind-building-construction.html.
3. Master Builders Solutions by BASF: www.master-builders-solutions.basf.us/en-us.
4. Pecora Corporation: www.pecora.com.
5. Sika Corporation: www.usa-sika.com.
6. Tremco Commercial Sealants & Waterproofing: www.tremcosealants.com.
7. W.R. Meadows, Inc: www.wrmeadows.com.

B. Preformed Compressible Foam Sealers:
1. EMSEAL Joint Systems, Ltd: www.emseal.com.
2. Sandell Manufacturing Company, Inc: www.sandellmfg.com.
3. Dayton Superior Corporation: www.daytonsuperior.com.
4. Tremco Global Sealants: www.tremcosealants.com.

2.02 JOINT SEALANT APPLICATIONS

A. Scope:
1. Exterior Joints: Seal open joints, whether or not the joint is indicated on drawings, unless specifically indicated not to be sealed. Exterior joints to be sealed include, but are not limited to, the following items.
a. Wall expansion and control joints.
b. Joints between door, window, and other frames and adjacent construction.
c. Joints between different exposed materials.
d. Openings below ledge angles in masonry.
e. Other joints indicated below.
2. Interior Joints: Do not seal interior joints unless specifically indicated to be sealed. Interior joints to be sealed include, but are not limited to, the following items.
a. Joints between door, window, and other frames and adjacent construction.
b. Other joints indicated below.
3. Do not seal the following types of joints.
a. Intentional weepholes in masonry.
b. Joints indicated to be treated with manufactured expansion joint cover or some other type of sealing device.
c. Joints where sealant is specified to be provided by manufacturer of product to be sealed.
d. Joints where installation of sealant is specified in another section.
e. Joints between suspended panel ceilings/grid and walls.

B. Exterior Joints: Use non-sag polyurethane sealant, unless otherwise indicated.

C. Interior Joints: Use non-sag acrylic urethane sealant, unless otherwise indicated.

2.03 NONSAG JOINT SEALANTS

A. Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single-component; not expected to withstand continuous water immersion or traffic.
   1. Movement Capability: Plus and minus 25 percent, minimum.
   2. Hardness Range: 20 to 35, Shore A, when tested in accordance with ASTM C661.
   3. Color: Match adjacent finished surfaces.
   4. Service Temperature Range: Minus 40 to 180 degrees F (Minus 40 to 82 degrees C).
   5. Manufacturers:
      a. Master Builders Solutions by BASF; MasterSeal NP1: www.master-builders-solutions.basf.us/en-us.
      b. Pecora Corporation; DynaTrol II: www.pecora.com.
      c. Sherwin-Williams Company; Stampede-1/-TX Polyurethane Sealant: www.sherwin-williams.com.
      d. Sika Corporation; Sikaflex-1a: www.usa-sika.com.

B. Acrylic-Urethane Sealant: ASTM C920, Grade NS, Uses M and A; single component; paintable; not expected to withstand continuous water immersion or traffic.
   1. Movement Capability: Plus and minus 12-1/2 percent, minimum.
   2. Hardness Range: 15 to 40, Shore A, when tested in accordance with ASTM C661.
   3. Color: Clear.
   4. Uses: All interior applications.
   5. Manufacturers:
      a. DAP Products Inc; DYNAFLEX 920 Sealant: www.dapspecline.com.
      b. Sherwin-Williams Company; Shermax Urethanized Elastomeric Sealant: www.sherwin-williams.com.
      c. Top Gun, a brand of PPG Architectural Coatings; Top Gun 400: www.ppgpaints.com.
      d. Tower Sealants, Inc; AU-1 Commercial Construction Sealant: www.towersealants.com.

2.04 SELF-LEVELING SEALANTS

A. Self-Leveling Polyurethane Sealant for Continuous Water Immersion: Polyurethane; ASTM C920, Grade P, Uses M and A; single component; explicitly approved by manufacturer for traffic exposure and continuous water immersion.
   1. Movement Capability: Plus and minus 25 percent, minimum.
   2. Color: To be selected by Architect from manufacturer's standard range.
   3. Manufacturers:
      a. Sika Corporation; Sikaflex-1c SL: www.usa-sika.com.
      b. W. R. MEADOWS, Inc; POURTHANE SL: www.wrmeadows.com.

2.05 ACCESSORIES

A. Backer Rod: Cylindrical cellular foam rod with surface that sealant will not adhere to, compatible with specific sealant used, and recommended by backing and sealant manufacturers for specific application.

B. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that joints are ready to receive work.

B. Verify that backing materials are compatible with sealants.

C. Verify that backer rods are of the correct size.

3.02 PREPARATION

A. Remove loose materials and foreign matter that could impair adhesion of sealant.

B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.

C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.

D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

3.03 INSTALLATION

A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Perform installation in accordance with ASTM C1193.

C. Install bond breaker backing tape where backer rod cannot be used.

D. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.

E. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.

F. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Non-fire-rated hollow metal doors and frames.

B. Hollow metal frames for wood doors.

C. Thermally insulated hollow metal doors with frames.

D. Accessories, including glazing.

1.02 RELATED REQUIREMENTS

A. Section 08 14 16 - Flush Wood Doors.

B. Section 08 71 00 - Door Hardware.

C. Section 08 80 00 - Glass And Glazing: Glass for doors and borrowed lites.

D. Section 09 91 00 - Paints and Coatings: Field painting

1.03 REFERENCE STANDARDS

A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design 2010.

B. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors 2011.

C. ANSI/SDI A250.6 - Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames 2003 (R2009).

D. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100) 2017.

E. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2020.

F. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable 2020.

G. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength 2018a.

H. BHMA A156.115 - American National Standard for Hardware Preparation in Steel Doors and Steel Frames 2016.

I. ICC A117.1 - Accessible and Usable Buildings and Facilities 2017.

J. NAAMM HMMA 830 - Hardware Selection for Hollow Metal Doors and Frames 2002.

K. NAAMM HMMA 831 - Hardware Locations for Hollow Metal Doors and Frames 2011.

L. NAAMM HMMA 840 - Guide Specifications For Receipt, Storage and Installation of Hollow Metal Doors and Frames 2007.

M. NAAMM HMMA 861 - Guide Specifications for Commercial Hollow Metal Doors and Frames 2014.

N. SDI 117 - Manufacturing Tolerances for Standard Steel Doors and Frames 2013.

1.04 SUBMITTALS

A. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced standards/guidelines.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

C. Maintain at project site copies of reference standards relating to installation of products specified.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Comply with NAAMM HMMA 840 or ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.

B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion and adverse effects on factory applied painted finish.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Steel Doors and Frames:
   1. Amweld Building Products
   2. Benchmark Commercial Doors
   3. Ceco Door Products
   4. Copco Door Co.
   5. Curries Co.
   6. Deansteel Mfg. Co.
   7. Republic Builders Products
   8. Mesker Door
   9. Steelcraft.

2.02 PERFORMANCE REQUIREMENTS

A. Requirements for Hollow Metal Doors and Frames:
   1. Steel Sheet: Comply with one or more of the following requirements; galvannealed steel complying with ASTM A653/A653M, cold-rolled steel complying with ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel complying with ASTM A1011/A1011M, commercial steel (CS) Type B, for each.
   2. Accessibility: Comply with ICC A117.1 and ADA Standards.
   3. Exterior Door Top Closures: Flush end closure channel, with top and door faces aligned.
   4. Door Edge Profile: Manufacturers standard for application indicated.
   5. Typical Door Face Sheets: Flush.
   6. Glazed Lights: Non-removable stops on non-secure side; sizes and configurations as indicated on drawings. Style: Manufacturers standard.
   7. Hardware Preparations, Selections and Locations: Comply with NAAMM HMMA 830 and NAAMM HMMA 831 or BHMA A156.115 and ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
   8. Zinc Coating for Typical Interior and/or Exterior Locations: Provide metal components zinc-coated (galvanized) and/or zinc-iron alloy-coated (galvannealed) by the hot-dip process in accordance with ASTM A653/A653M, with manufacturer's standard coating thickness, unless noted otherwise for specific hollow metal doors and frames.

a. Based on SDI Standards: Provide at least A40/ZF120 (galvannealed) when necessary, coating not required for typical interior door applications, and at least A60/ZF180 (galvannealed) for corrosive locations.

B. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

2.03 HOLLOW METAL DOORS

A. Exterior Doors: Thermally insulated.
   a. Model 1 - Full Flush.
   b. Zinc Coating: A60/ZF180 galvannealed coating; ASTM A653/A653M.
   2. Core Material: Polyisocyanurate, 2 lbs/cu ft minimum density.
   3. Door Thermal Resistance: R-Value of 9.9 minimum for installed thickness of polyisocyanurate.
   4. Door Thickness: 1-3/4 inches (44.5 mm), nominal.
   5. Door Face Sheets: Flush.
   6. Weatherstripping: Refer to Section 08 71 00.
   7. Door Finish: Factory primed and field finished.

B. Interior Doors, Non-Fire Rated:
   1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
      a. Level 3 - Extra Heavy-duty.
      b. Physical Performance Level A 1 000 000 cycles; in accordance with ANSI/SDI A250.4.
      c. Model 1 - Full Flush.
      d. Door Face Metal Thickness: 20 gauge, 0.032 inch (0.8 mm), minimum.
   2. Door Core Material: Manufacturers standard core material/construction and in compliance with requirements.
   3. Door Thickness: 1-3/4 inches (44.5 mm), nominal.
   4. Door Finish: Factory primed and field finished.

2.04 HOLLOW METAL FRAMES

A. Comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements.

B. Exterior Door Frames: Full profile/continuously welded type.
   1. Galvanizing: Components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A653/A653M, with A60/ZF180 coating.
   2. Frame Metal Thickness: 16 gage, 0.053 inch (1.3 mm), minimum.
   3. Frame Finish: Factory primed and field finished.
   4. Weatherstripping: Separate, see Section 08 71 00.

C. Interior Door Frames, Non-Fire Rated: Full profile/continuously welded type.
   1. Frame Metal Thickness: 16 gage, 0.053 inch (1.3 mm), minimum.
   2. Frame Finish: Factory primed and field finished.

D. Frames for Wood Doors: Comply with frame requirements in accordance with corresponding door.

E. Mullions for Pairs of Doors: Removable type, with profile similar to jambs.

F. Borrowed Lites Glazing Frames: Construction and face dimensions to match door frames, and as indicated on drawings.

G. Transom Bars: Fixed, of profile same as jamb and head.

H. Frames Wider than 48 inches (1219 mm): Reinforce with steel channel fitted tightly into frame head, flush with top.

2.05 ACCESSORIES

A. Glazing: As specified in Section 08 80 00, factory installed.

B. Bituminous Coating: Asphalt emulsion or other high-build, water-resistant, resilient coating.

C. Expandable Foam in Non-Grouted Frames: Low-pressure expandable foam for filling all interior door frames not otherwised filled with masonry grout.

D. Silencers: Resilient rubber, fitted into drilled hole; provide three on strike side of single door, three on center mullion of pairs, and two on head of pairs without center mullions.

E. Temporary Frame Spreaders: Provide for factory- or shop-assembled frames.

2.06 FINISHES

A. Primer: Furnish of one of the following:

1. Option 1: Tnemec "Series 37 Chem-Prime" or Sherwin Williams "Kem Kromik Universal Metal Primer", or approved, chromate-free rust inhibitive universal alkyd-phenolic primer compatible with high performance primer and finish coats specified in Section 09 91 00.
2. Option 2: Tnemec Company, Inc. "Series 394" PerimePrime or Wasser Corporation "MC-Miozinc 100" one-component, moisture-cured, micaceous iron oxide and zinc filled polyurethane primer, or approved.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Verify that finished walls are in plane to ensure proper door alignment.

3.02 PREPARATION

A. Coat inside of frames to be installed in masonry or to be grouted, with bituminous coating, prior to installation.

3.03 INSTALLATION

A. Install doors and frames in accordance with manufacturer's instructions and related requirements of specified door and frame standards or custom guidelines indicated.

B. Install fire rated units in accordance with NFPA 80.

C. Coordinate frame anchor placement with wall construction.

D. Coordinate installation of glazing and hardware.

1. Comply with recommended practice for hardware placement of doors and frames in accordance with ANSI/SDI A250.6 or NAAMM HMMA 861.

E. Coordinate installation of electrical connections to electrical hardware items.

3.04 TOLERANCES

A. Clearances Between Door and Frame: Comply with related requirements of specified frame standards or custom guidelines indicated in accordance with SDI 117 or NAAMM HMMA 861.

B. Maximum Diagonal Distortion: 1/16 inch (1.6 mm) measured with straight edge, corner to corner.

3.05 ADJUSTING

A. Adjust for smooth and balanced door movement.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Flush wood door types A and F; flush configuration; non-rated.

1.02 RELATED REQUIREMENTS

A. Section 08 11 13 - Hollow Metal Doors and Frames.

B. Section 08 71 00 - Door Hardware.

C. Section 08 80 00 - Glass And Glazing.

D. Section 09 91 00 - Paints and Coatings: Field applied sealer at top and bottom edges of doors.

1.03 REFERENCE STANDARDS

A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials Current Edition.

B. ANSI A208.1 - American National Standard for Particleboard 2016.

C. WDMA I.S. 1A - Interior Architectural Wood Flush Doors 2013.

1.04 SUBMITTALS

A. Product Data: Indicate door core materials and construction; veneer species, type and characteristics.

B. Shop Drawings: Show doors and frames, elevations, sizes, types, swings, undercuts, beveling, blocking for hardware, factory machining, factory finishing, cutouts for glazing and other details.

C. Samples: Submit two samples of door veneer, 6 x 6 inch in size illustrating wood grain, stain color, and sheen.

D. Warranty, executed in Owner's name.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section, with not less than three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Package, deliver and store doors in accordance with specified quality standard.

B. Accept doors on site in manufacturer's packaging, and inspect for damage.

C. Protect doors with resilient packaging sealed with heat shrunk plastic; do not store in damp or wet areas or areas where sunlight might bleach veneer; seal top and bottom edges with tinted sealer if stored more than one week, and break seal on site to permit ventilation.

1.07 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Interior Doors: Provide manufacturer's warranty for the life of the installation.

C. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, and telegraphing core construction.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Wood Veneer Faced Doors:

1. Algoma Hardwoods, Inc.: www.algomahardwoods.com

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2. Graham Manufacturing Corp.: www.grahamdoors.com
3. Lynden Doors, Inc.: www.lyndendoor.com
4. Mohawk Flush Doors, Inc.: www.mohawkdoors.com
5. Oregon Door: www.oregondoor.com
6. Vancouver Door Company; www.vancouverdoorco.com
7. VT Industries: www.vtinductries.com

2.02 DOORS

A. All Flush Wood Doors: See drawings for locations and additional requirements.
   1. Quality Standard: Custom Grade, Heavy Duty performance, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
   2. Wood Veneer Faced Doors: 5-ply unless otherwise indicated.
   3. Face Material: Provide cross-banding and face veneers of rotary cut or plain slice Vertical Grain Douglas Fir having a uniform color appearance. Face veneers shall be premium grade and at least 1/50-inch thick at 12% moisture content, after finish sanding.

B. Interior Doors: 1-3/4 inches (44 mm) thick unless otherwise indicated; flush construction.
   1. Provide solid core doors at each location.
   2. Wood veneer facing for field transparent finish.

2.03 DOOR CORES & CONSTRUCTION

A. Non-Rated Solid Core Doors: Type particleboard core (PC), plies and faces as indicated.
   1. Particleboard core shall comply with ANSI 208.1 LD-2 grade. Core shall have a minimum face screw holding capacity of 125 pounds, modulus of rupture of 800 psi, modulus of elasticity of 150,000 psi, and density of 30-32 pounds per cubic foot.
   2. Thickness: 1-3/4 inches.
   3. Glue Bond: High water resistant type; CS 35-61 Type II.
   4. Stiles: All doors shall have mill-option specie kiln dried hardwood edge band stiles of 6 inch minimum thickness or provide 24 inch long x 4 inch wide lock block set inside of standard 1-1/2 inch stile; edge band stiles shall be glued to core with CS 35-61 Type II water-resistant adhesive. Stile edge screw withdrawals when tested in accordance with ASTM D1037 shall exceed 740 lbs.
   5. Rails: All doors shall have mill-option specie kiln dried hardwood top and bottom rails of 1-1/8-inch minimum thickness; rails shall be glued to core with CS 35-61 Type I water-resistant adhesive.

B. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.

C. Dimensions
   1. Verify opening sizes, exact wall materials and partition thicknesses prior to frame fabrication.
   2. Fabricate doors to provide the following edge clearances:
      a. Provide beveled edges 1/8-inch in 2 inches on both vertical edges of doors.
      b. Provide 1/8-inch between doors and frames at head and jambs.
      c. Provide 1/8-inch at meeting edges of pairs of doors.
      d. Provide 1/8-inch door-to-stop clearance.
      e. Provide 3/4-inch maximum between door and sills where no threshold is used; 1/4 inch above carpeting.
      f. Provide 3/8-inch maximum between door and sills where threshold is used.

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2.04 DOOR CONSTRUCTION

A. Fabricate doors in accordance with door quality standard specified.

B. Cores Constructed with stiles and rails:
   1. Provide solid blocks at lock edge for hardware reinforcement.
   2. Provide solid blocking for other through-bolted hardware.

C. Glazed Openings: Non-removable stops on non-secure side; sizes and configurations as indicated on drawings.

D. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.

E. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.

F. Provide edge clearances in accordance with the quality standard specified.

2.05 FINISHES - WOOD VENEER DOORS

A. Finish work in accordance with AWMAC/WI (NAAWS), Section 5 - Finishing for grade specified and as follows:
   1. Transparent:
      a. System - 11 Polyurethane Catalyzed.
      b. Stain: Stain to match sample as approved by Architect from submitted samples.
      c. Sheen: Satin.

2.06 ACCESSORIES

A. Hollow Metal Door Frames: See Section 08 11 13.

B. Glazing: Clear fully tempered glass as specified in Section 08 80 00.

C. Light Openings:
   1. Make cuts for light openings of sizes and glass types as scheduled.
   2. All vision panel frames shall be shipped with doors on same bill of lading.

D. Door Hardware: See Section 08 71 00.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

3.02 INSTALLATION

A. Install doors in accordance with manufacturer's instructions and specified quality standard.

B. Factory-Finished Doors: Do not field cut or trim along jamb edges; if fit or clearance along jamb is not correct, replace door.
   1. Trim maximum of 3/4 inch off bottom edges.

C. Use machine tools to cut or drill for hardware.

D. Coordinate installation of doors with installation of frames and hardware.

E. Coordinate installation of glazing.

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3.03 TOLERANCES

A. Comply with specified quality standard for fit and clearance tolerances.

B. Comply with specified quality standard for telegraphing, warp, and squareness.

3.04 ADJUSTING

A. Adjust doors for smooth and balanced door movement.

B. Adjust closers for full closure.

END OF SECTION

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PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Exterior aluminum entry doors (Door Type D, Doors 000B, 100A, 100B, 123C, 201A, 202A, 203A, 203B, 206A and 207A) and associated storefront framing.

B. Exterior aluminum storefront framing.

1.02 RELATED REQUIREMENTS

A. Section 05 40 00 - Cold-Formed Metal Framing.

B. Section 07 27 00 - Air Barriers: Perimeter air and vapor seal between glazing system and adjacent construction.

C. Section 07 92 00 - Joint Sealants: Perimeter sealant and back-up materials.

D. Section 08 42 13 - Interior Aluminum-Framed Entrances.

E. Section 08 71 00 - Builders Hardware: Hardware items other than specified in this section.

F. Section 08 80 00 - Glass and Glazing: Glass and glazing accessories.

G. Conduit, wiring, and connections for electrically powered operators and switches provided under work of Division 26.

1.03 REFERENCE STANDARDS

A. AAMA CW-10 - Care and Handling of Architectural Aluminum From Shop to Site; American Architectural Manufacturers Association; 2004.

B. AAMA 501.2 - Field Check of Metal Storefronts, Curtain Walls, and Sloped Glazing Systems for Water Leakage; American Architectural Manufacturers Association; 2003 (part of AAMA 501).

C. ASCE 7 - Minimum Design Loads for Buildings and Other Structures; American Society of Civil Engineers; 2005.

D. ASTM A 36 - Standard Specification for Carbon Structural Steel; 2005.

E. ASTM A 123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2002.

F. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2007.

G. ASTM E 283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2004.

H. ASTM E 330 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2002.

I. ASTM E 331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2009).

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate with installation of other components that comprise the exterior enclosure.

B. Preinstallation Meeting: Conduct a preinstallation meeting one week before starting work of this section; require attendance by all affected installers.

1.05 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures.

B. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, and internal drainage details .

C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related Work, expansion and contraction joint location and details, field welding required, and installation requirements.

D. Samples for Verification: For each type of exposed finish required, in manufacturer's standard sizes.

E. Manufacturer's Certificate: Certify that the products supplied meet or exceed the specified requirements.

F. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

A. Comply with requirements of AAMA/WDMA/CSA 101/1.S.2/A440.

B. Subcontractor/Installer:

1. Subcontractor for work in this Section is responsible for materials, fabrication and erection of the storefront system to the performance standards specified herein; should any portion of this work be sub-subcontracted, the principal subcontractor maintains joint responsibility with the Contractor for the work.
2. Storefront assembly installation shall be by and under the supervision of the manufacturer's representative employing mechanics experienced in storefront installations.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Handle products of this section in accordance with AAMA CW-10.

B. Protect finished aluminum surfaces with wrapping or strippable coating. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

1.08 FIELD CONDITIONS

A. Do not install sealants when ambient temperature is less than 40 degrees F.

B. Maintain this minimum temperature during and 48 hours after installation.

1.09 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Provide 10 year manufacturer warranty against failure of glass seal on insulating glass units, including interpane dusting or misting. Include provision for replacement of failed units.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Storefront System Performance Requirements:

1. Wind loads: Provide storefront system including anchorages capable of withstanding wind load design pressures based on ASCE 7-10 and the following:
   a. Basic Wind Speed: 115 mph (51 m/s).
   b. Exposure Category: B.
2. Air Infiltration: The test specimen shall be tested in accordance with ASTM E 283. Air infiltration rate shall not exceed 0.06 cfm/ft2 (0.3 l/s · m2) at a static air pressure differential of 6.24 psf (300 Pa).

3. Water Resistance: The test specimen shall be tested in accordance with ASTM E 331. There shall be no leakage at a minimum static air pressure differential of 10 psf (479 Pa) as defined in AAMA 501.
4. Uniform Load: A static air design load of 30 psf (1436 Pa) shall be applied in the positive and negative direction in accordance with ASTM E 330. There shall be no deflection in excess of L/175 of the span of any framing member. At a structural test load equal to 1.5 times the specified design load, no glass breakage or permanent set in the framing members in excess of 0.2% of their clear spans shall occur.
5. Thermal Transmittance (U-factor): When tested to AAMA Specification 1503 for low-E glass, the thermal transmittance (U-factor) shall not be more than 0.32 BTU/hr/ft2/°F.
6. Condensation Resistance (CRF): When tested to AAMA Specification 1503 for low-E glass, the condensation resistance factor shall not be less than the following:
   a. 68 frame and 68 glass.

2.02 MANUFACTURERS

A. Basis of Design: Kawneer North America; www.kawneer.com.
   1. Storefront Framing Product: "Trifab 451UT" framing system, center glazed.

B. Other Acceptable Manufacturers:
   1. EFCO: www.efcocorp.com.
   2. United States Aluminum Corp: www.usalum.com.
   3. Vistawall Architectural Products: www.vistawall.com.

2.03 STOREFRONT / ENTRANCE ASSEMBLY

A. Aluminum-Framed Entrance
   1. Type and Quality: Furnish "Trifab 451UT" center glazed, thermal-break screw spline storefront framing system as manufactured by Kawneer Company, Inc., or approved, subject to meeting all requirements specified herein and specific exposed frame width dimensions indicated on Drawings.
   2. Materials:
      a. Aluminum Extrusions: Alloy and temper recommended by aluminum storefront manufacturer for strength, corrosion resistance, and application of required finish and not less than 0.070" (1.8 mm) wall thickness at any location for the main frame and complying with ASTM B 221: 6063-T6 alloy and temper.
      b. Fasteners: Aluminum, nonmagnetic stainless steel or other materials to be non-corrosive and compatible with aluminum framing members, trim hardware, anchors, and other components.
      c. Anchors, Clips, and Accessories: Aluminum, nonmagnetic stainless steel, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.
      d. Reinforcing Members: Aluminum, nonmagnetic stainless steel, or nickel/chrome-plated steel complying with ASTM B 456 for Type SC 3 severe service conditions, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.
      e. Sealant: For sealants required within fabricated storefront system, provide permanently elastic, non-shrinking, and non-migrating type recommended by sealant manufacturer for joint size and movement.
      f. Thermal Barrier (451UT System): Kawneer DUAL Isolock™ Thermal Break with two (2) 1/4" (6.4 mm) separations consisting of a two-part chemically curing, high-density polyurethane, which is mechanically and adhesively joined to aluminum storefront

sections. Thermal Break shall be designed in accordance with AAMA TIR-A8 and tested in accordance with AAMA 505.

g. Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of storefront members are nominal and in compliance with AA Aluminum Standards and Data.

3. Glazing: Glass Types as shown on Frame Types and specified therefor in Section 08 80 00. All insulated units shall be dual sealed with primary and secondary seals and shall have IGCC Class CBA certification when tested in conformance with ASTM E773.

4. Electrolytic protection: Where aluminum abuts members with metals of different galvanic range or abuts other materials, protect aluminum with approved bituminous paint or zinc chromate primer or by use of other industry-approved method.

B. Monumental Stile & Rail Entry Doors

1. Type and Style:
   a. Provide door of size and thickness scheduled on Drawings, of extruded aluminum conforming to details as shown.
   b. Furnish as manufactured by Kawneer/Amax, or approved, Series "500T Insulpour" Thermal Entrance Door, 2-1/4 inches thick, with 5 inch wide stiles and top rails and 10 inch wide bottom rail.
2. Finish: As specified below.
3. Hardware:
   a. Furnished as specified under Section 08 71 00.
   b. The finish hardware supplier shall be responsible for furnishing physical hardware to the entrance manufacturer prior to fabrication, and for coordinating hardware delivery requirements with the hardware manufacturer, door subcontractor and the entrance manufacturer to insure the building project is not delayed.
4. Fabrication:
   a. Major portions of the door members to be 0.125" (3.2 mm) nominal in thickness and glazing molding to be 0.05" (1.3 mm) thick.
   b. Glazing gaskets shall be either EPDM elastomeric extrusions or a thermoplastic elastomer.
   c. Provide adjustable glass jacks to help center the glass in the door opening.
5. Glass: Furnish with 1 inch clear insulated tempered glass for both exterior and interior doors, all as specified therefor in Section 08 80 00.

2.04 ACCESSORIES

A. Structural Steel Sections: ASTM A 36; galvanized in accordance with requirements of ASTM A 123.

B. Sheet Aluminum Flashings

1. Furnish of sheet aluminum, alloy 5005, or alloy as required for the specified color coated finish. Provide all head flashings as detailed; include break formed members as applicable.
2. Use.040 inch minimum thickness or heavier as deemed advisable by storefront supplier. Finish sheet aluminum with Aluminum Association fluoropolymer high performance organic paint coating matching color of adjacent storefront framing.

C. Perimeter Sealant amd Backing Materials: Type specified in Section 07 92 00.

D. Bituminous Paint: Cold-applied, asphalt-mastic paint complying with SSPC-Paint 12, non-asbestos containing.

2.05 FABRICATION

A. Construction
   1. Major framing shall be factory prepared for job site assembly and sealed according to manufacturer's recommended procedures.
   2. Mullions and horizontal rails shall be tubular extruded shapes with sharp, well-defined corners and flush sight lines.
   3. Sections shall be designed to accommodate either single or double insulating glass. Exterior glazing seal shall be synthetic polymer tape secured by extruded aluminum pressure plates fastened to the main grid members.
   4. Provision shall be made at all sealed horizontals to lead moisture accumulation to the exterior. A cover shall be snapped over the pressure plate to shown only a sharp, uninterrupted exterior profile.
   5. Fabricate components with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
   6. Accurately fit and secure joints and corners. Make joints flush, hairline, and weatherproof.
   7. Prepare components to receive anchor devices. Fabricate anchors.
   8. Coat concealed metal surfaces that will be in contact with cementitious materials or dissimilar metals with bituminous paint.
   9. Arrange fasteners and attachments to conceal from view.
   10. Reinforce components internally for door hardware and door operators.
   11. Reinforce framing members for imposed loads.
   12. Provide steel reinforcement in mullions as required to meet loading requirements.
   13. Finishing: Apply factory finish to all surfaces that will be exposed in completed assemblies.

B. Door Frame
   1. Provide frame of extruded aluminum section profiles and dimensions as shown on Drawings, complete with reinforcement and anchorage as specified hereinafter and as shown on the approved shop drawings.
   2. Include compensating channels at head and jambs where indicated.

2.06 FINISHES

A. All exposed grid framing members shall be free of scratches and other serious surface blemishes.

B. All aluminum shall be cleaned, given a pretreatment and coated with a fluoropolymer high performance organic paint coating finish, all in accordance with Architectural Aluminum Manufacturers Association (AAMA) Standard AAMA 2605, with a total dry film thickness of not less than 1.3 mils.

C. Color: Finish color shall be as selected by Architect from standard Kawneer Permadized color.

D. Mild steel framing operations shall conform to ASTM A283 Grade "C". All steel shall receive one coat of zinc chromate primer after fabrication. Field welds and scratches shall receive one touch-up coat after installation.

E. Apply 30 mil coat of bituminous paint to concealed aluminum and steel surfaces in contact with dissimilar materials.

2.07 HARDWARE

A. Door Hardware: As specified in Section 08 7100.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify dimensions, tolerances, and method of attachment with other work.

B. Verify that wall openings and adjoining air and vapor seal materials are ready to receive work of this section.

3.02 INSTALLATION

A. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.

B. Provide alignment attachments and shims to permanently fasten system to building structure.

C. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.

D. Provide thermal isolation where components penetrate or disrupt building insulation. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.

E. Coordinate attachment and seal of perimeter air and vapor barrier materials.

F. Set thresholds in bed of mastic and secure.

G. Install hardware using templates provided.
   1. See Section 08 7100 for hardware installation requirements.

H. Install glass in accordance with Section 08 80 00.

I. Install perimeter sealant in accordance with Section 07 92 00.

J. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

3.03 TOLERANCES

A. Maximum Variation from Plumb: 1/16 inches per 10 ft.

B. Maximum Variation from Plumb: 0.06 inches every 3 ft (1.5 mm/m) non-cumulative or 1/16 inches per 10 ft (1.5 mm/3 m), whichever is less.

C. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch (0.8 mm).

3.04 ADJUSTING

A. Adjust hardware for smooth operation and secure weathertight closure.

3.05 CLEANING

A. Remove protective material from factory finished aluminum surfaces.

B. Wash surfaces by method recommended and acceptable to sealant and window manufacturer; rinse and wipe surfaces clean.

C. Remove excess sealant by moderate use of mineral spirits or other solvent acceptable to sealant and window manufacturer.

3.06 PROTECTION

A. Protect installed products from damage during subsequent construction.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Interior non-thermal break aluminum entry doors (Door Type H, Doors 100C, 121A and 123B) and associated storefront framing.

1.02 RELATED REQUIREMENTS

A. Section 05 40 00 - Cold-Formed Metal Framing.

B. Section 08 41 13 - Exterior Aluminum Entrance and Storefront Window Framing.

C. Section 08 71 00 - Builders Hardware: Hardware items other than specified in this section.

D. Section 08 80 00 - Glass and Glazing: Glass and glazing accessories.

1.03 REFERENCE STANDARDS

A. AAMA CW-10 - Care and Handling of Architectural Aluminum From Shop to Site; American Architectural Manufacturers Association; 2004.

B. AAMA 501.2 - Field Check of Metal Storefronts, Curtain Walls, and Sloped Glazing Systems for Water Leakage; American Architectural Manufacturers Association; 2003 (part of AAMA 501).

C. ASTM A 36 - Standard Specification for Carbon Structural Steel; 2005.

D. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2007.

E. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2008.

1.04 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures.

B. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, and internal drainage details .

C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related Work, expansion and contraction joint location and details, field welding required, and installation requirements.

D. Manufacturer's Certificate: Certify that the products supplied meet or exceed the specified requirements.

E. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

A. Comply with requirements of AAMA/WDMA/CSA 101/1.S.2/A440.

B. Subcontractor/Installer:

1. Subcontractor for work in this Section is responsible for materials, fabrication and erection of the storefront system to the performance standards specified herein; should any portion of this work be sub-subcontracted, the principal subcontractor maintains joint responsibility with the Contractor for the work.
2. Storefront assembly installation shall be by and under the supervision of the manufacturer's representative employing mechanics experienced in storefront installations.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Handle products of this section in accordance with AAMA CW-10.

B. Protect finished aluminum surfaces with wrapping or strippable coating. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

1.07 FIELD CONDITIONS

A. Do not install sealants when ambient temperature is less than 40 degrees F.

B. Maintain this minimum temperature during and 48 hours after installation.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Basis of Design: Kawneer North America; www.kawneer.com.
   1. Storefront Framing Product: "Trifab VG 451" framing system, center glazed.

B. Other Acceptable Manufacturers:
   1. EFCO: www.efcocorp.com.
   2. United States Aluminum Corp: www.usalum.com.
   3. Vistawall Architectural Products: www.vistawall.com.

2.02 STOREFRONT / ENTRANCE ASSEMBLIES

A. Aluminum-Framed Entrances And Storefronts
   1. Type and Quality: All Interior Storefront Entrance Frame Types: Furnish "VG 451" center glazed, shear block storefront framing system as manufactured by Kawneer Company, Inc., or approved, complete with integral door frame where occurring, all subject to meeting all requirements specified herein and specific exposed frame width dimensions indicated on Drawings for each assembly type.
   2. Materials:
      a. Aluminum Extrusions: Alloy and temper recommended by aluminum storefront manufacturer for strength, corrosion resistance, and application of required finish and not less than 0.070" (1.8 mm) wall thickness at any location for the main frame and complying with ASTM B 221: 6063-T6 alloy and temper.
      b. Fasteners: Aluminum, nonmagnetic stainless steel or other materials to be non-corrosive and compatible with aluminum framing members, trim hardware, anchors, and other components.
      c. Anchors, Clips, and Accessories: Aluminum, nonmagnetic stainless steel, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.
      d. Reinforcing Members: Aluminum, nonmagnetic stainless steel, or nickel/chrome-plated steel complying with ASTM B 456 for Type SC 3 severe service conditions, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.
      e. Sealant: For sealants required within fabricated storefront system, provide permanently elastic, non-shrinking, and non-migrating type recommended by sealant manufacturer for joint size and movement.
      f. Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of storefront members are nominal and in compliance with AA Aluminum Standards and Data.

3. Finish: As specified below.
4. Glass: 1/4 Inch clear tempered glass per Section 08 80 00.

B. Monumental Stile & Rail Entry Doors (Door Type H)
1. Type and Style:
   a. Provide doors of sizes and thicknesses scheduled on Drawings, integral with storefront and curtain wall framing where indicated, of extruded aluminum conforming to details as shown
   b. Furnish as manufactured by Kawneer/Amax, or approved, Series "500 Wide Stile" Aluminum Entrance Door, 1-3/4 inches thick, with 5 inch wide stiles and top rail and 10 inch wide bottom rail.
2. Finish: As specified below.
3. Hardware:
   a. Furnished as specified under Section 08 71 00.
   b. The finish hardware supplier shall be responsible for furnishing physical hardware to the entrance manufacturer prior to fabrication, and for coordinating hardware delivery requirements with the hardware manufacturer, door subcontractor and the entrance manufacturer to insure the building project is not delayed.
4. Fabrication:
   a. Corner construction shall consist of mechanical clip fastening, SIGMA deep penetration and fillet welds.
   b. Glazing stops shall be snap-in type with EPDM glazing gaskets.
   c. The door weathering on door and frame shall be Kawneer "Sealair" weathering consisting of dense, semi-rigid polymeric material which shall remain resilient and retain its weathering ability under temperature extremes.
5. Glass: Furnish as scheduled and specified therefor in Section 08 80 00.

2.03 STOREFRONT FABRICATION & PERFORMANCE

A. Construction
1. Major framing shall be factory prepared for job site assembly and sealed according to manufacturer's recommended procedures.
2. Mullions and horizontal rails shall be tubular extruded shapes with sharp, well-defined corners and flush sight lines.
3. Sections shall be designed to accommodate either single or double insulating glass. Exterior glazing seal shall be synthetic polymer tape secured by extruded aluminum pressure plates fastened to the main grid members.
4. Provision shall be made at all sealed horizontals to lead moisture accumulation to the exterior. A cover shall be snapped over the pressure plate to shown only a sharp, uninterrupted exterior profile.
5. Fabricate components with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
6. Accurately fit and secure joints and corners. Make joints flush, hairline, and weatherproof.
7. Prepare components to receive anchor devices. Fabricate anchors.
8. Coat concealed metal surfaces that will be in contact with cementitious materials or dissimilar metals with bituminous paint.
9. Arrange fasteners and attachments to conceal from view.
10. Reinforce components internally for door hardware and door operators.
11. Reinforce framing members for imposed loads.
12. Provide steel reinforcement in mullions as required to meet loading requirements.

B. Door Frames
   1. Provide frames of extruded aluminum section profiles and dimensions as shown on Drawings, complete with reinforcement and anchorage as specified hereinafter and as shown on the approved shop drawings.
   2. Include compensating channels at head and jambs where indicated.
   3. Provide transom frames of same material, section profiles and dimensions as for door frames, as shown on the Drawings.

C. Performance: Products furnished under this section shall meet or exceed the performance requirements specified above.

2.04 FINISHES

A. All exposed grid framing members shall be free of scratches and other serious surface blemishes.

B. All aluminum shall be cleaned, given a pretreatment and coated with a fluoropolymer high performance organic paint coating finish, all in accordance with Architectural Aluminum Manufacturers Association (AAMA) Standard AAMA 2605, with a total dry film thickness of not less than 1.3 mils.

C. Color: Finish color shall be as selected by Architect from standard Kawneer Permadized color.

D. Mild steel framing operations shall conform to ASTM A283 Grade "C". All steel shall receive one coat of zinc chromate primer after fabrication. Field welds and scratches shall receive one touch-up coat after installation.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify dimensions, tolerances, and method of attachment with other work.

3.02 INSTALLATION

A. Install storefront entrance systems complete in accordance with manufacturer's instructions.

B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.

C. Provide alignment attachments and shims to permanently fasten system to building structure.

D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.

E. Install hardware using templates provided.
   1. See Section 08 7100 for hardware installation requirements.

F. Install glass in accordance with Section 08 80 00.

G. Install perimeter sealant in accordance with Section 07 92 00.

H. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

3.03 TOLERANCES

A. Maximum Variation from Plumb: 1/16 inches per 10 ft.

B. Maximum Variation from Plumb: 0.06 inches every 3 ft (1.5 mm/m) non-cumulative or 1/16 inches per 10 ft (1.5 mm/3 m), whichever is less.

C. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch (0.8 mm).

3.04 ADJUSTING

A. Adjust operating hardware for smooth operation and secure weathertight closure.

3.05 CLEANING

A. Remove protective material from factory finished aluminum surfaces.

B. Wash surfaces by method recommended and acceptable to sealant and window manufacturer; rinse and wipe surfaces clean.

C. Remove excess sealant by moderate use of mineral spirits or other solvent acceptable to sealant and window manufacturer.

3.06 PROTECTION

A. Protect installed products from damage during subsequent construction.

END OF SECTION

SECTION 08 71 00 - FINISH HARDWARE

PART 1 GENERAL

1.01 SECTION INCLUDES

Hardware for swinging, sliding, and folding doors except special types of unique and non-matching hardware specified in other sections.

1.02 RELATED WORK

A. Division 8 – Hollow Metal Doors and Frames
B. Division 8 – Flush Wood Doors
C. Division 8 – Metal Framed Storefronts
D. Division 8 – Glass & Glazing
E. Division 26 – Electrical
F. Division 28 – Fire Alarm/Detection

1.03 REFERENCES

A. ADA - Americans with Disabilities Act of 1990 including Accessibility Guidelines as amended by the D.O.J. September 15, 2010, as adopted by the Authority Having Jurisdiction (AHJ).
B. ANSI A117.1 - Buildings and Facilities - Providing Accessibility and Usability for Physically Handicapped People.
C. ANSI/BHMA A156 (.1 through .21)
D. ANSI/DHI – A115.IG Installation Guide for Doors and Hardware.
E. FEMA P-361 – Safe Rooms for Tornados and Hurricanes.
F. NFPA 80 - Fire Doors and Windows.
G. NFPA 101 – Life Safety Code
H. IBC - International Building Code, as adopted by public Authority Having Jurisdiction (AHJ).
I. State and local Rules and Regulations for Barrier Free Facilities, as adopted by AHJ.

1.04 DOOR HARDWARE TYPES

A. Types of finish hardware required include, but is not necessarily limited to, the following:

1. Pivot sets and intermediate pivots.
2. Hinges.
3. Lock cylinders.
4. Keys, keying, and key control.
5. Locksets, latchsets, and privacy sets.
6. Exit devices.
7. Closers.
8. Mullions.
9. Overhead, wall, and floor stops.
10. Protection plates.
11. Gasketing for exterior and interior doors, as required.
12. Door holders.
13. Door bottoms.
14. Thresholds.
15. Silencers.

B. Requirements for design, grade, function, finish, size and other distinctive qualities of each type of door hardware is indicated elsewhere in this section or in the Door Hardware Schedule at the end of this section. Refer to Part 2 Products for Manufacturer's identification and allowable substitutions.

1.05 SUBMITTALS

A. Under provisions of Division 1 submit the following:

1. Product information: Manufacturer's published technical product data for all specified door hardware items indicating compliance with the requirements.
2. Hardware Schedule:
   a. Hardware schedules are intended for the Contractor's coordination of the work. Review and acceptance by the Architect or Owner does not relieve the Contractor of his exclusive responsibility to fulfill the requirements as shown and specified.
   b. Submit hardware schedule in the manner and format as specified, complying with the actual construction progress schedule requirements for each draft. Include the following information:
      1) Explanation of all abbreviations, symbols, codes, at the like, including door handing.
      2) Type, style, function, size, and finish of each hardware item.
      3) Door and frame sizes and materials cross referenced to the Architect's marks in the door schedule.
      4) Room identification (name and number) on each side of door opening as indicated on the drawings.
      5) Product name, model number, description, and name of manufacturer of each item.
      6) Fastenings and other pertinent information.
      7) Locations of hardware cross referenced to architectural floor plans and door schedules.
      8) Mounting heights and locations of each type of hardware.
3. Key Schedule:
   a. Require a qualified representative of the hardware supplier to personally meet with the Owner and Architect to obtain the Owner's written key requirements.
   b. Include a separate key schedule, showing clearly how the Owner's instructions on keying of locks has been fulfilled.
4. Samples: Upon request, submit actual material samples of items indicated as for color selection.
5. Templates: Hardware supplier will furnish hardware templates to the Contractor for each fabricator of doors, frames, and other work to be shop prepared or factory prepared for the installation of hardware. Upon request check shop drawings of such other work, to conform that adequate provisions are made for proper location and installation of hardware.
6. Provide electrical operation technical sheets including product schematics, point to point diagrams, and electrical requirements of all electrified hardware. Completely coordinate with the general contractor, electrical engineer, electrician, security access subcontractor and the installer. Operational descriptions are for demonstration only – verify operational intent with the owner, architect and electrical engineer.
7. Manufacturer's published operation and maintenance data. Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.
8. Tools and extra materials as required.
9. Manufacturer's warranties, revise to meet criteria as established within this section. Warranty periods shall commence upon acceptance of the building by the owner. Where warranties listed exceed the manufacturer’s standard warranty, obtain in writing an extended warranty to meet the requirements above and as noted. If the manufacturer will not meet these requirements, and another approved manufacturer will comply, supply the alternate approved manufacturer.

1.06 QUALITY ASSURANCE

A. Acceptable Designs:

1. Items specified in this section are products which are of acceptable design.
2. Do not substitute products without Architect's written prior approval per Division 1. Requests for approval shall be submitted by factory authorized distributor firms representing the products proposed for substitution. Items that are noted to allow no substitution are matching existing materials and the owner's material inventory for servicing the facility.

B. Qualifications:

1. Manufacturer: Manufacturers named in Part 2 of this section with not less than 5 years experience in manufacturing commercial door hardware of the type indicated.
2. Hardware Supplier:
   a. A recognized architectural finish hardware supplier who has been furnishing hardware in the same state as the project for a period of not less than 5 years.
   b. Hardware supplier's organization shall include an experienced Architectural Hardware Consultant (AHC), certified by the Door and Hardware Institute (DHI), who is physically available, at reasonable times during the course of the work, for consultation about project's hardware requirements, to Owner, Architect and Contractor. Mail or telephone correspondence is not acceptable.
   c. Hardware supplier shall have local warehousing facilities and shall maintain an adequate parts inventory of items supplied for future service to the owner. Supplier will be a factory authorized distributor of all hardware specified.
   d. Prior to occupancy, the hardware supplier along with a representative of the manufacturer shall perform a visible and physical inspection of all installed hardware to ensure compliance with the specifications and proper operation. Create a document that confirms both proper or improper conditions and send to the architect and owner's representative.
3. Installer: Company specializing in installing work of this section with not less than 5 years experience and acceptable to the manufacturers and the hardware supplier. Maintain regular work force of qualified personnel, trained, skilled, and experienced in installing door hardware and constant, competent supervision per the requirements of the General Contractor. The hardware installer shall meet with the representatives of the General Contractor and hardware supplier to jointly inventory all hardware items. Upon satisfactory inventory of products, the hardware installer accepts responsibility for all hardware items inventoried.

C. Regulatory and Operational Requirements:

1. Provide hardware for all openings, whether specified or not, in compliance with NFPA Standard No. 80, proper operation and local building code requirements. Where required, provide only hardware which has been tested and listed by UL or FM for types and sizes of doors required and complies with requirements of door and door frame labels. Label hardware, as required, for compliance with pressure testing criteria as dictated in IBC.
2. Provide hardware which meets or exceeds handicap accessibility per local building code requirements. Conform to the Americans with Disabilities Act (ADA) of 1990 as amended by the D.O.J. September 15, 2010, as adopted by the Authority Having Jurisdiction (AHJ).

1.07 DELIVERY, STORAGE, HANDLING, AND PROTECTION

A. Deliver, store, handle, and protect products to project site under provisions of Division 1 and as specified herein.

B. Require hardware supplier to:

1. Tag each item or package separately, with identification related to final hardware schedule.
2. Include manufacturer's basic installation instructions with each item or package.
3. As material is received by hardware supplier from various manufacturers, sort and repackage in containers with each item clearly marked with appropriate opening numbers to

match the approved hardware schedule. Two or more identical items may be packed in the same container.

4. Deliver individually packaged hardware items at the proper times to the proper locations (shop or project site) for installation.
5. Inventory hardware jointly with representatives of the General Contractor, hardware supplier and the hardware installer until each is satisfied that count is correct. Refer to paragraph 1.6-B-3.

C. Protect hardware from theft by cataloging and storing in a secure and lockable area. Control the handling and installation of hardware items which are not immediately replaceable, so that the completion of the work will not be delayed by hardware losses, both before and after installation. Replace lost, missing, damaged, or stolen door hardware items at no additional cost to the Owner as required to meet schedule requirements.

1.08 SEQUENCING AND SCHEDULING

A. Coordinate work of this section with the work of other sections of work under provisions of Division 1
B. Furnish hardware templates to each fabricator of doors, frames, and other work to be shop or factory prepared for the installation of hardware.
C. Verify completeness and suitability of door hardware with the hardware supplier and the hardware installer.

1.09 MAINTENANCE MATERIALS

A. Under provisions of Division 1 furnish to Owner a complete set of special wrenches and tools applicable to each different or special hardware component as needed for Owner's continued adjustment, maintenance, removal, and replacement of door hardware.
B. Special tools and accessories shall be supplied by the hardware component manufacturer.

PART 2 PRODUCTS

2.01 MATERIALS AND FABRICATION

A. General:
   1. Provide all door hardware for complete work, in accordance with the drawings and as specified herein.
   2. Quantities listed, in any instance, are for the Contractor's convenience only and are not guaranteed.
   3. Provide items and quantities not specifically mentioned to ensure a proper and complete operational installation. Match the quality and finish of items specified.
   4. Provide miscellaneous hardware as listed in hardware groups.
B. Hand of door: Drawings show direction of slide, swing or hand of each door leaf. Door schedule indicates door and frame sizes, materials, required fire ratings, and other pertinent information. Furnish each item of hardware for proper installation and operation of door movement as indicated.
C. Manufacturer's Name Plate: Do not use manufacturer's products which have manufacturer's name or trade name displayed in a visible location (omit removable name plates), except in conjunction with required UL or FM labels and as otherwise acceptable to the Architect. Manufacturer's identification will be permitted on rim of lock cylinders and latch faceplates only.
D. Base Metals: Produce hardware units of basic metal and forming method indicated, using manufacturer's standard metal alloy, composition, temper and hardness, but in no case of lesser (commercially recognized) quality than specified for applicable hardware units by applicable ANSI A156 series standard for each type hardware item and with ANSI A156.18 for finish designations indicated. Do not furnish "optional" materials or forming methods for those indicated, except as otherwise specified.

E. Fasteners: Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation. Do not provide hardware which has been prepared for self-tapping sheet metal screws, except as specifically indicated.
   1. Screws: Furnish screws for installation, with each hardware item. Provide Phillips flat head screws except as otherwise indicated. Finish exposed (exposed under any condition) screws to match hardware finish or, if exposed in surfaces of other work, to match finishes of such other work as closely as possible, including "prepared for paint" in surfaces to receive painted finish.
   2. Concealed Fasteners: Provide concealed fasteners for hardware units which are exposed when door is closed, except to extent no standard units of type specified are available with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed in other work, except where it is not feasible to adequately reinforce the work. In such cases, provide sleeves for each thru-bolt or use sex screw fasteners.

2.02 HINGES

A. Manufacturer:
   1. Listed in Door Hardware Schedule: Stanley
   2. Approved Substitutions: Hager, McKinney
   3. Continuous hinges are as manufactured by Stanley. Equal products by Select or ABH are acceptable.
B. Templates: Except for hinges and pivots to be installed entirely (both leaves) into wood doors and frames, provide only template produced units.
C. Screws: Furnish Phillips flat head or machine screws for installation of units, except furnish Phillips flat head or wood screws for installation of units into wood. Finish screw heads to match surface of hinges.
D. Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:
   1. Steel Hinges: Steel pins.
   2. Non-ferrous Hinges: Stainless steel pins.
   3. Exterior doors: Non-removable pins.
   4. Reverse bevel interior doors (lockable): Non-removable pins.
   5. Interior doors: Non-rising pins.
E. Pin Tips: Flat button and matching plug, finished to match leaves unless noted otherwise.
F. Number of Hinges: Provide number of hinges indicated, but not less than 3 hinges per door leaf for doors 90" or less in height and one additional hinge for each 30" of additional height.
G. Butt type hinges and continuous hinges are to be warranted for a period of two years.

2.03 LOCK CYLINDERS

A. Manufacturer:
   1. Listed in Door Hardware Schedule: Best
   2. Approved Substitutions: None – facility standard
B. Equip locks with 7-pin cylinders for small format interchangeable core pin tumbler inserts, Brass construction cores for use during the construction phases. Plastic construction cores are not allowed. Temporary construction cores shall be removed upon installation of the permanent key system by the owner and returned to the hardware supplier.
C. Construct lock cylinder parts from brass/bronze, stainless steel, or nickel silver.

2.04 KEYS, KEYING, AND KEY CONTROL

A. Keys:
   1. Material: Provide keys of nickel silver only.
   2. Quantities: These quantities are to establish a maximum allowable quantity of cut keys to service the project and may not necessarily be assigned as noted. A lesser quantity of cut

keys required will not result in any credits, nor a quantity of uncut keys to be issued unless noted otherwise.
   a. 3 change keys per each cylinder unit.
   b. 5 master keys per master
   c. 2 Construction Control Keys
   d. 2 Permanent Control Keys
   e. 20 construction keys.
3. Deliver keys to the Owner's representative: Send masterkeys to Owner via U.S. registered mail direct from hardware supplier.

B. Keying:
1. Comply with Owner's written instructions for masterkeying and, except as otherwise indicated, provide individual change keys for each lock which is not designated to be keyed alike with a group of related locks.
2. Grandmaster key all cylinder items to coordinate with the Owner's instructions. Permanently inscribe each key with the notation "DO NOT DUPLICATE".

C. Key Control:
1. Provide a key control system including envelopes, labels, tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet, all as recommended by the system manufacturer, with capacity for 150% of the number of locks required for the project.
2. Provide a hinged panel type cabinet, for wall mounting, Telkee AWC-250S or equal.
3. Provide cylinder units with concealed key control and keys with visual key control.

2.05 LOCKSETS, LATCHSETS, AND PRIVACY SETS:

A. Manufacturer:
1. Listed in Door Hardware Schedule: Best 45H
2. Substitutions: Dorma M9000
3. Push/Pull units are as manufactured by Trimco. Equal products by Rockwood, Dorma or Ives are acceptable

B. Types: Locksets, latchsets, and privacy sets as indicated in Door Hardware Schedule.
C. Where specified, provide the manufacturer’s universal lock casing (UN) that can be field modified to meet several lock functions.
D. Strikes: Provide manufacturer's standard wrought box strike for each latch or lock bolt. Provide dust-proof strikes for foot bolts, except where not available. At these locations, provide manufacturer's standard recessed strike. Provide roller type strikes where recommended by lock, latch or bolt manufacturer. If aluminum frames are specified, confirm with the aluminum frame supplier that the standard lock strikes will function. Provide the manufacturer’s standard extended lip strikes if required.
E. Lock Throw: Provide 3/4" minimum throw of mortise type latches and deadbolts used. Cylindrical latches will be 1/2" minimum. Comply with UL requirements for throw of bolts and latch bolts on rated fire openings.
F. Locks and latches shall be warranted for a period of five years.

2.06 EXIT DEVICES AND MULLIONS

A. Manufacturer:
1. Listed in Door Hardware Schedule: Precision 2000
2. Substitutions: Dorma 9000

B. Provide risers, as needed, to prevent interference with door glazing kits.
C. Provide spacers as needed for proper application of removable mullions on narrow stop type frames.
D. Provide architecturally finished products.
E. Mullions shall be provided primed to be painted to match finish hardware.
F. Exit devices and related hardware shall be warranted for a period of five years.

2.07 CLOSERS:

A. Manufacturer:
   1. Listed in Door Hardware Schedule: Best HD7016
   2. Approved Substitutions: Dorma 8916
B. Size of Units: Except as otherwise specifically indicated, comply with the manufacturer's recommendations for size of door control unit, depending on the size of the door, exposure to weather and anticipated frequency of use.
C. Provide manufacturer's standard through bolt attachment where door construction is not adequate for support.
D. Arms:
   1. Provide parallel arms for all overhead closers, except as otherwise indicated. Provide drop plates as needed to prevent glazing interference.
E. Mount all closers to the maximum allowable degree of opening by the closer manufacturer's template. Where closer arms incorporate dead stop features, mount closers to the maximum degree of opening available before conflict with adjacent structures. If not apparent on the contract documents, verify the use of open space with the Architect or Owner's Representative to determine the maximum allowable degree of opening.
F. Access Free Manual Closers: Where manual closers are indicated for doors required to be accessible to the physically handicapped, provide adjustable units complying with ANSI A117.1 provisions for door opening force. Fire protection has precedence over handicap compatibility, check with local jurisdiction.
G. Door closers and related hardware shall be warranted for a period of twenty-five years. Electronic closers shall be warranted for a period of two years.

2.08 WALL AND FLOOR STOPS

A. Manufacturers:
   1. Listed in Door Hardware Schedule: Trimco
   2. Approved Substitutions: Hager, Ives, Rockwood
B. General: Except as otherwise indicated, provide stops (wall, floor or overhead) at each leaf of every swinging door leaf.

2.09 OVERHEAD STOPS

A. Manufacturer:
   1. Listed in Door Hardware Schedule: ABH
   2. Approved Substitutions: Dorma, Rixson
B. Mount stops to the maximum degree of opening available before conflict with adjacent structures, or, if adjacent structures are not considered, to the maximum allowable by stop manufacturer's template.
C. If not apparent on the contract documents, verify the use of open space with the Architect or Owner's Representative to determine the maximum allowable degree of opening.
D. Overhead stops in exterior doors must be manufactured from stainless steel, US32D finish.
E. Overhead stops shall be warranted for a period of two years.

2.10 PROTECTION PLATES

A. Manufacturers:
   1. Listed in Door Hardware Schedule: Trimco
   2. Approved Substitutions: Hager, Ives, Rockwood
B. Types: Armor Plates, Kick Plates, Mop Plates
C. Fasteners: Provide manufacturer's standard exposed Phillips head fasteners for door trim units; either machine screws or self-tapping sheet metal type screws per manufacturer's recommendations for application to the specified door construction.

D. Sizes: Fabricate protection plates (armor, kick or mop) not more than 2" less than door width on stop side and not more than 1" less than door width on pull side, x the height indicated.
E. Plastic Laminate Plates, 1/8” thick, beveled four edges (B4E) and countersunk (CS).

2.11 GASKETS AND SWEEPS

A. Manufacturer:
   1. Listed in Door Hardware Schedule: National Guard
   2. Approved Substitutions: Zero, Pemko
B. General: Except as otherwise indicated, provide continuous weatherstripping at each edge of every exterior door leaf. Provide type, sizes and profiles indicated as drawn or scheduled.
C. Fasteners: Provide non-corrosive fasteners as recommended by the manufacturer for applications indicated.
D. Replaceable seal strips: Provide only those units where resilient or flexible seal strip is easily replaceable and readily available from stocks maintained by the manufacturer.
E. Perimeter weatherstripping: Flexible, hollow neoprene bulb or loop insert, conforming to MIL R 6055, Class II, Grade 40.
F. Weatherstripping at Door Bottoms: Provide door bottoms consisting of contact type resilient insert and metal housing of design and size indicated.
G. Hot smoke seal, if required by IBC and subsequent UL testing procedures, will be supplied as an integral part of the door assembly by the door manufacturer.
H. Gaskets and sweeps shall be warranted for a period of three years.

2.12 THRESHOLDS

A. Manufacturer:
   1. Listed in Door Hardware Schedule: National Guard
   2. Approved Substitutions: Zero, Pemko
B. Except as otherwise indicated provide standard metal threshold unit of type, size and profile as detailed or scheduled.
C. Where there is conflict between scheduled thresholds and details, details shall have precedence. Revise details only if necessary to comply with handicap accessibility requirements. Notify the Architect of such required modifications.
D. Thresholds shall incorporate the manufacturer’s standard abrasive coating option.
E. Thresholds and related items shall be warranted for a period of three years, abrasive coatings shall be warranted for a period of ten years.

2.13 SILENCERS

A. Manufacturers:
   1. Listed in Door Hardware Schedule: Trimco
   2. Approved Substitutions: Rockwood, Ives

2.14 FINISHES

A. Exposed surfaces of hardware shall be Brushed Chrome (US26D, 626, 652), unless otherwise indicated. Items specified in Satin Stainless Steel (US32D, 630) shall be supplied in stainless steel with no exceptions.
B. The designations used in the schedule and elsewhere to indicate hardware finishes are the industry recognized standard commercial finishes common to the product's manufacturer listed.

PART 3 EXECUTION

3.01 EXAMINATION

A. Under provisions of Division 1 examine and verify that substrates and project site conditions are ready to receive work of this section.

B. Do not begin installation until finishes indicated to be field applied have been applied to doors, frames, and similar items requiring project site finishing and are thoroughly dry and cured.
C. Do not begin installation until unsatisfactory conditions are corrected in a manner acceptable to the installer. Beginning installation means installer accepts project site conditions and substrates as ready to receive work of this section.

3.02 INSTALLATION

A. General: The types and approximate quantities of door hardware required for this project are indicated at the end of this section.
B. Key Cabinet: Install in location as indicated on drawings or as directed by the Architect.
C. Heights: Mount hardware units at heights indicated in "Recommended Locations for Builders Hardware for /standard Steel Doors and Frames" by the Door and Hardware Institute, except as specifically indicated or required to comply with governing regulations, and except as may be otherwise directed by the Architect.
D. Substrates: Adjust and reinforce attachment substrates as necessary for proper installation and operation of hardware.
E. Installation:
    1. Install each hardware item in compliance with the manufacturer's instructions, requirements of NFPA 80, NFPA 101, IBC, ADA, State Rules and Regulations for Barrier Free Facilities and recommendations of the DHI.
    2. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
    3. Drill and countersink units which are not factory prepared for fasteners. Space fasteners and anchors in accordance with industry standards.
    4. Where not factory machined, machine cut for hardware per template, as required.
    5. Cut and fit thresholds and floor covers to profile of door frames. Join units with concealed welds. Cut smooth openings for spindles, bolts, or similar items. Screw thresholds to substrate with the manufacturer's standard stainless-steel machine screws/expansion anchors (SSMS/EA), 1/4-20 unless otherwise noted. Fill cavities of thresholds at sound rated openings with 1 inch thick (uncompressed thickness) low density fiberglass sill sealer insulation full width and length of the threshold. In addition to fastening requirements, set thresholds for exterior doors in a full bed of butyl-rubber or polyisobutylene mastic sealant.
    6. Do not install hardware which is incomplete or apparently improper for application. Notify the hardware supplier immediately of any such deficiencies. Failure to comply with this requirement indicates the hardware installer's acceptance of responsibility for proper application and performance.
F. Cutting and Patching:
    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 removal, storage and reinstallation or application of surface protections with finishing work specified in the Division-9 sections.

3.03 ADJUSTING

A. Initial Adjustment:
    1. Adjust and check each operating item of hardware and each door, to ensure proper operation or function of every unit. Adjust resilient faced sound stops for continuous contact with door and threshold. Adjust weatherstripping and sweeps to completely seal doors with frames and to adjacent structures.
    2. Replace units which cannot be adjusted to operate freely and smoothly as intended for the application made.
B. 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 final check and adjustment of all hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of

hardware and doors. Adjust door control devices to compensate for final operation of heating and ventilating equipment.

3.04 DEMONSTRATION

Instruct Owner's personnel in proper adjustment and maintenance of hardware and hardware finishes, during the final adjustment of hardware.

3.05 CLEANING AND DEBRIS

A. Cleaning:
   1. Clean work under provisions of Division 1
   2. Clean adjacent surfaces soiled by work of this section.
B. Debris: Under provisions of Division 1 remove debris from project site and legally dispose of off-site.

3.06 MAINTENANCE

A. Approximately six months after the acceptance of hardware in each area, the hardware installer shall:
   1. Return to the project and re-adjust every item of hardware to restore proper function of doors and hardware.
   2. Consult with and instruct Owner's personnel in recommended additions to the maintenance procedures.
   3. Replace hardware items which have deteriorated or failed due to faulty design, materials or installation of hardware units.
   4. Prepare a written report of current and predictable problems (of substantial nature) in the performance of the hardware and submit to the Architect.

3.07 PROTECTION

Under provisions of Division 1 protect work of this section as required so that work will be without damage or deterioration at the time of completion and acceptance by the Owner.

3.08 DOOR HARDWARE SCHEDULE

List of Manufacturers

BE	Best Access Systems	Locks, Cylinders, Closers
NA	National Guard	Thresholds, Gaskets
PR	Precision	Exit Devices
ST	Stanley Commercial	Hinges
TK	Telkee	Key Cabinet
TR	Trimco	Stops, Flat Goods

Finish Codes

Code	**Description**
628	Satin Anodized Aluminum
626/652	Satin Chrome Plated
630	Satin Stainless Steel
689	Aluminum Painted
BLK	Black
GREY	Grey

Option List

Code	Description
VIN	Occupancy Indicator (Best)
CD	Cylinder Dogging (Precision)
L Mounting	Spanner Back to Back Mounting (Trimco)
N Mounting	Spanner Through Bolt Mounting (Trimco)
B4E	Beveled 4 Edges - Kick and Mop Plates (Trimco)
CS	Countersunk Screws (Trimco)
SMS-TEKS	Self Tapping Sheet Metal Screws (NGP)
SSMS/EA	Stainless Steel Screws/Expansion Shields (NGP)

SET #MISC - Miscellaneous Hardware

1	Key Cabinet	AWC-150-S		TK

SET #1 - Exterior - Card Access

Door: 000A

3	Hinges	CB199 5 X 4 1/2 NRP	630	ST
1	Exit Device	2108 X V4908A CD	630	PR
1	Mortise Cylinder	1E-74 STD	626	BE
1	Rim Cylinder	12E-72 STD	626	BE
*1	Electric Strike	BES-0162	630	BE
1	Closer	HD7016 SPA	626	BE
1	Kick Plate	K0050 10" x 2" LDW B4E CS	630	TR
1	Door Stop	1214H	626	TR
1	Gasketing	700 NA SMS-TEKS		NA
1	Door Sweep	200 NA SMS-TEKS		NA
1	Saddle Threshold	426 SSMS/EA		NA
*1	Wire Harness	WH-6E		ST
*1	Wire Harness	WH-192		ST
*1	Power Supply	DKPS-2A		RC

Wi-Q components and card reader by security access. Contact Eric Peterson at Dormakaba for additional components required. Do not cut weatherstrip - template hardware accordingly. Verify threshold application.

SET #2 - Exterior Entry

Doors: 100A, 100B, 201A, ~~202A~~, 203A

2	Continuous Hinges	661HD	628	ST
1	Exit Device	2603 CD	630	PR
1	Exit Device	2601 CD	630	PR
2	Mortise Cylinders	1E-74 STD	626	BE
1	Rim Cylinder	12E-72 STD	626	BE
2	Door Pulls	1191-4 Type N Mounting	630	TR
2	Closers	HD7016 SPA DP70	689	BE
2	Door Stops	1214H	626	TR
2	Door Sweeps	200 NA SMS-TEKS		NA
1	Saddle Threshold	426 SSMS/EA		NA

Gaskets by door manufacturer. Verify threshold application.

SET #2A - Exterior Entry - Card Access

Door: 000B, 100A

2	Continuous Hinges	661HD	628	ST
*2	Power Transfers	EPT-12C		PR
*1	Exit Device	C MLR TS 2603	630	PR
*1	Exit Device	C MLR TS 2601	630	PR
1	Rim Cylinder	12E-72 STD	626	BE
2	Door Pulls	1191-4 Type N Mounting	630	TR
2	Closers	HD7016 SPA DP70	689	BE
2	Door Stops	1214H	626	TR
2	Door Sweeps	200 NA SMS-TEKS		NA
1	Saddle Threshold	426 SSMS/EA		NA
*2	Wire Harnesses	WH-6E		ST
*2	Wire Harnesses	WH-6E		ST
*2	Wire Harnesses	WH-6E		ST
*1	Power Supply	RPSMLR2		PR

Wi-Q components and card reader by security access. Contact Eric Peterson at Dormakaba for additional components required. Gaskets by door manufacturer. Verify threshold application.

SET #2B - Exterior Entry - Automatic

Door: 100B, 207A

2	Continuous Hinges	661HD	628	ST
1	Exit Device	2603 CD	630	PR
1	Exit Device	2601 CD	630	PR
2	Mortise Cylinders	1E-74 STD	626	BE
1	Rim Cylinder	12E-72 STD	626	BE
2	Door Pulls	1191-4 Type N Mounting	630	TR
*1	Auto Operator	ED 900PR Series	689	DM
*1	Operator Switch	6 x 6	630	WI
2	Door Stops	1214H	626	TR
2	Door Sweeps	200 NA SMS-TEKS		NA
1	Saddle Threshold	426 SSMS/EA		NA

Devices must be dogged for automatic operation. Gaskets by door manufacturer. Verify threshold application. Operators may be provided under section 087113. Coordinate accordingly.

SET #3 - Vestibule - Automatic

Door: 100C

2	Continuous Hinges	661HD	628	ST
2	Push/Pull Sets	1738 Type L & N Mounting	630	TR
*1	Auto Operator	ED 900PR Series	689	DM
*1	Vestibule Switch	AA3R x AA3L	630	WI
*1	Operator Switch	6 x 6	630	WI
2	Door Stops	1214H	626	TR

Gaskets by door manufacturer. Operators may be provided under section 087113. Coordinate accordingly.

SET #4 - Restroom

Doors: 106A, 107A, 108A, 109A, 110A

3	Hinges	CB179 4 1/2 X 4 1/2	652	ST
1	Privacy Set	45H-0L15H VIN	626	BE
1	Closer	HD7016 SPA	626	BE
1	Kick Plate	K0050 10" x 2" LDW B4E CS	630	TR
1	Wall Bumper	1270WV	630	TR
1	Gasketing	5050 B Head & Jambs		NA

SET #4A - Restroom

Door: 101AA

3	Hinges	CB179 4 1/2 X 4 1/2	652	ST
1	Privacy Set	45H-0L15H VIN	626	BE
1	Closer	HD7016 SPA	626	BE
1	Kick Plate	K0050 10" x 2" LDW B4E CS	630	TR
1	Door Stop	1215CKU	626	TR
1	Gasketing	5050 B Head & Jambs		NA

SET #5 - Lobby

Door: 101B

3	Hinges	CB168 4 1/2 X 4 1/2 NRP	652	ST
1	Exit Device	2108 CD	630	PR
1	Wi-Q Exit Trim	EXQ-7EV15PH STD PH2	626	BE
1	Rim Cylinder	12E-72 STD	626	BE
1	Mortise Cylinder	1E-74 STD	626	BE
1	Closer	HD7016 SPA	626	BE
1	Kick Plate	K0050 10" x 2" LDW B4E CS	630	TR
1	Wall Bumper	1270WV	630	TR
1	Gasketing	5050 B Head & Jambs		NA

Contact Eric Peterson at Dormakaba for additional components required.

SET #6 - Office

Doors: 102A, 104A, 105A, 115A, 122A, 124A, 125A, 126A

3	Hinges	CB179 4 1/2 X 4 1/2	652	ST
1	Lockset	45H-7A15H STD	626	BE
1	Wall Bumper	1270WV	630	TR
3	Door Silencers	1229A	GREY	TR

SET #6A - Office - Card Access

Door: 102A

3	Hinges	CB179 4 1/2 X 4 1/2	652	ST
1	Wi-Q Lockset	45HQ-7DV15PH STD	626	BE
1	Wall Bumper	1270WV	630	TR
3	Door Silencers	1229A	GREY	TR

Contact Eric Peterson at Dormakaba for additional components required.

SET #7 - Plan Review

Door: 102B

3	Hinges	CB179 4 1/2 X 4 1/2	652	ST
1	Lockset	45H-7A15H STD	626	BE
1	Closer	HD7016 JT	689	BE
1	Kick Plate	K0050 10" x 2" LDW B4E CS	630	TR
1	Wall Bumper	1270WV	630	TR
1	Gasketing	5050 B Head & Jambs		NA

SET #8 - Conference

Doors: 103A, 103B

3	Hinges	CB179 4 1/2 X 4 1/2	652	ST
1	Lockset	45H-7R15H STD	626	BE
1	Wall Bumper	1270WV	630	TR
1	Gasketing	5050 B Head & Jambs		NA

SET #9 - Custodial

Door: 111A

3	Hinges	CB179 4 1/2 X 4 1/2	652	ST
1	Lockset	45H-7D15H STD	626	BE
1	Kick Plate	K0050 10" x 2" LDW B4E CS	630	TR
1	Door Stop	1215CKU	626	TR
1	Gasketing	5050 B Head & Jambs		NA

SET #10 – Lactation/Shower

Doors: 112A, 118AA

3	Hinges	CB179 4 1/2 X 4 1/2	652	ST
1	Privacy Set	45H-0L15H VIN	626	BE
1	Closer	HD7016 JT	689	BE
1	Kick Plate	K0050 10" x 2" LDW B4E CS	630	TR
1	Wall Bumper	1270WV	630	TR
1	Gasketing	5050 B Head & Jambs		NA

SET #11 - Water Lab - Card Access

Door: 113B

3	Hinges	CB199 4 1/2 X 4 1/2 NRP	630	ST
1	Wi-Q Lockset	45HQ-7DV15PH STD	626	BE
1	Closer	HD7016 SPA	626	BE
1	Kick Plate	K0050 10" x 2" LDW B4E CS	630	TR
1	Door Stop	1214H	626	TR
1	Gasketing	700 NA SMS-TEKS		NA
1	Door Sweep	200 NA SMS-TEKS		NA
1	Saddle Threshold	426 SSMS/EA		NA

Contact Eric Peterson at Dormakaba for additional components required. Do not cut weatherstrip - template hardware accordingly. Verify threshold application.

SET #12 - Storage

Door: 127A

6	Hinges	CB179 4 1/2 X 4 1/2	652	ST
1	Set Auto Flush Bolts	3810 X 3810	626	TR
1	Dustproof Strike	3911	630	TR
1	Lockset	45H-7D15H STD	626	BE
1	Coordinator	3094 Series	BLK	TR
2	Closers	HD7016 JT	689	BE
2	Kick Plates	K0050 10" x 2" LDW B4E CS	630	TR
2	Wall Bumpers	1270WV	630	TR
1	Gasketing	5050 B Head & Jambs		NA

Astragal on inactive leaf by door manufacturer.

SET #13 - Storage

Door: 127B

3	Hinges	CB179 4 1/2 X 4 1/2 NRP	652	ST
1	Lockset	45H-7D15H STD	626	BE
1	Closer	HD7016 SDS	689	BE
1	Kick Plate	K0050 10" x 2" LDW B4E CS	630	TR
1	Gasketing	5050 B Head & Jambs		NA

SET #14 - Storage

Door: 127C

3	Hinges	CB179 4 1/2 X 4 1/2	652	ST
1	Lockset	45H-7D15H STD	626	BE
1	Closer	HD7016 JT	689	BE
1	Kick Plate	K0050 10" x 2" LDW B4E CS	630	TR
1	Wall Bumper	1270WV	630	TR
1	Gasketing	5050 B Head & Jambs		NA

SET #14A - Storage - Card Access

Door: 117A

3	Hinges	CB179 4 1/2 X 4 1/2	652	ST
1	Wi-Q Lockset	45HQ-7DV15PH STD	626	BE
1	Closer	HD7016 JT	689	BE
1	Kick Plate	K0050 10" x 2" LDW B4E CS	630	TR
1	Wall Bumper	1270WV	630	TR
1	Gasketing	5050 B Head & Jambs		NA

Contact Eric Peterson at Dormakaba for additional components required.

SET #15 - Prep Room

Door: 113A

3	Hinges	CB179 4 1/2 X 4 1/2 NRP	652	ST
1	Lockset	45H-7A15H STD	626	BE
1	Closer	HD7016 SPA	689	BE
1	Kick Plate	K0050 10" x 2" LDW B4E CS	630	TR
1	Wall Bumper	1270WV	630	TR
3	Door Silencers	1229A	GREY	TR

SET #16 - Mechanical/Electrical - Card Access

Door: 117B

3	Hinges	CB199 5 X 4 1/2 NRP	630	ST
1	Wi-Q Lockset	45HQ-7DV15PH STD	626	BE
1	Closer	HD7016 SPA	626	BE
1	Kick Plate	K0050 10" x 2" LDW B4E CS	630	TR
1	Door Stop	1214H	626	TR
1	Gasketing	700 NA SMS-TEKS		NA
1	Door Sweep	200 NA SMS-TEKS		NA
1	Saddle Threshold	426 SSMS/EA		NA

Contact Eric Peterson at Dormakaba for additional components required. Do not cut weatherstrip - template hardware accordingly. Verify threshold application.

SET #17 - Mud Room

Door: 118A

3	Hinges	CB179 4 1/2 X 4 1/2	652	ST
1	Passage Set	45H-0N15H	626	BE
1	Closer	HD7016 JT	689	BE
1	Kick Plate	K0050 10" x 2" LDW B4E CS	630	TR
1	Wall Bumper	1270WV	630	TR
3	Door Silencers	1229A	GREY	TR

SET #18 - Mud Room/Break Room

Doors: 118B, 121B

3	Hinges	CB199 4 1/2 X 4 1/2 NRP	630	ST
1	Wi-Q Lockset	45HQ-7DV15PH STD	626	BE
1	Closer	HD7016 SPA	626	BE
1	Kick Plate	K0050 10" x 2" LDW B4E CS	630	TR
1	Door Stop	1214H	626	TR
1	Gasketing	700 NA SMS-TEKS		NA
1	Door Sweep	200 NA SMS-TEKS		NA
1	Saddle Threshold	426 SSMS/EA		NA

Contact Eric Peterson at Dormakaba for additional components required. Do not cut weatherstrip - template hardware accordingly. Verify threshold application.

SET #19 - Office

Door: 114A

3	Hinges	CB179 4 1/2 X 4 1/2	652	ST
1	Lockset	45H-7A15H STD	626	BE
1	Floor Stop	1215CKU	626	TR
3	Door Silencers	1229A	GREY	TR

SET #20 - Supplies

Door: 120A

3	Hinges	CB179 4 1/2 X 4 1/2	652	ST
1	Lockset	45H-7D15H STD	626	BE
1	Wall Bumper	1270WV	630	TR
3	Door Silencers	1229A	GREY	TR

SET #21 - Break Room

Door: 121A

3	Hinges	CB179 4 1/2 X 4 1/2 NRP	652	ST
1	Lockset	45H-7R15H STD	626	BE
1	Closer	HD7016 SPA	626	BE
1	Kick Plate	K0050 10" x 2" LDW B4E CS	630	TR
1	Wall Bumper	1270WV	630	TR
3	Door Silencers	1229A	GREY	TR

SET #22 - Conference - Card Access

Door: 123A

3	Hinges	CB179 4 1/2 X 4 1/2 NRP	652	ST
1	Wi-Q Lockset	45HQ-7DV15PH STD	626	BE
1	Closer	HD7016 SPA	626	BE
1	Kick Plate	K0050 10" x 2" LDW B4E CS	630	TR
1	Wall Bumper	1270WV	630	TR
1	Gasketing	5050 B Head & Jambs		NA

Contact Eric Peterson at Dormakaba for additional components required.

SET #23 - Conference

Door: 123B

1	Continuous Hinge	661HD	628	ST
1	Lockset	45H-7R15H STD	626	BE
1	Closer	HD7016 SDS	689	BE
1	Kick Plate	K0050 10" x 2" LDW B4E CS	630	TR
1	Gasketing	5050 B Head & Jambs		NA

SET #24 - Conference/Exterior

Doors: 123C, 203A, 203B, 207C

1	Continuous Hinge	661HD	628	ST
1	Exit Device	2403 CD	630	PR
1	Cylinder	12E-72 STD	626	BE
1	Cylinder	1E-74 STD	626	BE
1	Door Pull	1191-4 Type N Mounting	630	TR
1	Closer	HD7016 SPA DP70	626	BE
1	Door Stop	1214H	626	TR
1	Door Sweep	200 NA SMS-TEKS		NA
1	Saddle Threshold	426 SSMS/EA		NA

Perimeter gaskets by door manufacturer. Modify existing doors and frames as needed. Verify threshold application.

SET #25 - Storage/Electrical

Doors: ~~204A~~, 207B

1	Continuous Hinge	661HD	628	ST
1	Exit Device	45H-7D15H STD	626	BE
1	Closer	HD7016 IS	626	BE
1	Wall Bumper	1270WV	630	TR
1	Door Bottom	36 EV SMS-TEKS		NA
1	Saddle Threshold	426 SSMS/EA		NA

Perimeter gaskets by door manufacturer. Doors need to be wide stile to accept specified hardware. Verify threshold application.

* Requires electronic coordination

End of Section

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Glass.

B. Glazing compounds and accessories.

1.02 RELATED REQUIREMENTS

A. Section 08 11 13 - Hollow Metal Doors and Frames: Glazed relites.

B. Section 08 14 16 - Flush Wood Doors: Glazed lites in wood doors.

C. Section 08 41 13 - Exterior Aluminum Entrance & Storefront Window Framing.

D. Section 08 42 13 - Interior Aluminum-Framed Entrances.

1.03 REFERENCE STANDARDS

A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials Current Edition.

B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings, Safety Performance Specifications and Methods of Test; 2010.

C. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers 2005 (Reapproved 2015).

D. ASTM C920 - Standard Specification for Elastomeric Joint Sealants 2018.

E. ASTM C1036 - Standard Specification for Flat Glass 2021.

F. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass 2014.

G. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2021a.

H. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation 2010.

I. GANA (GM) - GANA Glazing Manual 2008.

J. GANA (SM) - GANA Sealant Manual 2008.

K. GANA (LGRM) - Laminated Glazing Reference Manual 2009.

L. IGMA TM-3000 - North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial & Residential Use 1990 (2016).

1.04 SUBMITTALS

A. Product Data on Glazing Compounds: Provide chemical, functional, and environmental characteristics, limitations, special application requirements. Identify available colors.

B. Samples: Submit two samples 12 by 12 inch (__ by __ mm) in size of glass units.

C. Certificates: Certify that products meet or exceed specified requirements.

1.05 QUALITY ASSURANCE

A. Perform Work in accordance with GANA Glazing Manual for glazing installation methods. Maintain one copy on site.

B. Installer Qualifications: Company specializing in performing the work of this section with minimum three years documented experience.

1.06 FIELD CONDITIONS

A. Do not install glazing when ambient temperature is less than 50 degrees F (10 degrees C).

B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.07 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Sealed Insulating Glass Units: Provide a five (5) year warranty to include coverage for seal failure, interpane dusting or misting, including replacement of failed units.

PART 2 - PRODUCTS

2.01 GLASS MATERIALS

A. Float Glass Manufacturers/Fabricators:
   1. AGC Glass Company North America, Inc: www.us.agc.com/#sle.
   2. Cardinal Glass Industries: www.cardinalcorp.com/#sle.
   3. Guardian Industries Corp: www.sunguardglass.com/#sle.
   4. Pilkington North America Inc: www.pilkington.com/na.
   5. Viracon; www.viracon.com.
   6. Vitro Architectural Glass (formerly PPG Glass); www.vitroglazings.com.

2.02 SINGLE PANE GLASS

A. Float Glass: Provide float glass based glazing unless noted otherwise.
   1. Annealed Type: ASTM C1036, Type I - Transparent Flat, Class 1 - Clear, Quality-Q3.
   2. Thicknesses: 1/4 Inch unless otherwise indicated; for exterior glazing comply with requirements indicated for wind load design regardless of thickness indicated.

B. Clear Fully Tempered Plate Glass
   1. Standards: Furnish conforming to ASTM C1048 Kind FT, Type I, Class 1 clear, quality "q3, with an etched indication or certificate from manufacturer attesting to conformance with Standard.
   2. Thickness: 1/4 inch.

2.03 SEALED INSULATING GLASS UNITS

A. Manufacturers:
   1. Any of the manufacturers specified for float glass.
   2. Fabricator certified by glass manufacturer for type of glass, coating, and treatment involved and capable of providing specified warranty.

B. High Performance Low-E Insulating Clear Float Glass Units For Glazed Aluminum Storefronts, Curtain Walls & Entrances
   1. Outside-Lite: Furnish clear float glass, 1/4 inch nominal thickness, conforming to ASTM C1036; Type I, Class 1 clear, quality "q3", with low-emittance, high-transmittance metallic coating applied to interior (#2) surface; PPG “Solarban 70XL” Low-E glass, or approved.
   2. Inside-Lite: Furnish clear float glass, 1/4 inch nominal thickness, conforming to ASTM C1036 Type I, Class 1 clear, quality "q3".
   3. Air space: Provide sealed air space between lights of 1/2 inch nominal thickness, filled with argon gas. All units shall be dual sealed with polyisobutylene primary seal and polysulfide or silicone secondary seal and shall have IGCC Class CBA certification when tested in accordance with ASTM E773.

4. Overall thickness: 1 inch.
5. Glass Unit Performance: Insulated unit shall have a visible light transmission of not less than 64%, a solar heat gain coefficient of not greater than 0.27, and a winter night-time thermal “U” value of not greater than 0.24, as approved.

C. High Performance Low-E Insulating Clear Tempered Glass Units For Glazed Aluminum Storefronts, Curtain Walls & Entrances
1. Outside-Lite: Furnish clear fully tempered glass, 1/4 inch nominal thickness, conforming to ASTM C1048; Type I, Class 1 clear, quality "q3", with low-emittance, high-transmittance metallic coating applied to interior (#2) surface; PPG “Solarban 70XL” Low-E glass, or approved.
2. Inside-Lite: Furnish same as specified above for clear fully tempered glass, 1/4 inch nominal thickness.
3. Air space: Provide sealed air space between lights of 1/2 inch nominal thickness, filled with argon gas. All units shall be dual sealed with polyisobutylene primary seal and polysulfide or silicone secondary seal and shall have IGCC Class CBA certification when tested in accordance with ASTM E773.
4. Overall thickness: 1 inch.
5. Glass Unit Performance: Insulated unit shall have a visible light transmission of not less than 64%, a solar heat gain coefficient of not greater than 0.27, and a winter night-time thermal “U” value of not greater than 0.24, as approved.

2.04 GLAZING COMPOUNDS

A. Glazing Sealants & Compounds - General: Provide color of exposed sealant/compound indicated or if not otherwise indicated, as selected by Architect from manufacturer's standard colors, or black if no color is so selected. Comply with manufacturer's recommendations for selection of hardness, depending upon the location of each application, conditions at time of installation, and performance requirements as indicated. Select materials, and variations or modifications, carefully for compatibility with surfaces contacted in the installation.

B. Butyl Sealant: Single component; ASTM C920, Grade NS, Class 12-1/2, Uses M and A, Shore A hardness of 10 to 20; black color.

C. Polysulfide Sealant : Two component; chemical curing, non-sagging type; ASTM C 920, Type M, Grade NS, Class 25, Uses M, A, and G; cured Shore A hardness of 15 to 25; specially compounded and tested to show minimum of 20 year's resistance to deterioration in normal glazing applicationscolor as selected; specially compounded and tested to show minimum of 20 year's resistance to deterioration in normal glazing applicationscolor as selected.

D. Silicone Sealant For General Purpose Use: Single component; chemical curing; capable of water immersion without loss of properties; non-bleeding, non-staining; ASTM C 920, Type S, Grade NS, Class 25, Uses M, A, and G; cured Shore A hardness of 15 to 25; color as selected..

E. Silicone Sealant For Structural Glazing At Canopies: For all glass-to-glass and glass-to-metal seals, furnish structural type silicone sealant.

2.05 GLAZING ACCESSORIES

A. Setting Blocks: Neoprene or EPDM, 80 to 90 Shore A durometer hardness, ASTM C 864 Option I. Length of 0.1 inch for each square foot (25 mm for each square meter) of glazing or minimum 4 inch (100 mm) x width of glazing rabbet space minus 1/16 inch (1.5 mm) x height to suit glazing method and pane weight and area.

B. Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness; ASTM C864 Option I. Minimum 3 inch (75 mm) long x one half the height of the glazing stop x thickness to suit application, self adhesive on one face.

C. Glazing Tape: Preformed butyl compound with integral resilient tube spacing device; 10 to 15 Shore A durometer hardness; coiled on release paper; black color.

D. Glazing Gaskets: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C864 Option II.

E. Glazing Clips: Manufacturer's standard type.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that openings for glazing are correctly sized and within tolerance.

B. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and ready to receive glazing.

3.02 PREPARATION

A. Clean the glazing channel, or other framing members to receive glass, immediately before glazing. Remove coatings which are not firmly bonded to the substrate. Remove lacquer from metal surfaces wherever elastomeric sealants are used.

B. Clean contact surfaces with solvent and wipe dry.

C. Seal porous glazing channels or recesses with substrate compatible primer or sealer.

D. Remove all moisture, grease, oil, dust, dirt, and rust from rabbets to receive glazing material.

E. Do no glazing in rainy weather without adequate overhead cover, as approved. Apply primer or sealer to joint surfaces wherever recommended by the sealant manufacturer.

F. Install sealants in accordance with ASTM C1193 and GANA Sealant Manual.

3.03 INSTALLATION - GENERAL

A. General

1. Glazier shall be responsible for correct glass size for each opening. When glazing polycarbonate sheet, follow manufacturer's guidelines for expansion and contraction allowances. Provide minimum of 1 inch edge engagement.
2. Comply with “Glazing Manual” by Flat Glass Marketing Association except as shown and specified otherwise, and except as specifically recommended otherwise by the manufacturers of the glass and glazing materials.
3. Protective masking is applied to both sides of the polycarbonate sheet. The masking on the side facing the clean tempered galls should be removed just prior to installing the glazing. The face of the polycarbonate and the face of the clear tempered glass next to each other shall be carefully cleaned with manufacturer approved cleaning procedures prior to installation. Install protective covering at outer face of both the polycarbonate and tempered glazing to protect the glazing from damage by other construction operations.
4. Cure glazing sealants and compounds in compliance with manufacturer's instructions and recommendations, to obtain high early bond strength, internal cohesive strength and surface durability.

B. Standards & Performance

1. Watertight and airtight installation of each piece of glass is required, except as otherwise shown. Each installation must withstand normal temperature changes, wind loading, impact loading (for operating sash and doors) without failure of any kind 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.
2. Protect glass from edge damage at all times during handling, installation and operation of the building.

3. Glazing channel dimensions as shown are intended to provide for necessary minimum bite on the glass, minimum edge clearance and adequate sealant thicknesses, with reasonable tolerances. The Glazier is responsible for correct glass size for each opening, within the tolerances and necessary dimensions established.
4. Comply with combined recommendations of glass manufacturer and manufacturer of sealants and other materials used in glazing, except where more stringent requirements are shown or specified, and except where manufacturer's technical representatives direct otherwise.
5. Comply with "Glazing Manual" by Glass Association of North America, except as shown and specified otherwise, and except as specifically recommended otherwise by the manufacturers of the glass and glazing materials.
6. Inspect each piece of glass immediately before installation, and eliminate any which have observable edge damage or face imperfections.
7. Unify appearance of each series of lights by setting each piece to match others as nearly as possible. Inspect each piece and set with pattern draw and bow oriented in the same direction as other pieces.
8. Install polysulfide sealants as recommended by Thiokol Chemical Corp., except as otherwise recommended by the sealant manufacturer.
9. Install insulating glass units to comply with recommendations by Sealed Insulating Glass Manufacturers Association, except as otherwise specifically indicated or recommended by glass and sealant manufacturers.

3.04 INSTALLATION - EXTERIOR/INTERIOR DRY METHOD (GASKET GLAZING)

A. Place setting blocks at 1/4 points with edge block no more than 6 inch (152 mm) from corners.

B. Rest glazing on setting blocks and push against fixed stop with sufficient pressure on gasket to attain full contact.

C. Install removable stops without displacing glazing gasket; exert pressure for full continuous contact.

3.05 INSTALLATION - EXTERIOR WET/DRY METHOD (PREFORMED TAPE AND SEALANT)

A. Cut glazing tape to length and set against permanent stops, 3/16 inch (5 mm) below sight line. Seal corners by butting tape and dabbing with butyl sealant.

B. Apply heel bead of butyl sealant along intersection of permanent stop with frame ensuring full perimeter seal between glass and frame to complete the continuity of the air and vapor seal.

C. Place setting blocks at 1/4 points with edge block no more than 6 inch (152 mm) from corners.

D. Rest glazing on setting blocks and push against tape and heel bead of sealant with sufficient pressure to attain full contact at perimeter of pane or glass unit.

E. Install removable stops, with spacer strips inserted between glazing and applied stops 1/4 inch (6.4 mm) below sight lines.
   1. Place glazing tape on glazing pane of unit with tape flush with sight line.

F. Fill gap between glazing and stop with sealant to depth equal to bite of frame on glazing, but not more than 3/8 inch (9 mm) below sight line.

G. Apply cap bead of sealant along void between the stop and the glazing, to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

3.06 INSTALLATION - INTERIOR DRY METHOD (TAPE AND TAPE)

A. Cut glazing tape to length and set against permanent stops, projecting 1/16 inch (1.6 mm) above sight line.

B. Place setting blocks at 1/4 points with edge block no more than 6 inch (152 mm) from corners.

C. Rest glazing on setting blocks and push against tape for full contact at perimeter of pane or unit.

D. Place glazing tape on free perimeter of glazing in same manner described above.

E. Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.

F. Knife trim protruding tape.

3.07 CLEANING

A. Remove glazing materials from finish surfaces.

B. Remove labels after Work is complete.

C. Maintain glass in a reasonable clean condition during construction, so that it will not be damaged by corrosive action and will not contribute (by wash-off) to the deterioration of glazing materials and other work.

D. Wash and polish glass on both faces not more than 4 days prior to Owner's acceptance of the work in each area. Comply with glass manufacturer's recommendations.

3.08 PROTECTION

A. Protect exterior glass from breakage immediately upon installation, by attachment of crossed streamers to framing held away from glass. Do not apply markers of any type to surfaces of glass.

B. Remove and replace glass which is broken, chipped, cracked, abraded or damaged in other ways during the construction period, including natural causes, accidents and vandalism.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This section applies to floors identified in Contract Documents that are receiving the following types of floor coverings:
   1. Resilient flooring.
   2. Exposed concrete, sealed
   3. Carpet tile.

B. Preparation of existing flooring substrate with troweled or self-leveling underlayment for installation of new resilient floor covering.

1.02 RELATED REQUIREMENTS

A. Section 02 41 19 - Selective Building Remodel Demolition.

B. Section 03 30 00 - Cast-in-Place Concrete: Concrete infill slabs at existing interior spaces.

C. Section 09 65 00 - Resilient Flooring.

D. Section 09 68 00 - Carpeting.

1.03 REFERENCE STANDARDS

A. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens) 2020b.

B. ASTM C472 - Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters and Gypsum Concrete 2020.

1.04 SUBMITTALS

A. Mix Designs: For mix design, designate proportions for all ingredients.

B. Product Literature: Submit for underlayment, bonding agents, primers and admixtures mixtures

C. Proposed curing method for each system.

D. Admixture manufacturer's detailed installation instructions, tailored to the specific requirements of this project.

E. Adhesive Bond and Compatibility Test Report.

1.05 QUALITY ASSURANCE

A. Installation of underlayment shall be by a qualified, factory-trained applicator who has specific experience with the installation of specified underlayment materials.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, handle, and protect products in accordance with manufacturer’s instructions and recommendations.

B. Deliver materials in manufacturer’s packaging; include installation instructions.

C. Keep materials from freezing.

PART 2 PRODUCTS

2.01 CEMENTITIOUS PATCHING AND REPAIR MATERIALS

A. Manufacturers:
   1. TEC, an H.B. Fuller Construction Products Brand: www.tecspecialty.com.
   2. ARDEX Engineered Cements: www.ardexamericas.com.

3. Custom Building Products: www.custombuildingproducts.com.
4. LATICRETE International, Inc: www.laticrete.com.

2.02 MATERIALS

A. Trowel-Applied Cementitious Skimcoat Patching Underlayment: Blended moisture-resistant, rapid-drying, portland cement-based polymer-modified patching mix, that will be ready to receive carpet flooring when fully cured.
   1. Thickness: As required to fill voids/holes in existing floor slab or otherwise damaged from removal of adjacent construction; from feather edge to approximately1/2 inch thickness.
   2. Basis of Design: ARDEX MRF Moisture-Resistant, Rapid-Drying, Skimcoat Patching Underlayment.

B. Self-Leveling Underlayment: Floor covering manufacturer's recommended product, suitable for conditions, and compatible with adhesive and floor covering. In the absence of any recommendation from flooring manufacturer, provide a product with the following characteristics:
   1. Cementitious moisture-, mildew-, and alkali-resistant compound, compatible with floor, floor covering, and floor covering adhesive, and capable of being feathered to nothing at edges.
   2. Latex or polyvinyl acetate additions are permitted; gypsum content is prohibited.
   3. Compressive Strength: 5000 psi, minimum, after 28 days, when tested in accordance with ASTM C109/C109M or ASTM C472, whichever is appropriate.
   4. Products:
      a. TEC, an H.B. Fuller Construction Products Brand; Level Set 300 Self-Leveling Underlayment: www.tecspecialty.com.
      b. Substitutions: See Section 01 60 00 - Common Product Requirements.

PART 3 EXECUTION

3.01 REMOVAL OF EXISTING FLOOR COVERINGS

A. Comply with local, State, and federal regulations and recommendations of RFCI Recommended Work Practices for Removal of Resilient Floor Coverings, as applicable to floor covering being removed.

B. Dispose of removed materials in accordance with local, State, and federal regulations and as specified.

3.02 PRELIMINARY CLEANING

A. Clean floors of dust, mold, mildew, and other materials that might prevent adhesive bond.

B. Do not use solvents or other chemicals for cleaning.

3.03 CEMENTITIOUS SKIMCOAT PATCHING UNDERLAYMENT

A. Fill and smooth surface voids in tile flooring with patching compound.

B. Trowel flush with top of adjacent floor surface.

3.04 APPLICATION OF SELF-LEVELING UNDERLAYMENT INFILL

A. Install underlayment in accordance with manufacturer's instructions.

B. Pump or pour material onto substrate. Do not retemper or add water.
   1. Pump, move, and screed while the material is still highly flowable.
   2. Be careful not to create cold joints.
   3. Wear spiked shoes while working in the wet material to avoid leaving marks.

C. Place to required thickness, with top surface level to 1/16 inch in 10 ft.

D. Curing
   1. Once underlayment starts to set, prohibit foot traffic until final set has been reached.
   2. Air cure in accordance with manufacturer's instructions.

3.05 PROTECTION

A. Cover prepared floors with building paper or other durable covering.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Suspended metal ceiling support system for new furred down gypsum board ceilings.

1.02 RELATED WORK IN OTHER SECTIONS

A. Lightgauge metal stud framing covered under Section 05 40 00.

B. Section 09 29 00 - Gypsum Board.

C. Section 09 51 00 - Acoustical Ceilings.

1.03 QUALITY ASSURANCE

A. Standard Specifications

1. General: Where "USG" is used herein it shall mean "United States Gypsum Company".
2. For Gypsum Board Suspended Ceiling Framing: For the installation of suspended steel framing members for gypsum board conform to the American National Standard "Standard Specifications for the Installation of Steel Framing Members to Receive Screw Attached Gypsum Board, ASTM C754", hereinafter called "ASTM C754".

1.04 SUBMITTALS

A. Manufacturer's Data: Furnish manufacturer's literature for support framing materials and accessories.

B. Shop Drawings

1. Submit shop drawings showing typical details for all work and relationship of work adjacent thereto. Include methods of joining, fastening, and other pertinent information.
2. Furnish samples for approval of each different member to be used on the work, upon request of the Architect.

1.05 PRODUCT DELIVERY, STORAGE & HANDLING

A. Delivery, Storage & Protection

1. All materials shall be delivered in original packages, containers, or bundles bearing the brand name and the name of the manufacturer or the supplier for whom the product is manufactured.
2. All materials shall be kept dry, stored inside the building under roof, or where necessary to store outside, shall be stacked off the ground, properly supported on a level platform and fully protected from the weather.

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PART 2 - PRODUCTS

2.01 METAL FRAMING MATERIALS

A. Standard Suspended Ceiling Members & Accessories For Gypsum Board Work

1. Hanger Wires and Clips: Galvanized steel No. 8 gauge wires for vertical hangers, hung from clips secured to structural members above ceiling, lengths as required for tying to steel runner channels at 48 inches o.c. For seismic bracing wire, furnish of galvanized steel No. 12 gauge wire.
2. Main Runner Channels: Furnish 1-1/2 inch x 16 gauge cold rolled steel channels weighing 475 lbs. per 1000 lin. ft., galvanized finish.
3. Compression Struts: Furnish of steel stud sections of size and gauge required for each respective ceiling condition as set forth in Detail 3/A9.7, complete with necessary bolt anchors.

4. Cross Furring Channels: Galvanized steel, 20 gauge, channel hat-shape similar to USG "Metal Furring Channel" with bearing flanges each side, manufactured for screw attachment of plaster base, of IBC approved type.
5. Tie Wire: 16 gauge and/or 18 gauge galvanized, soft annealed steel wire.

PART 3 - EXECUTION

3.01 SUSPENDED CEILING FRAMING - INSTALLATION

A. General
   1. Work in this Section shall include installation of all suspended ceiling framing and accessories for gypsum board ceiling work specified under Section 09 29 00.
   2. Erect ceilings level or to slopes shown, with tolerance not to exceed 1/8 inch in 12 feet.

B. Main Runner Channels & Suspension Wires For Standard Suspension System For Gypsum Board Work
   1. Install wires firmly anchored in, or attached to, structure above in manner conforming to ASTM C754.
   2. Space channels 4 feet o.c., suspension wires 48 inches maximum o.c.; erect channels level and to proper radiuses, where indicated, with tolerance not to exceed 1/8 inch in 12 feet in any direction. Install seismic bracing wires as shown on Detail 3/A9.7, at spacing as indicated on Detail 6/A9.7
   3. At light fixtures or any other openings that interrupt the main runner channels, install additional cross-reinforcing to restore the lateral stability of grillage.

C. Furring Channels For Standard Suspension System For Gypsum Board Work
   1. Install metal furring channels at right angles to main runner channels, spaced 16 inches o.c. maximum.
   2. Space furring within 6 inches of walls.
   3. Provide 1 inch clearance between furring ends and abutting walls and partitions.
   4. Attach furring channels to main runner channels with USG furring channel clips installed on alternate sides of main channels.
   5. At light fixtures or any other openings that interrupt the furring channels, install additional cross-reinforcing to restore the lateral stability of grillage.
   6. Erect ceilings level and to proper slopes, with tolerance not to exceed 1/8 inch in 12 feet.

D. Compression Struts: Install in conformance with suspension system details, secured to main runner channels and ceiling structure above.

END OF SECTION

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PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Standard gypsum board for wall and ceiling applications where not otherwise noted to be abuse-resistant, moisture-resistant, or acoustical gypsum board.

B. Moisture-resistant gypsum board for all wall applications where ceramic tile finish is scheduled in Finish Schedule.

C. Joint treatment and accessories.

1.02 RELATED WORK IN OTHER SECTIONS

A. Section 05 40 00 - Lightgauge Cold-Formed Metal Framing.

B. Section 06 10 00 - Rough Carpentry.

C. Section 07 21 00 - Building Insulation.

D. Section 09 22 26 - Metal Suspension Systems.

E. Section 09 30 00 - Tiling.

F. Section 09 91 00 - Paints & Coatings.

1.03 QUALITY ASSURANCE

A. Standard Specifications

1. For installation and finishing of gypsum board conform to the American Society for Testing Methods Standard ASTM C840, "Standard Specifications for Application and Finishing of Gypsum Board", hereinafter called "ASTM C840", and to the gypsum board manufacturer's standard specifications and recommendations.
2. In addition, installation and finishing of gypsum board shall conform to the following:
   a. Gypsum Association Publication GA - 201, Gypsum Board For Walls And Ceilings, latest edition.
   b. Gypsum Association Publication GA - 216, Application And Finishing of Gypsum Board, latest edition.
   c. Gypsum Association Publication GA - 600, Fire Resistance Design Manual, latest edition.
   d. Where "USG" is used herein it shall mean "United States Gypsum Company".

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1.04 SUBMITTALS

A. Brochures: Furnish in accordance with Section 01 33 00, for all materials used under work of this Section; include descriptive literature and installation instructions the each panel type.

1.05 PRODUCT DELIVERY, STORAGE & HANDLING

A. Delivery, Storage & Protection

1. As required by SMACNA Guideline Chapter 3, Section 01 81 19 Indoor Air Quality Controls and LEED credit IEQ3.1 to prevent moisture damage and particulate contamination. Interior sections only.
2. Deliver materials protected from inclement weather and other damage.
3. Store materials in dry, heated room or building at site.
4. Lay board flat, off floor, protected from damage; lay specialties and accessories on supports off floor, protected from damage.
5. Protect building floors and adjacent materials from damage due to the work including drippage of joint cements and adhesives.

1.06 JOB CONDITIONS

A. Temperature & Ventilation
   1. Building to be enclosed by other trades, windows glazed, and temporary or permanent exterior doors installed prior to starting work in this Section; no exceptions.
   2. Temperature to be maintained at plus 60 degrees F. minimum during and after drywall installation and joint treatment work no exceptions.
   3. Provide adequate, properly regulated ventilation.

PART 2 - PRODUCTS

2.01 PERFORMANCE AND DESIGN CRITERIA

A. All paints, coatings, adhesives, and sealants shall meet the VOC limits specified in 01 81 13 - Sustainable Design Requirements.

2.02 GYPSUM BOARD MATERIALS

A. Standard Gypsum Board: Furnish USG "Sheetrock Firecode Gypsum Panels" or Geogia-Pacific “ToughRock Fireguard” or National Gypsum “Fire-Shield” panels, or approved, in 4 foot widths, 5/8 inch thickness, long edges tapered and eased, with surface suitable for decoration and conforming to ASTM C1396, Type "X"; U.L. listed.
   1. Use for all wall and ceiling applications, except where other type gypsum panels are specified to be used.

B. Moisture-Resistant Gypsum Board Panels: Furnish USG "Fiberock Brand Aqua-Tough" Interior Panels, or National Gypsum “eXP Tile Backer” or Geogia-Pacific or American Gypsum equivalent panels, as approved, 5/8 inch thickness, 4 foot width, tapered and eased edges, with surface suitable for decoration and conforming to ASTM C1396, Type "X"; U.L. listed. Use for all shower room wall and ceiling applications; elsewhere where tile wall finish is scheduled.

C. Miscellaneous Board Accessories
   1. Corner Bead: Furnish galvanized metal corner with tape reinforcement; USG "Flexible Metal Corner Reinforcing Tape" or Beadex “B1 Splay” flexible corner bead, or approved.
   2. Board Edge Trim: Except as otherwise specified below, furnish similar to USG No. 801-B galvanized steel, proper size and type for board thickness and installation conditions, subject to prior approval.
   3. Control Joints: Furnish USG No. 093, or approved equivalent, of roll-formed zinc with tape-protected opening, 7/16 inch depth, perforated flanges each side.

D. Drywall Screws: Self-drilling, self-tapping steel screws similar to those manufactured by USG, or approved, of the following types and lengths for applications specified:
   1. For Single-Layer Attachment to Steel Framing:
      a. 1 inch Type S bugle head for attachment to 22 ga. or lighter framing.
      b. 1 inch Type S-12 bugle head for attachment to 20 ga. or heavier framing.
   2. For Single-Layer Attachment to Wood/Plywood Substrates:
      a. 1-1/4 inch Type W bugle head.
   3. For Face-Layer Attachment of Double-Layer Board to Steel Framing, Runners and/or Furring Channels:
      a. 1-7/8 inch Type S bugle head for attachment to 22 ga. or lighter framing.
      b. 1-7/8 inch Type S-12 bugle head for attachment to 20 ga. or heavier framing.

E. Joint Treatment Materials
   1. Bedding and Reinforcement Cement: ASTM C475 joint compound and of same manufacture as board used or approved by board manufacturer.

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2. Joint Tape: Plain or perforated, ASTM C475 and of same manufacturer as board used or approved by board manufacturer.
3. Topping Coat Over Joints and Screw Heads: ASTM C475 finishing or topping compound as manufactured or recommended by manufacturer of board used in the work for joint topping work, and as approved.

F. Primer-Sealer for Level 4 Textured Finish: One coat Hamilton Drywall Products "Perm Tex" Vapor Barrier Primer or CertainTeed "Vapor Prime" Vapor Retarder Coating, or approved.

G. Sound Sealant: Furnish acrylic emulsion latex, water-based sealant conforming to ASTM C834, of one of the following:
1. USG “Sheetrock Acoustical Sealant”.
2. Pecora “AC-20 FTR Acoustical Sealant”.
3. Franklin International, Inc. “Titebond GREENchoice Professional Acoustical Smoke and Sound Sealant”.
4. Specified Technologies Inc. “Smoke N Sound Acoustical Sealant”.

PART 3 - EXECUTION

3.01 GYPSUM BOARD INSTALLATION

A. General
1. Conform to above referenced standards and to UL, IBC and the installation instructions of the respective gypsum board manufacturer used on the work and as supplemented herein. In addition, conform to all U.L. and IBC requirements where "UL Design" numbers and IBC Table numbers are indicated at wall types.
2. Install abuse resistant panels at all walls in rooms noted above. Use standard gypsum board panels at all other locations and applications.
3. Provide expansion and contraction (control) joints in ceilings exceeding 2500 sq.ft. in area and in partition, wall and wall furring runs exceeding 30 feet. Do not exceed a distance of 50 feet, in either direction, between ceiling control joints and install a control joint where ceiling framing or furring changes direction. Do not exceed a distance of 30 feet between control joints in walls or wall furring, and install a control joint where an expansion joint occurs in the base exterior wall. In fire-rated walls and ceilings, provide backing at control joint as recommended by gypsum board manufacturer to conform to U.L. Inc. and IBC requirements.
4. Where required under conditions specified above, control joints in walls shall extend from floor to ceiling or from both top corners of door frames to top of partition. Wall or partition height door frames may be considered a control joint.
5. At walls where shown to have gypsum board extending continuous through ceiling, install wall panels, fire tape and mud above ceiling line prior to installation of ceiling panels; where wall panels are shown to terminate at ceiling line, apply gypsum ceiling board panels on ceilings first.
6. Install board panels perpendicular to supports with end joints over supports, with 1/16 to 1/8 inch space between butted ends of boards.
7. At multi-layer work, position end joints of base layer to offset face layer joints by at least 10 inches; base layer joints may occur on or between framing members.
8. Space fasteners 3/8 inch minimum from ends and edges. Stagger screws on adjoining edges and ends.
9. Bottom edge of all panels shall be 1/4-inch above floor surface and filled with acoustical sealant. Top edge of all panels extending to ceiling structure above shall be terminated 1/4-inch from ceiling surface and filled with acoustical sealant, except with fire rated sealant at all fire rated wall assemblies.

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10. Use maximum practical lengths to minimize end joints. Stagger joints on opposite faces of wall so that joints occur on different studs.
11. Do not apply board to wood framing with moisture content exceeding 15 percent.
12. Where light fixtures and other devices penetrate 1-hour rated ceilings, provide 1-hour fire-rated enclosure surrounding and above such fixtures and devices. At fire-rated gypsum board ceilings, enclosure shall consist of 5/8 inch gypsum board on metal framing. Coordinate with electrical subcontractor to maintain required clearances from fixtures and devices.
13. Leave 1/4 inch gap between edge of boards and adjacent window and storefront frames, complete with casing beads, for subsequent application of sealant per Section 07 92 00.
14. Fit panels snugly into steel door frames; no joints to occur within 12 inches of the corner of door frames, except at intersecting walls.

B. Gypsum Board Installation - General
   1. For single layer attachment to metal framing at non-rated wall and ceiling assemblies, use appropriate screw fasteners as specified above, spaced as set forth in ASTM C840, Section 8.
   2. For single layer attachment to framing at fire-rated wall assemblies, use appropriate fasteners and spacing of fasteners as set forth in IBC Table No. 720.1(2), as applicable, unless otherwise indicated on Drawings.
   3. For single layer attachment to framing at fire-rated ceiling assembly, use appropriate fasteners and spacing of fasteners as set forth in IBC Table No. 720.1(3), as applicable.
   4. Gypsum board shall be installed to within the following tolerances:
      a. Between board faces: 1/16 inch offset.
      b. Plane, level, warp, or bow: 1/8 inch in 10 feet.

C. Tile Backer Joint Treatment
   1. Seal tile backer joints, as required, according to tile backer manufacturer's written recommendations.
      a. Apply bead of sealant in 1/4 inch setback between tile backer boards and shower receptor.
      b. Apply alkali-resistant glass-fiber mesh tape to tile backer board joints, apply and trowel latex-modified thinset mortar in entire face of tape.

D. Sound Sealant Installation
   1. Prior to application of drywall on back side of partitions with sound insulation, apply a 1/4 inch bead of acoustical sealant around all cut-outs for electrical boxes and other penetrations. Caulk sides and backs of electrical boxes.
   2. Seal perimeter of construction with acoustical sealant complying with ASTM C919; apply one continuous bead of sealant at each side of framing member interface with substrate for single layer construction; for double layer construction, install continuous bead of sealant after installation of base layer and after installation of face layer.
   3. Apply along edges of boards where abutting dissimilar finish material. Seal around all window and door frames, and all other wall openings or penetrations.
   4. Where sealant is to be left exposed, tool joint surfaces smooth in manner recommended by sealant manufacturer.
   5. Upon completion, remove and dispose of masking materials; remove any excess sealant material.

3.02 BOARD ACCESSORY INSTALLATION

A. Corner Bead: Install at all exterior corners in finished spaces from 6 inches above ceiling line, of full stock lengths wherever possible, in alignment with wall surfaces, cemented in

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accordance with manufacturer's instructions. In all cases, gaps in at adjoining board edges, behind corner beads, shall be over-filled completely with taping mud immediately prior to application of bead.

B. Board Edge Trim: Install approved type trim in finished spaces below ceiling line, full stock lengths, at all exposed ends and edges of board and where board abuts dissimilar materials, screwed or screwed and cemented, as applicable, in accordance with manufacturer's instructions.

C. Control Joints: Install on walls and ceilings in locations shown and in conformance with requirements specified above; install on walls, floor to ceiling, in long partition runs; install from each top corner of door frames to ceiling above, and extending minimum 6 inches above ceiling line where suspended acoustical ceilings occur. See Drawings for additional control joint requirements and applications.

3.03 TAPING & FINISHING

A. Gypsum Board - General

1. Tape and finish all joints, corners, fastener heads, imperfections, etc., in accordance with manufacturer's specifications and recommendations and as herein specified.
2. All drywall finishing, including sanding, shall be carried down to floor level.
3. Apply tape and joint compound to all joints in partitions above finished ceiling line; all surfaces from a point of 3 inches above finish ceiling line up to the structure above shall receive fire-taping only (Finish Level 1).
4. Apply tape and joint compound to all joints in gypsum board including tile backer board. Except as specified above, taping and cementing required on all other gypsum board whether concealed or not, including gypsum board scheduled to receive ceramic tile finish or other applied finishes.
   a. Finish at gypsum board panels to receive ceramic tile finish shall be finished to a minimum Level 3 finish consisting of taping and two (2) coats of joint compound. Blade second coat smooth.
   b. Finish at all other gypsum board panels scheduled to receive paint finishes shall be finished to a minimum Level 4 finish, ready for application of respective primer-sealer as specified below.

B. Taping & Finishing For All Gypsum Board Panels

1. All exposed joints, angles, and inside vertical corners shall be reinforced with tape embedded with joint compound and finished with not less than three applications of topping compound, allowing each application to dry thoroughly and sanding between coats as required.
2. All outside vertical corners shall be finished with not less than three applications of topping compound, allowing each application to dry thoroughly and sanding between coats as required.
3. Taping:
   a. Apply a uniform layer of taping compound to all joints and angles to be reinforced.
   b. Apply reinforcing tape immediately centered over the joint and seated into the compound.
   c. Skim coat shall follow immediately but shall not function as a fill or second coat.
   d. Tape shall be properly folded and embedded in all angles to provide a true angle.
4. Filling: After taping compound has hardened, apply topping compound, filling the board flush with the surface. Fill coat shall cover the tape and feather out slightly beyond the tape.
5. Finishing:
   a. Fastener Depressions: Apply taping compound to all fastener depression followed when hardened by at least two (2) coats of topping compound, leaving all depressions level with plane of the surface.

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b. Apply topping compound to all exposed corners of beads and trim, feathering out from the ground to the plane of the surface as specified for joints.

c. Finish joints with at least two (2) coats of topping compound, each coat extending beyond preceding coat. Feather joints to 6 inches each side of the joint; feather joints at square edges or butt ends of boards 12 inches each side of the joint.

d. All coats of joint compound shall be sanded after each application has dried. Exercise care when sanding to avoid roughing the face of panel. For final sanding, use 150 grit or finer sandpaper. Provide a smooth surface with joints fully concealed.

6. The final application of compound and sanding shall leave all gypsum board surfaces uniformly smooth and in proper condition to receive respective primer-sealer specified herein and other finishes as scheduled.

3.04 PRIMER-SEALER ON EXPOSED BOARD SURFACES

A. Application Of Primer-Sealer On All Gypsum Board Panels

1. Do not proceed with this work until all surfaces, joints, and fastener heads are properly prepared.

2. Apply one coat latex primer-sealer as specified above evenly using roller at an approximate coverage rate as recommended by the manufacturer and to achieve a “smooth wall”, free from surface blemishes, irregularities holidays, sags, etc.; apply coat to a minimum of 350 square feet per gallon. Do not thin material.

3. Use rollers of a type as recommended by the primer manufacturer. Back-roll primer if applied by spray. Apply additional coat to surfaces that have been damaged.

3.05 SPRAYED TEXTURE ON EXPOSED BOARD SURFACES

A. Surface Preparation: Do not proceed with this work until all surfaces, joints, and fastener heads are properly prepared and have received one coat of primer-sealer as specified above.

B. Texture Application

1. General:

a. Give notice to Architect as specified above, Paragraph 1.02B.

b. Do not apply texture coating to wallboard surfaces noted above to receive fire taping only. Do not apply texture coating to surfaces scheduled to receive ceramic tile, plastic laminate, or other miscellaneous wainscot coverings, acoustical ceiling tile, and the like.

c. Apply texture coating to all other gypsum wallboard surfaces not otherwise noted above.

2. Priming of Wallboard: Wallboard surfaces shall receive one coat of primer-sealer as specified above.

3. Texture Application: Machine spray-apply texture in medium to 'fine orange peel' texture, as approved, in manner recommended by texture material manufacturer.

END OF SECTION

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PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Ceramic porcelain tile for floor and wall applications.

B. Ceramic and non-ceramic trim.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast-In-Place Concrete: Recessed slabs for floor tile setting beds.

B. Section 07 92 00 - Joint Sealants: Sealing joints between tile work and adjacent construction and fixtures.

C. Section 09 29 00 - Gypsum Board: Installation of tile backer board.

1.03 REFERENCE STANDARDS

A. ANSI A108/A118/A136 - American National Standard Specifications for the Installation of Ceramic Tile (Compendium) 2019.

B. ANSI A108/A118/A136.1 - American National Standard Specifications for the Installation of Ceramic Tile (Compendium). 2017.

1. ANSI A108.1a - American National Standard Specifications for Installation of Ceramic Tile in the Wet-Set Method, with Portland Cement Mortar 2017.
2. ANSI A108.1b - American National Standard Specifications for Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set or Latex-Portland Cement Mortar 2017.
3. ANSI A108.5 - American National Standard Specifications for Installation of Ceramic Tile with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar 1999 (Reaffirmed 2010).
4. ANSI A108.10 - American National Standard Specifications for Installation of Grout in Tilework 2017.
5. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units 2018.
6. ANSI A118.1 - American National Standard Specifications for Dry-Set Cement Mortar 2012 (Revised).
7. ANSI A118.4 - American National Standard Specifications for Modified Dry-Set Cement Mortar 2012 (Revised).
8. ANSI A118.6 - American National Standard Specifications for Standard Cement Grouts for Tile Installation 2010 (Reaffirmed 2016).
9. ANSI A118.15 - American National Standard Specifications for Improved Modified Dry-Set Cement Mortar; 2012.
10. ANSI A137.1 - American National Standard Specifications for Ceramic Tile 2019.

C. ASTM C150/C150M - Standard Specification for Portland Cement 2020.

D. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation 2019.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by affected installers.

1.05 SUBMITTALS

A. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.

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B. Shop Drawings: Indicate tile layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, control and expansion joints, thresholds, ceramic accessories, and setting details.

C. Samples: Mount tile and apply grout on two plywood panels, minimum 18 by 18 inches (457 by 457 mm) in size illustrating pattern, color variations, and grout joint size variations.

D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

E. Maintenance Data: Include recommended cleaning methods, cleaning materials, and stain removal methods.

1.06 QUALITY ASSURANCE

A. Maintain one copy of and ANSI A108/A118/A136 and TCNA (HB) on site.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.

1.08 FIELD CONDITIONS

A. Do not install solvent-based products in an unventilated environment.

B. Maintain ambient and substrate temperature above 50 degrees F (10 degrees C) and below 100 degrees F (38 degrees C) during installation and curing of setting materials.

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PART 2 - PRODUCTS

2.01 TILE

A. General

1. Furnish the materials as specified hereinafter. Unless otherwise noted, furnish all tile of TCA A137.1 "Standard Grade"; "Seconds" will not be permitted.
2. Ship all tile in packages bearing and sealed with the Grade Seal attesting conformance with TCA A137.1 and these Specifications; leave seals unbroken until inspected and approved by Architect.

B. Manufacturers: All products of each type by the same manufacturer.

1. American Olean Corporation: www.americanolean.com.
2. Crossville, Inc.: www.crossvileinc.com.
3. Dal-Tile Corporation: www.daltile.com.
4. Emser Tile, LLC: www.emser.com.
5. Summitville Tiles, Inc: www.summitville.com.
6. United Tile: www.unitedtile.com.

C. Porcelain Floor Tile, Type TL-1: ANSI A137.1, standard grade.

1. Product: Dal-Tile “Koncrete” Glazed porcelain tile.
2. Moisture Absorption: 3.0 to 7.0 percent as tested in accordance with ASTM C373.
3. Size: 2" x 2" nominal.
4. Thickness: 1/4 inch.
5. Edges: Cushioned.
6. Surface Finish: Slip resistant.
7. Color: #KC04 Grey.
8. Pattern: As indicated on enlarged floor plan.
9. Grout Joint: 1/8 inch.
10. Coved Base Trim Units: As specified below for "TB-1" coved base trim units.

D. Porcelain Wall & Base Tile - Type TL-2 & TB-1: ANSI A137.1, standard grade.
   1. Product: DalTile "Color Wheel" collection glazed ceramic tile.
   2. Moisture Absorption: <20.0 percent as tested in accordance with ASTM C373.
   3. Size:
      a. TL-2: 2" x 8", nominal.
      b. TB-1: 4" x 12", nominal (A34C1MOD)
   4. Thickness: 5/16 inch.
   5. Edges: Glazed.
   6. Surface Finish:
      a. TL-2: Semi-gloss.
      b. TB-1: Semi-gloss
   7. Color:
      a. TL-2: #0190 Artic White.
      b. TB-1: #0109 Architectural Gray.
   8. Grout Joint: 1/16 inch.

2.02 TRIM AND ACCESSORIES

A. Non-Ceramic Trim: Satin brass anodized extruded aluminum, style and dimensions to suit application, for setting using tile mortar or adhesive.
   1. Applications:
      a. Open edges of floor tile.
      b. Transition between floor finishes of different heights.
      c. Thresholds at door openings.
   2. Manufacturers:
      a. Schluter-Systems: www.schluter.com/.
      b. Genesis APS International: www.genesis-aps.com.

2.03 SETTING MATERIALS

A. Manufacturers:
   1. Bostik Inc: www.bostik-us.com.
   2. Custom Building Products: www.custombuildingproducts.com.
   3. LATICRETE International, Inc: www.laticrete.com.
   4. Merkrete, by Parex USA, Inc: www.merkrete.com.
   5. TEC, an H.B. Fuller Construction Products Brand: www.tecspecialty.com.

B. Thick Bed Portland Cement Setting Bed Materials - Floor Tile Applications: Furnish the following as required for providing properly sloped floor substrates where tile flooring is to be installed.
   1. Portland cement, ASTM C150, Type I standard grey color.
   2. Sand, clean, graded according to ASTM C144 for mortar as required.
   3. Hydrated lime, ASTM C207, Type S.
   4. Water, clean, potable.

C. Thin Bed Mortar:
   1. Applications: All floor and wall tile applications, except shower.
   2. ANSI A118.1 fully sanded dry-set mortar with ANSI A118.4 latex additive, having a minimum 400 psi 28 day shear strength, consisting of one of the following:
      a. Mapei “Ultra/Flex 2”, TEC Specialty Products “SturdiFlex", or Custom Building Products “Master Blend" with "Acrylic Admix" latex additive.

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b. Water, clear, potable.
c. Dry-Set Portland Cement type: ANSI A118.1.
d. Latex-Portland Cement type: ANSI A118.4.

D. Epoxy Adhesive and Mortar Bond Coat: ANSI A118.3.
1. Applications: Wall and floor tile applications in shower area.
2. Products:
a. LATICRETE International, Inc; LATICRETE LATAPOXY 300 Adhesive: www.laticrete.com.
b. Merkrete, by Parex USA, Inc; Merkrete Pro Epoxy: www.merkrete.com.
c. ProSpec, an Oldcastle brand; B-7000 Epoxy Mortar and Grout: www.prospec.com.

2.04 GROUTS

A. Manufacturers:
1. Bonsal American, Inc: www.prospec.com.
2. Bostik Inc: www.bostik-us.com.
3. Custom Building Products: www.custombuildingproducts.com.
4. LATICRETE International, Inc: www.laticrete.com.
5. TEC, an H.B. Fuller Construction Products Brand: www.tecspecialty.com.

B. Polymer Modified Grout: ANSI A118.7 polymer modified cement grout.
1. Applications: Use this type of grout for all tile set with fully sanded dry-type setting mortar.
2. Use sanded grout for joints 1/8 inch wide and larger; use unsanded grout for joints less than 1/8 inch wide.
3. Colors: As selected by Architect from full color line for each tile application.
4. Products:
a. Custom Building Products "Polyblend Ceramic Tile Grout / Joint Filler".
b. LATICRETE International, Inc; LATICRETE PERMACOLOR Grout: www.laticrete.com.

C. Epoxy Grout: ANSI A118.3 chemical resistant and water-cleanable epoxy grout.
1. Applications: At shower stall walls and floor.
2. Color(s): As selected by Architect from manufacturer's full line.
3. Products:
a. Custom Building Products; 100% Solids Epoxy Grout; www.custombuilding products.com
b. LATICRETE International, Inc; LATICRETE SPECTRALOCK PRO Premium Grout: www.laticrete.com.
c. TEC, an H.B. Fuller Construction Products Brand; TEC AccuColor EFX Epoxy Special Effects Grout: www.tecspecialty.com.
4. Additive for Vertical Applications: Provide non-slump epoxy additive per grout manufacturer's recommendations for all vertical grout applications.

2.05 ACCESSORY MATERIALS

A. Waterproof Membrane For Thin-Bed Systems
1. Membrane: Laticrete International Inc. “Laticrete 9235” liquid rubber membrane with reinforcing fabric, or approved substitute.
2. Seaming Solvent for Chlorinated Poly-Ethylene Membrane: NobelWeld 100 CPE solvent welding liquid or Xylene.
3. Bond Coat: Use thin-bed mortar with latex additive as specified above.

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B. Sealant, Bond Breaker & Back-Up Material

1. Sealant: Single-component polysulphide rubber non-sag type conforming to Fed. Spec. TT-S-230A(I); color to match color of grout.
2. Bond Breaker: Polyethylene tape, or aluminum foil same width as joint, to be placed in bottom of joint.
3. Back-up Material: Flexible and compressible type compatible with sealant and approved by sealant manufacturer similar to Dow "Ethafoam Rod", size to allow sealant depth of 1/2 of joint width.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that sub-floor and wall surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive tile.

B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive tile.

3.02 PREPARATION

A. Protect surrounding work from damage.

B. Vacuum clean surfaces and damp clean.

C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.

D. Install backer board in accordance with ANSI A108.11 and board manufacturer's instructions. Tape joints and corners, cover with skim coat of setting material to a feather edge.

E. Prepare substrate surfaces for adhesive installation in accordance with adhesive manufacturer's instructions.

F. Waterproof Membrane For Thin-Bed Systems

1. Install waterproof membrane system at shower tile floors and walls, set over sloped setting bed and gypsum tile backer board substrates, extending minimum 6 inches up perimeter walls at all shower locations.
2. Membrane shall be installed in strict accordance with membrane manufacturer’s current written procedures for the type of area to be protected, using thin-bed mortar bond coat for bonding to floor and wall substrates.

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3.03 INSTALLATION

A. General

1. Install tile and grout in accordance with applicable requirements of ANSI A108.1A thru A108.13, manufacturer's instructions, and TCNA (HB) recommendations.
2. Include installation for tile on floors, walls, wainscots, reveals and wall breaks, as applicable. Conform to A108.1 and A108.5, paragraphs as applicable, plus manufacturer's written instructions for proprietary materials specified herein.
3. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.
4. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make grout joints without voids, cracks, excess mortar or excess grout, or too little grout.
5. Form internal angles square and external angles bullnosed.
6. Install non-ceramic trim in accordance with manufacturer's instructions.
7. Install thresholds where indicated.

8. Sound tile after setting. Replace hollow sounding units.
9. Prior to grouting, allow installation to completely cure; minimum of 48 hours.

B. Workmanship, Cutting & Fitting
1. Conform to tile manufacturer's written instructions and to A108.1 and A108.5 for type of tile work indicated, as applicable.
2. Terminate work neatly at obstructions, edges and corners without disruption of pattern or joint alignment.
3. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures and other penetrations so that plates, collars, or covers overlap tile.

C. Mixing & Use Of Proprietary Materials: Conform strictly to manufacturer's written directions for proprietary materials.

D. Installation Of Tile
1. General: Extend all wall tile behind mirrors and other wall mounted accessories where and as shown on Drawings.
2. Jointing Pattern: Unless otherwise shown, lay tile in grid pattern, of colors as specified and directed for the various rooms and tile applications, including floor and wall accent tile colors and pattern. Align joints when adjoining tiles on floor, base, walls and trim are the same size or module. Layout tile work and center tile fields both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths for all floor and wall tile applications and associated trim units.
3. Tile Council of America Installation Methods: Except as otherwise specified, conform to the following TCA installation methods for the tile work involved:
a. Sloped Tile Floor Setting Beds: Tile Floor Setting Bed Over Concrete - No Waterproof Membrane: F112.
b. Shower Tile Floors Thin-Set with Epoxy Mortar Over Waterproof Membrane Over Sloped Setting Bed: F121.
c. All Other Tile Floors: Tile Floors Thin-Set with Dry-Set Mortar Over Sloped Setting Bed or Over Concrete Slab-on-Grade - No Waterproof Membrane: F112/F113.
d. Tile Walls and Bases Over Tile Backer Board in Showers: W245 using epoxy bond coat and grout.
e. Tile Walls and Bases Over Moisture-Resistant Backer Board - All Other Locations: W243 using dry-set mortar.
f. Expansion Joints: E171, as applicable.
4. Placement: Comply with applicable requirements of the specified standards for installation, unless otherwise shown.
a. Dry-Set Portland Cement Mortar or Latex Portland Cement Mortar: ANSI A108.5.
5. Defective Work: Remove and replace any work not properly installed, or bonded, without additional cost to Owner.

E. Grouting, Curing & Cleaning
1. For all Tile Work - General:
a. Use grout type and respective colors specified hereinabove and selected.
b. Provide non-slump epoxy additive per grout manufacturer's recommendations for all wall grout applications.
c. Conform to ANSI A108.10, paragraphs as applicable, plus manufacturer's written installation instructions for proprietary materials specified herein.

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d. Shape all joints around tile work to blend smoothly with adjacent surfaces. Follow tile manufacturer's grouting and caulking direction, except for project specific requirements listed herein.

3.04 CLEANING

A. Clean tile and grout surfaces.

3.05 PROTECTION

A. Do not permit traffic over finished floor surface for 4 days after installation.

END OF SECTION

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PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Suspended metal grid ceiling systems.

B. 2' x 4' Acoustical lay-in panels.

C. 2' x 8' Wood lay-in panels.

1.02 RELATED WORK IN OTHER SECTIONS

A. Mechanical work penetrating acoustical materials covered under Division 23 and the Mechanical Work Drawings.

B. Electrical work penetrating acoustical materials covered under Division 26 and the Electrical Work Drawings.

1.03 REFERENCE STANDARDS

A. ASTM C635 - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2007.

B. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels; 2008.

C. ASTM E580/E580M - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions; 2011.

D. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2008e1.

1.04 QUALITY ASSURANCE

A. Qualifications: All work covered by this Section to be provided by a firm regularly engaged, and licensed in the area of the work, as an acoustical subcontractor approved by the acoustical material manufacturer and the Architect.

B. Requirement Of Regulatory Agencies: Conform to the requirements of local building codes and ordinances, governing fire officials, and Underwriters' Laboratories design test requirements, for suspended ceiling work specified herein.

C. Seismic & Uplift Bracing Requirements

1. Provide lateral force bracing in conformance with ASTM E580.
2. Provide vertical bracing to prevent uplift.

1.05 SUBMITTALS

A. Submittals

1. Samples and Technical Data: Furnish samples and technical data for each type and pattern of acoustical tile and panels and each part of metal suspension system, all in accordance with Section 01 33 00.
2. Shop Drawings: Submit in accordance with Section 01 33 00. Include all details of all connections including supporting details, light fixture attachments, lateral force bracing, partition bracing, etc.

1.06 PRODUCT DELIVERY, STORAGE & HANDLIING

A. Product Handling

1. Furnish all materials specified herein, suitably boxed and wrapped to protect against damage.
2. Store materials in heated, covered location in the building, off floor; protect materials from all damage before and during installation.

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1.07 JOB CONDITIONS

A. Environmental & Job Conditions: Coordinate sequence of work that the following is completed by other trades and conditions maintained as noted before starting work in this Section:
   1. Concrete and other "wet" work is completed, cured and dry.
   2. Exterior doors are installed and closed, windows glazed.
   3. Heating system installed and operating to maintain specified minimum temperature of not less than 60 degrees F. before, during and after acoustical work installation.
   4. Other "Job Conditions" are maintained as set forth in the CISCA "Installation Recommendations".

PART 2 - PRODUCTS

2.01 MATERIALS

A. Mineral Fiber Acoustic Panels : Furnish conforming to the following:
   1. Ceiling Type ACP1: 2x4 Scored Mineral Fiber Panels with 2' x 2' Look:
      a. Size: 24 x 48 inches
      b. Minimum thickness: 3/4 inch.
      c. NRC: 0.65 minimum (ASTM E1264)
      d. CAC: 0.35 (ASTM E1264)
      e. Light Reflectance: 0.85 (ASTM E1477)
      f. Flame Resistance: "A"
      g. Flame Spread: 25 or less (ASTM E1264)
      h. Exposed Edges: Beveled Tegular for 15/16” exposed grid.
      i. Substrate: Water felted mineral fiber.
      j. Pattern: Armstrong World Ind. "Cirrus Second Look II" #513 (24” x 24” square scored pattern) or USG #78085 “Eclipse Illusion Two/24” panel, or approved.
      k. Finish: Factory-applied white vinyl-latex paint.
   2. Mineral Fiber Acoustic Panels : Furnish conforming to the following:
      a. Ceiling Type ACP2: 2x4 Scored Mineral Fiber Panels with 6" x 4' Look:
         1) Size: 24 x 48 inches
         2) Minimum thickness: 3/4 inch.
         3) NRC: 0.65 minimum (ASTM E1264)
         4) CAC: 0.35 (ASTM E1264)
         5) Light Reflectance: 0.85 (ASTM E1477)
         6) Flame Resistance: "A"
         7) Flame Spread: 25 or less (ASTM E1264)
         8) Exposed Edges: Beveled Tegular for 15/16” exposed grid.
         9) Substrate: Water felted mineral fiber.
         10) Pattern: Armstrong World Ind. "Cirrus Second Look III" #514 (6” x 48” linear plank scored pattern) or USG #78011 “Eclipse Illusion Four/48” panel, or approved.
         11) Finish: Factory-applied white vinyl-latex paint.

B. Wood Ceiling Panels
   1. Ceiling Type WD1: Wood Composite Ceiling Panels
      a. Surface Texture: Smooth.
      b. Composition: Solid wood.
      c. Species/Finish: Western Hemlock Clear Coat.

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d. Size: 12 in x 96 in x 3/4 in.
e. Edge Profile: Square.
f. Edge Banding & Trim: To match wood.
g. Flame Spread: ASTM E 1264; Class C (HPVA)
h. Dimensional Stability: Standard.
i. Acceptable Product: Armstrong World Industries "WoodWorks Linear" #8118W1HCC2 solid wood panel with 5-1/4 inch wide planks or USG "True Wood" linear wood ceiling panel, as approved.

2.02 METAL SUSPENSION SYSTEMS

A. Exposed Grid Metal Suspension System
1. System type: ASTM C635 - defined Intermediate Classification steel non-fire- endurance-rated grid system, of exposed 15/16-inch grid (USG “DXDXL System” or equal) for all acoustical lay-in panels. For linear wood ceiling panels furnish heavy duty main beams equal to Armstrong "Prelude XL" HD main beam suspension members along with 2-foot cross tees that are full height (1-11/16").
2. Approved manufacturers:
a. U.S. Gypsum (Donn Products Inc.)
b. Chicago Metallic Corp.
c. Armstrong World Ind.
3. Steel Non-Fire-Endurance-Rated Systems:
a. ASTM C635, manufacturer's standard sections of formed cold-rolled steel, electro-galvanized and factory painted satin **white** standard coating for mineral fiber panel grid assemblies and **black** premium color coating for linear wood panels.
b. Include main and cross runner members, assembly devices, wall molding, all other accessories required for the complete non-fire-endurance-rated system hereinbefore specified.
c. Where employing indirect-hung suspension system, furnish 1-1/2 inch cold-rolled carrying channels, 475 lbs. per 1000 lin. ft., protective painted.
d. Hanger wires, galvanized, for direct-hung work, soft-annealed mild steel wire of gauge certified by load test data as capable of carrying five times the design load but in no case less than No. 12 gauge or U.L. Inc. requirements, whichever is greater; with indirect-hung suspension systems, conform to MLA Specifications for galvanized wire, No. 2 size, of type, and spacing requirements.
e. Hangers conforming to ASTM C636 and as approved.
f. Main runners for 4 feet o.c. spacing; support wire 4 feet o.c. maximum.
g. Cross runners as required for panel system and as required for mechanical and electrical equipment and fixture support.
h. Compression Struts: Furnish of steel stud sections of size and gauge required for each respective ceiling condition, complete with necessary anchors for securing to main runners and ceiling structure above.

PART 3 - EXECUTION

3.01 INSPECTION OF SURFACES & CONDITIONS

A. Condition Of Surfaces & Prior Work (For suspended ceiling work in this Section)
1. Make certain that perimeter wall work, where ceiling abuts, is completed and that all work has been installed and completed above ceiling.
2. Comply with ASTM C636 Article 3, “Interference of Ceiling Related Components”; coordinate with other trades in this matter.

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3. Consult mechanical and electrical drawings for type and extent of their work becoming a part of or penetrating ceiling.
4. Provide approved hangers for attaching suspension wires.

3.02 INSTALLATION OF SUSPENDED CEILING GRID SYSTEM

A. Ceiling Suspension System
   1. General:
      a. Conform to ASTM C636, Article 2, as if included herein verbatim, and the suspension system manufacturer's instructions for component assembly for the non-rated systems hereinbefore specified and as supplemented hereinafter.
      b. Erect ceiling system level within 1/8 inch in 12 feet tolerance when measured in any direction, non-cumulatively; exposed members parallel with one another, parallel with perimeter walls.
      c. Make sure that all grilles and diffusers are in place, properly supported and connected lighting fixtures are to be individually supported from structure above by electrical trade.
   2. Direct-hung suspension system:
      a. Install with hanger wires and their anchors and attachment devices, direct-suspended main runners, cross runners, spanning main runners, assembly devices, perimeter wall moldings and metal trim, as required, for a complete installation and as approved. Wires shall attach directly to framing members; attachment to finish materials not permitted.
      b. Arrange that perimeter borders be not less than one-half lay-in panel width when measured perpendicularly to wall or panel edge.
      c. Install grid systems in the various patterns shown on Reflective Ceiling Plans for each respective space.
      d. Compression Struts: Install in conformance with suspension system details, secured to main runner channels and ceiling structure above.

3.03 INSTALLATION OF LAY-IN PANELS

A. Panels Suspended Ceiling Work
   1. Lay-in Panels:
      a. Install panels in suspension systems specified hereinabove.
      b. Edge joints tight, in straight line.
   2. Panel Edges at Perimeters: Cut carefully to suit border sizes allowing for full bearing on perimeter angles or support, or kerf tile or concealed perimeter support angles, where so detailed; provide a tapered cut 'tegular' or 'shadowline' edge along cut edges of perimeter panels to maintain 'tegular' or 'shadowline' appearance and fit, as applicable. Provide similar treatment at diffuser and other penetrations, as necessary.

B. Wood Panel Installation
   1. Install suspension system and panels in compliance with ASTM C636, and in accordance with the manufacturer's Techinal Installation Guide instructions.
   2. Suspend main beam from overhead construction with hanger wires spaced 4 feet on center along the length of the main runner. Install hanger wires plumb and straight. Hanger wires shall not be installed in convenience holes.
   3. Install wall moldings at intersection of suspended ceiling and vertical surfaces. Miter corners where wall moldings intersect or install corner caps.
   4. Install panels in suspension system to pattern indicated on Reflected Ceiling Plans. Edge joints tight, in straight line and proper alignment.

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3.04 CLEANING & REPAIRING DENTS, SCRATCHES & ABRASIONS ON NEW WORK

A. Dents: Where damaged by denting or otherwise during or subsequent to installation and dents cannot be repaired only by painting, without use of spackle or fillers, remove and replace with new material. Replace work damaged by other trades, after installation at the expense of trades causing such damage

B. Scratches & Abrasions

1. Where acoustical units and exposed suspension members are slightly scratched or abraded subsequent to installation, repair by painting.
2. Use only paint of same type, color and manufacture as recommended and furnished by the manufacturer of the scratched or abraded material.

END OF SECTION

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FOR REFERENCE ONLY

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Resilient sheet flooring.

B. Rubber base.

C. Installation accessories.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast-In-Place Concrete: Restrictions on curing compounds for concrete slabs and floors to receive adhesive-applied resilient flooring.

1.03 REFERENCE STANDARDS

A. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring 2019, with Editorial Revision (2020).

B. ASTM F1344 - Standard Specification for Rubber Floor Tile 2015.

C. ASTM F1700 - Standard Specification for Solid Vinyl Floor Tile 2020.

1.04 SUBMITTALS

A. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.

B. Verification Samples: Submit two samples, 6 x 6 inch in size illustrating color and pattern for each resilient flooring product specified.

C. Certification: Prior to installation of flooring, submit written certification by flooring manufacturer and adhesive manufacturer that condition of subfloor is acceptable.

D. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing specified flooring with minimum three years documented experience.

B. Installer Qualifications: Company specializing in installing specified flooring with minimum three years documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Upon receipt, immediately remove any shrink-wrap and check materials for damage and the correct style, color, quantity and run numbers.

B. Store all materials off of the floor in an acclimatized, weather-tight space.

C. Maintain temperature in storage area between 55 degrees F (13 degrees C) and 90 degrees F (72 degrees C).

D. Protect roll materials from damage by storing on end. Do not double stack pallets.

1.07 FIELD CONDITIONS

A. Store materials for not less than 48 hours prior to installation in area of installation at a temperature of 70 degrees F (21 degrees C) to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F (13 degrees C).

B. Unroll resilient base materials and allow to acclimate to the space for minimum 24 hours prior to installation.

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PART 2 - PRODUCTS

2.01 SHEET FLOORING

A. Linoleum Sheet Flooring (LN01 & LN02)

1. Description: Furnish Forbo Flooring, Inc. "Marmoleum® Composition Sheet" (MCS) homogeneous sheet linoleum of primarily natural materials consisting of linseed oil, wood flour, and rosin binders, mixed and calendered onto natural jute backing. Pattern and color shall extend throughout total thickness of material.
2. Width: 2 Meters (79")
3. Length: 3 2 Meters (105 Linear Feet)
4. Gauge: 2.0mm (0.080”)
5. Backing: Jute
6. Pattern: Marmoleum "Real" pattern.
7. Colors:
   a. LN01: #3137 Slate Grey.
   b. LN02: #3032 Mist Grey.
8. Adhesive: Forbo Flooring, Inc., L 885 Adhesive
9. Heat Welding Rod: Forbo Flooring, Inc., Marmoweld® color-matched solid color or multi-color welding rod.
10. Finish: TopshieldÔ finish
11. Where coved base is scheduled for base, provide flooring with integral coved base to a 6 inch height, integral with linoleum sheet flooring, coved with cove former and top metal trim cap; cove former shall provide minimum 1-1/4 inch cove radius.

2.02 RESILIENT BASE

A. Resilient Base: ASTM F1861, Type TP rubber, thermoplastic; top set Style B, Cove (RB1 thru RB3).

1. Manufacturers:
   a. Armstrong Flooring: www.armstrongflooring.com.
   b. Burke Flooring: www.burkemercer.com.
   c. Johnsonite, a Tarkett Company: www.johnsonite.com.
   d. Roppe Corp: www.roppe.com.
2. Height: 4 inches (100 mm).
3. Thickness: 0.125 inch (3.2 mm).
4. Finish: Satin.
5. Length: Roll.
6. Colors:
   a. RB1: Armstrong #R48FS Flagstone.
   b. RB2: Armstrong #R48ND Indigo.
   c. RB3: Armstrong #R48GM Gray Mist.
7. Accessories: Premolded external corners and internal corners.

2.03 ACCESSORIES

A. Subfloor Filler: White premix latex; type recommended by adhesive material manufacturer.

B. Primers, Adhesives, and Seam Sealer: Waterproof; types recommended by flooring manufacturer.

NOT FOR CONSTRUCTION
FOR REFERENCE ONLY

C. Resilient Reducer Strips: Furnish the following edge reducer strips for conditions noted, or approved equal, of selected standard color:
   1. Resilient Flooring to Concrete Slab: Johnsonite #RRS-XX-C or Flexco #92 or Mercer #633 vinyl tile reducer strip, or approved, with butting gauge to match flooring thickness, colors as selected; color coordinated with respective rubber flooring color.

D. Metal Floor Transition Strips
   1. Resilient Flooing to Carpet Transition Strip: Furnish 3/16 inch (4.5 mm) high L-shaped profile edge molding with 1/8 inch (3.2 mm) wide visible surface and integrated trapezoid-perforated anchoring leg. Schluter Systems Inc. "Schiene" #E 45 EB, or approved, brushed stainless steel type 304.
   2. Resilient Flooring-to-Ceramic Tile Transition Strip: Furnished under ceramic floor tile work of Section 09 30 00.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.

B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive resilient base.

3.02 PREPARATION

A. Prepare floor substrates as recommended by flooring and adhesive manufacturers.

B. Remove subfloor ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with subfloor filler to achieve smooth, flat, hard surface.

C. Prohibit traffic until filler is fully cured.

D. Clean substrate.

E. Apply primer as required to prevent "bleed-through" or interference with adhesion by substances that cannot be removed.

3.03 INSTALLATION - GENERAL

A. Starting installation constitutes acceptance of subfloor conditions.

B. Install in accordance with manufacturer's written instructions.

C. Adhesive-Applied Installation:
   1. Spread only enough adhesive to permit installation of materials before initial set.
   2. Fit joints and butt seams tightly.
   3. Set flooring in place, press with heavy roller to attain full adhesion.

D. Where type of floor finish, pattern, or color are different on opposite sides of door, terminate flooring under centerline of door.

E. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated.
   1. Metal Strips: Attach to substrate before installation of flooring using stainless steel screws.
   2. Resilient Strips: Attach to substrate using epoxy adhesive.

F. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.

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G. Install flooring in recessed floor access covers, maintaining floor pattern.

H. At movable partitions, install flooring under partitions without interrupting floor pattern.

3.04 INSTALLATION - SHEET FLOORING

A. Lay flooring with joints and seams parallel to longer room dimensions, to produce minimum number of seams. Lay out seams to avoid widths less than 1/3 of roll width; match patterns at seams.

B. Cut sheet at seams in accordance with manufacturer's instructions.

C. Seal seams by heat welding.

D. Coved Base: Install where coved base is scheduled, as detailed on drawings, using coved base filler as backing at floor to wall junction. Extend sheet flooring vertically to height indicated , and cover top edge with metal cap strip.

E. Installation of Linoleum Sheet Flooring

1. Adhesive Flooring Installation: Cut required length of linoleum flooring from roll, allowing enough material to extend up the wall 4 to 6 inches at either end. Layout and position sheet flooring so that any seams will fall at least 6 inches from underlayment joints or saw cuts in concrete substrate. Scribe and cut flooring material to shape of vertical surfaces, including walls and partitions. Apply adhesive and lay sheet flooring into wet adhesive and roll with a 100 pound roller. Install sheet flooring square with room axis.
   a. Adhesive, Seamless Flooring Installation: Rout out seams and heat weld together with complementary colored heat welding rod of complimentary composition in accordance with resilient flooring manufacturer's recommendations.
   b. Adhesive Flooring and Flash Coved Base Installation: Extend flooring up the wall in a flash-coved method to a height of 6 inches.
   c. Adhesive Material Installation: Use trowel as recommended by flooring manufacturer for specific adhesive. Spread at a rate of approximately 150 ft2/gallon, as recommended by flooring manufacturer.
2. Installation Techniques:
   a. Where items are indicated for installation on top of finished flooring, install flooring before these items are installed.
   b. Scribe, cut, fit flooring to butt tightly to vertical surfaces, permanent fixtures and built-in furniture, including pipes, outlets, edgings, thresholds, nosings, and cabinets.
   c. Extend flooring into toe spaces, door reveals, closets, and similar openings.
   d. Install flooring on covers for telephone and electrical ducts, and similar items occurring within finish floor areas. Maintain overall continuity of color and pattern with pieces of flooring installed on these covers.
   e. Do not install resilient flooring over expansion joints. Use expansion joint covers manufactured for use with resilient flooring. Refer to other specification sections for expansion joint covers.
   f. Adhere resilient flooring to substrate without producing open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, or other surface imperfections in completed installation.
      1) Use adhesive applied to substrate in compliance with flooring manufacturer’s recommendations, including those for trowel notching, adhesive mixing, and adhesive open and working times.
   g. Roll resilient flooring as required by resilient flooring manufacturer.

3.05 INSTALLATION - RESILIENT BASE

A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches (45 mm) between joints.

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B. Miter internal corners. At external corners, use premolded units. At exposed ends, use premolded units.

C. Install base on solid backing. Bond tightly to wall and floor surfaces.

D. Scribe and fit to door frames and other interruptions.

3.06 CLEANING

A. Remove excess adhesive from floor, base, and wall surfaces without damage.

B. Clean in accordance with manufacturer's written instructions.

3.07 PROTECTION

A. Prohibit traffic on resilient flooring for 72 hours after installation.

END OF SECTION

NOT FOR CONSTRUCTION
FOR REFERENCE ONLY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Tufted Carpet Tile.

B. Walk-Off Mat.

C. Accessories.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast-in-Place Concrete: Restrictions on curing compounds for concrete slabs and floors to receive adhesive-applied carpet.

B. Section 09 05 61 - Common Work Results for Flooring Preparation.

C. Section 09 30 00 - Tiling.

D. Section 09 65 00 - Resilient Flooring: Wall base and termination edging of adjacent floor finish.

1.03 REFERENCE STANDARDS

A. ASTM E 648 - Standard Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source; 2008b.

B. ASTM F 710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2008.

C. CRI (CIS) - Carpet Installation Standard; Carpet and Rug Institute; 2009.

D. CRI (GLP) - Green Label Plus Carpet Testing Program - Approved Products; Carpet and Rug Institute; Current Edition.

1.04 SUBMITTALS

A. Product Data: Provide data on specified products, including test reports, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation. Test reports shall include confirmation of the manufacturer's product data.

B. Samples: Submit manufacturer's full color line for selection by Architect.

C. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

D. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.

E. Maintenance Materials: Furnish quantity equal to 5 percent of total installed of each color and pattern installed.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing specified carpet with minimum five years documented experience.

B. Installer Qualifications: Company specializing in installing carpet with minimum five years documented experience and approved by manufacturer.

1.06 FIELD CONDITIONS

A. Store materials in area of installation for minimum period of 24 hours prior to installation.

B. Maintain minimum 70 degrees F ambient temperature 72 hours prior to, during and 72 hours after installation.

C. Ventilate installation area during installation and for 72 hours after installation.

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FOR REFERENCE ONLY

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Tufted Carpet Tile:
   1. Shaw Contract Group.: www.shawcontractgroup.com.
   2. Interface, Inc.: www.interfaceinc.com.
   3. Mannington Commercial: www.manningtoncommercial.com.

B. Walk-Off Mat: Connexus by Mats Inc.

2.02 CARPET TILE

A. Tufted Carpet Tile CPT1:
   1. Product: Blueprint Collection "Outline" style as manufactured by Mannington Commercial, or approved.
   2. Construction: Patterned Loop.
   3. Face Fiber: ECONYL 100% Regenerated Type 6 Nylon, with ColorSafe, XGUARD soil resistant treatment
   4. Size: 24 x 24 inches.
   5. Color: #15217 Borough.
   6. VOC Content: Provide CRI Green Label Plus certified product.
   7. Static: < 3.0 KV (AATCC-134).
   8. Face Weight: 14 oz/sq.yd.
   9. Dye Method: Solution.
   10. Backing Type: Infinity 2 Modular.

B. Tufted Carpet Tile CPT2:
   1. Product: Blueprint Collection "Sketch" style as manufactured by Mannington Commercial, or approved.
   2. Construction: Patterned Loop.
   3. Face Fiber: ECONYL 100% Regenerated Type 6 Nylon, with ColorSafe, XGUARD soil resistant treatment
   4. Size: 24 x 24 inches.
   5. Color: #15217 Borough.
   6. VOC Content: Provide CRI Green Label Plus certified product.
   7. Static: < 3.0 KV (AATCC-134).
   8. Face Weight: 14 oz/sq.yd.
   9. Dye Method: Solution.
   10. Backing Type: Infinity 2 Modular.

C. Tufted Carpet Tile CPT3:
   1. Product: Automata Collection "Cryptogram" style as manufactured by Mannington Commercial, or approved.
   2. Construction: Patterned Loop.
   3. Face Fiber: Antron Lumena Type 6,6 Nylon, with ColorSafe, XGUARD soil resistant treatment
   4. Size: 18 x 36 inches.
   5. Color: As selected by Architect.
   6. Smoke Density (ASTM E 662): Less than 450 (Flaming Mode).
   7. VOC Content: Provide CRI Green Label Plus certified product.

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8. Static: < 3.0 KV (AATCC-134).
9. Face Weight: 18 oz/sq.yd.
10. Dye Method: Solution/Yarn.
11. Backing Type: Infinity 2 Modular.
12. Installation Method: Horizontal Brick Ashlar.

2.03 WALK-OFF MATS

A. Walk-Off Mats: Furnish Connexus by Mats Inc. “Super NOP 52” nonwoven, nop texture solution dyed polypropylene walk-off mat with composite rubber backing, or approved, 52 oz. face weight, of sizes indicated for each entry location; distributed through Pacific Mat Co. (T&A Supply Co.); 800/562-2857. Color as selected by Architect from full color line.

2.04 ACCESSORIES

A. Reducer Strips: Furnish the following edge reducer strips for conditions noted, or approved equal, of selected standard color:
   1. Resilient Flooring to Carpet: Johnsonite #CTA-XX-A or Flexco #64 or Mercer #150 vinyl tile and carpet joiner, or approved.
   2. Walk-Off Mat to VCT or Carpet: Schluter Systems "RENO-U" EBU100 stainless steel reducer with brushed finish.

B. Adhesives
   1. General Use Adhesive - For Carpet and Mat Applications to Concrete: Furnish water-resistant, non-staining type adhesive with anti-microbial additive as recommended and approved by respective carpet and mat manufacturers and which complies with flammability requirements for installed carpet.
   2. Reducer Strip Applications to Concrete: Furnish water-resistant type adhesive as recommended by leveler strip manufacturer.
   3. Contact Adhesive: Compatible with carpet material; releasable type.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that sub-floor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive carpet.

B. Verify that sub-floor surfaces are dust-free and free of substances that could impair bonding of adhesives to sub floor surfaces.

C. Verify that concrete sub-floor surfaces are dry enough and ready for installation by testing for moisture emission rate and alkalinity in accordance with ASTM F 710; obtain instructions if test results are not within limits recommended by carpet manufacturer.

3.02 PREPARATION

A. Remove sub-floor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with sub-floor filler.

B. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Prohibit traffic until filler is cured.

C. Vacuum clean substrate.

D. Reducer Strips
   1. Install reducer strips at locations noted above, and in accordance with manufacturer's recommendations.; Install to proper thickness to provide a flush transition between carpet and resilient sheet flooring, as approved by Architect.

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2. Glue to substrate using waterproof cement or contact bond of type recommended by reducer strip manufacturer.

3.03 INSTALLATION - GENERAL

A. Carpet Tile Installation
   1. Starting installation constitutes acceptance of sub-floor conditions.
   2. Install carpet tile in accordance with respective manufacturer's instructions and CRI Carpet Installation Standard.
   3. Lay carpet tile in monolithic, quarter-turn or non-directional pattern to be determined by the Architect for each carpet application.
   4. Locate change of color in locations and to sizes and shapes shown.
   5. Install carpet tight and flat on subfloor, well fastened at edges, with a uniform appearance.
   6. Trim neatly at walls and where abutting other flooring.
   7. Complete installation of edge strips, concealing exposed edges.

3.04 WALK-OFF MATS

A. Install mats adhered to concrete using manufacturer's recommended adhesive; follow adhesive manufacturer's written instructions for installation procedures. Mats shall be installed in a one-piece application for each installation wherever possible; where not possible, install with seams perpendicular to primary direction of travel. No butt (cross) seams allowed. Obtain Architect's approval of seam locations prior to installation.

3.05 CLEANING

A. Remove excess adhesive from floor and wall surfaces without damage.

B. Clean and vacuum carpet surfaces.

END OF SECTION

NOT FOR CONSTRUCTION
FOR REFERENCE ONLY

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Plastic Laminate ("PLAM") interior wainscot finishes as scheduled in Room Finish Schedule.

1.02 RELATED WORK IN OTHER SECTIONS

A. Section 09 29 00 - Gypsum Board.

B. Section 09 91 00 - Paints and Coatings.

1.03 QUALITY ASSURANCE

A. Subcontractor & His Personnel: Use only thoroughly trained and experienced installers, completely familiar with installation recommendations of the laminate panel manufacturer and requirements of the various work.

1.04 SUBMITTALS

A. Manufacturer's Data: Submit brochures indicating all specified products including accessory items proposed for use. Include manufacturer's current installation instructions with submittal.

1.05 PRODUCT DELIVERY, STORAGE & HANDLING

A. Delivery & Storage Of Material

1. Deliver materials to, and retain, at the job site in unbroken packages.
2. Do not open until Architect inspects and approves.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Plastic Laminate (PLAM1) & Accessories For Wainscot Wall Covering

1. Material: Furnish NEMA Standard No. LD3 Type 1 Post-Forming Type, HGP Grade, .040 inch thickness; colors and texture as specified below. Furnish in 4x8 foot standard sized panels, for applications at wainscots as scheduled and shown on Interior Elevations.
2. Trim and Accessories: Furnish standard metal trim moldings at inside corners and laminate perimeter edges, as approved.
3. Adhesive: Only use adhesive recommended by panel manufacturer.
4. Color & Texture: Wilson Art #4622-60 Gray Nebula (matte).

PART 3 - EXECUTION

3.01 INSPECTION OF SURFACES & CONDITIONS

A. Surface Conditions

1. Carefully inspect all surfaces to receive the various plastic wall panels. Wall surface to receive markerboard laminate shall be finished to a level 5 finish.
2. Do not proceed with installation until all surfaces are acceptable.
3. Preparation: Carefully prepare wall surfaces in accordance with respective panel manufacturer's recommendations.

3.02 INSTALLATION

A. Plastic Laminate Wainscot Panels

1. Install at respective wainscot wall surfaces as scheduled and shown on Interior Elevations and related details, using factory approved laminate adhesive and trim moldings.

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2. Where installed over gypsum board, seal all joints of gypsum board backing using approved joint compound, properly prepared for installation of plastic laminate, as approved.
3. Installed panels shall have a uniformly smooth surface, free from warps and with all paneling firmly attached to substrate.

3.03 CLEANING

A. Cleaning Up
1. After hanging, immediately clean all wall panel surfaces, removing all traces of adhesive and soil and thoroughly washing with clean water.
2. Do not use any other cleaning agent not specifically recommended by manufacturer of wall paneling.

END OF SECTION

NOT FOR CONSTRUCTION
FOR REFERENCE ONLY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fabric-covered fiberglass core panels (AP1) and mounting accessories.

1.02 RELATED REQUIREMENTS

A. Section 05 40 00 - Cold-Formed Metal Framing.

B. Section 09 29 00 - Gypsum Board.

C. Section 09 51 00 - Acoustical Ceilings.

D. Section 09 72 26 - Panel Wall Covering.

E. Section 09 91 00 - Paints And Coatings.

1.03 REFERENCE STANDARDS

A. ASTM C423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method 2017.

B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2021a.

1.04 SUBMITTALS

A. Product Data: Submit manufacturer's product data and installation instructions.

1. Recommended procedures for normal cleaning and removal of stains including precautions in use of cleaning materials that may be detrimental to surfaces.

B. Verification Samples: Fabricated samples of each type of panel specified; 12 by 12 inch (305 by 305 mm), showing construction, edge details, and fabric covering.

C. Quality Assurance/Control Submittals: Submit the following:

1. Test Reports: Upon request, submit certified test reports from recognized test laboratories.

2. Certificates: Submit manufacturer's certificate that products meet or exceed specified requirements.

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FOR REFERENCE ONLY

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company with not less than five years of experience in manufacturing acoustical products similar to those specified.

B. Installer Qualifications: Utilize an installer having demonstrated experience on projects of similar size and complexity.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect acoustical panels from moisture during shipment, storage, and handling. Deliver in factory-wrapped bundles; do not open bundles until panels are needed for installation.

B. Store panels flat, in dry, well-ventilated space; do not stand panels on end.

C. Protect panel edges from damage.

1.07 PROJECT/SITE CONDITIONS

A. Environmental Requirements:

1. Do not install acoustical panels until building is closed in and HVAC system is operational.

2. Locate materials onsite at least 24 hours before beginning installation to allow materials to reach temperature and moisture content equilibrium.

3. Maintain the following conditions in areas where acoustical materials are to be installed 24 hours before, during and after installation:
   a. Relative Humidity: 65 - 75%.
   b. Uniform Temperature: 55 - 70 degrees F (13 - 21 degrees C).

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Fabric-Covered Acoustical Panels:
   1. Conwed Designscape; Respond A Series: www.conwed.com.
   2. Essi Acoustical Products Company; Silentspace: www.essiacoustical.com.
   3. Lamvin Acoustical Products Manufacturer; Sonic Standard Panel: www.lamvin.com.
   4. Valhalla Construction Products; Acoustical Wall Panels: www.valhallaproducts.com.

2.02 FABRIC-COVERED ACOUSTICAL PANELS

A. Acoustical Wall Panels (AWP)
   1. Panels:
      a. Provide acoustical wall panels constructed of one-piece 6 pcf noncombustible and dimensionally stable glass fiber core faced with Guilford Style 2100 FR701 woven polyester panel fabric.
         1) Color: #420 Cobalt.
      b. Panels shall be 1 inch nominal thickness, of sizes required for panel configurations shown on Interior Elevations, with all edges of each individual piece having an internal edge protection. Edges of wall panels shall be beveled (chamfered) unless otherwise detailed; outside corners shall be mitered.
      c. All edges shall be wrapped, with abutting edges kerfed for concealed spline. Edge wrap shall return on the back of the panel a minimum of 1-1/2 inches.
   2. Flame Spread: All components utilized in the construction of the acoustical wall panel shall meet a Class A rating as tested per ASTM E84.
   3. Sound Absorption: Panels shall have a minimum noise reduction coefficient (NRC) of 0.90 in conformance to ASTM C423.
   4. Installation Method: Installation of panels shall be accomplished by the use of fabric covered bottom leveling angles, concealed metal wall clips and concealed metal splines (at all abutting panel joints) and adhesive.
   5. Locations: As shown on Interior Elevations.

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2.03 FABRICATION

A. Fabric Wrapped, General: Fabricate panels to sizes and configurations indicated, with fabric facing installed without sagging, wrinkles, blisters, or visible seams.
   1. Where radiused or mitered corners are indicated, install fabric to avoid seams or gathering of material.

B. Tolerances: Fabricate to finished tolerance of plus or minus 1/16 inch (1.6 mm) for thickness, overall length and width, and squareness from corner to corner.

2.04 ACCESSORIES

A. Spline-Mounting Accessories: Manufacturer's standard concealed connecting splines of extruded aluminum designed for screw attachment to walls, with coordinating moldings and trim for interior and exterior corners and miscellaneous conditions.
   1. Color of Exposed Trim: To match fabric.

B. Back-Mounting Accessories: Manufacturer's standard accessories for concealed support, designed to allow panel removal, and as follows:
   1. Two-part clip and base-support bracket system; brackets designed to support full weight of panels and clips designed for lateral support, with one part mechanically attached to back of panel and the other attached to substrate.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine substrates for conditions detrimental to installation of acoustical panels. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Install acoustical panels in locations indicated, following installation recommendations of panel manufacturer. Align panels accurately, with edges plumb and top edges level. Scribe to fit accurately at adjoining work and penetrations.

B. Install panels to construction tolerances of plus or minus 1/16 inch (1.6 mm) for the following:
   1. Plumb and level.
   2. Flatness.

3.03 CLEANING

A. Clean fabric facing upon completion of installation from dust and other foreign materials, following manufacturer's instructions.

B. Remove and replace work that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

3.04 PROTECTION

A. Protect installed work from damage due to subsequent construction activity, including temperature and humidity limitations and dust control, so that the work will be without damage and deterioration at the time of acceptance by the Owner.

B. Replace panels that cannot be cleaned and repaired to satisfaction of the Architect.

END OF SECTION

NOT FOR CONSTRUCTION
FOR REFERENCE ONLY

PART 1 - GENERAI.

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints, stains, varnishes, and other coatings.

C. Materials for backpriming woodwork.

D. Do Not Paint or Finish the Following Items:

1. Items fully factory-finished unless specifically so indicated; materials and products having factory-applied primers are not considered factory finished.
2. Items indicated to receive other finishes.
3. Items indicated to remain unfinished.
4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
5. Floors, unless specifically so indicated.
6. Glass.
7. Concealed pipes, ducts, and conduits.

E. Colors: As specified herein and otherwise selected by Architect from samples and textures prepared on the work by the Contractor.

1.02 RELATED REQUIREMENTS

A. Section 07 19 30 - Water Repellent Treatment.

B. Section 09 96 56 - Epoxy Coatings.

C. Color coding of piping for mechanical work covered under Division 22.

1.03 QUALITY CONTROL

A. General: Standard coating terms defined in ASTM D16 apply to this Section.

1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.
2. Eggshell refers to low-sheen finish with a gloss range between 20 and 35 when measured at a 60-degree meter.
3. Semigloss refers to medium-sheen finish with a gloss range between 35 and 70 when measured at a 60-degree meter.
4. Full gloss refers to high-sheen finish with a gloss range more than 70 when measured at a 60-degree meter.

B. Pre-Application Painting Conference

1. Approximately two (2) weeks prior to scheduled commencement of painting applications and associated work, and including prior to requirement for priming/backpriming of finish carpentry items, meet at project site with Painter, installer of each component of associated work including installers of substrate construction to receive painting work, installers of other work in and around painting which must precede or follow painting work, Architect, Owner, painting system(s) manufacturer's representative, and other representatives directly concerned with performance of the work including (as applicable) Owner's testing agency.
2. Review foreseeable methods and procedures related to painting work, including, but not necessarily limited to, the following:
   a. Tour areas of painting substrates, inspect and discuss condition of substrates, and other preparatory work performed by other trades.

b. Review painting system requirements (drawings, specifications and other contract documents).
c. Review required submittals, both completed and yet to be completed.
d. Review required inspection, certifying and material usage accounting procedures.
e. Review weather and forecasted weather conditions as it pertains to exterior painting work, and procedures for dealing with unfavorable conditions.

C. Single Source Responsibility: Provide primers and other undercoat paint produced by same manufacturer as finish coats. Use only thinners approved by paint manufacturer, and use only within recommended limits.

D. Paint Coordination
1. Provide finish coats which are compatible with prime paints used.
2. Review other sections of these specifications in which prime paints are to be provided to ensure compatibility of total coatings system for various substrates.
3. Upon request from other trades, furnish information on characteristics of specified finish materials provided for use, to ensure compatible prime coats are used.
4. Provide barrier coats over incompatible primers or remove and re-prime as required.

E. Field Testing For Adhesion: Field test primers which are to be applied. The purpose of this field testing will be to ensure compatibility and total adhesion of the materials to the various substrates. Notify Contractor if results of any test is not in total conformance with the paint manufacturer's specifications. Commencement of work constitutes full responsibility for any resulting unsatisfactory finish.

1.04 SUBMITTALS

A. Samples
1. Applied Finish Samples: Upon request, submit samples in accordance with Section 01 33 00 and the following as directed:
a. Before commencing work, prepare samples on final substrate; size not less the 8-1/2" x 11".
b. Furnish additional required samples until colors, finishes, textures are reviewed and accepted by the Architect (followed by written authorization to proceed).
c. Mark on each sample, the paint manufacturer and color code formula.
d. Allow ample time for the selection of colors; do no work until colors are approved.
e. Retain approved samples for reference.

B. Materials Lists
1. Submit complete and detailed list of materials proposed for use on the work; no exceptions.
2. Include manufacturers' names and color code numbers.
3. Submit letter from manufacturer or manufacturer's representative stating that proposed materials are first grade of specified type, and best of their respective kinds.
4. Obtain Owner's approval of materials before ordering.

C. Product Data
1. Submit manufacturer's published literature for specified products and accessories as applicable, including manufacturer's specifications, physical characteristics and performance data, plus material safety data sheets (MSDS) for all products where applicable.
2. Submit as a supplement, manufacturer's instructions and directions for application if not included in manufacturer's published literature.

D. Materials For Maintenance
   1. Furnish one (1) gallon, unopened, of each water borne / latex type and color of paint used. Clearly mark each container with respective color name and number.
   2. Submit list of painting materials used, including polyurethane and other two-part type coatings and their waterborne type replacements, complete with manufacturer and color code identification number and/or formula.

1.05 PRODUCT DELIVERY, STORAGE & HANDLING

A. Delivery & Storage Of Material
   1. Deliver materials to jobsite in unbroken sealed packages with manufacturer's original labels thereon, bearing manufacturer's name, type of paint, brand name, color designation and instructions for mixing and/or reducing.
   2. Store and mix material outside building; store per manufacturer's recommendations and as required by governing Codes and Ordinances.

1.06 JOB CONDITIONS

A. Condition Of Surfaces
   1. Put surfaces in proper condition for application of finishes. Complete all major cleaning of existing surfaces prior to application of paint coatings.
   2. Do no outside work during damp or freezing weather, or until surfaces have thoroughly dried from the effects of such weather.
   3. See that proper temperatures are maintained for inside work.
   4. Do no work when dust or insects are present.

B. Protection Of Finished Work
   1. Use tarpaulins or drop cloths and masking tape and paper when working above or adjacent to finished work.
   2. Clean paint splatters and stains from finished surfaces.

C. Environmental Requirements
   1. Temperature:
      a. Do no work of this Section when surface or air temperatures are below +40F, or below manufacturer-recommended temperatures for conditions of installation. The minimum temperatures for latex finishes is required to be not less than +45F for interior work and +50F for exterior work unless specifically accepted in writing by the Specifying Authority.
      b. Temporary heat/interior work: Temporary heat for interior work to be provided as specified in accordance with Section 01 50 00.
      c. Temporary heat/exterior work: When required, provide approved temporary heat or delay work until minimum surface and air temperatures exist for the required period. Unless otherwise specified, maintain above minimum for 24 hours before and after finish application.
   2. Weather:
      a. Do no exterior work on unprotected surfaces if it is raining or moisture from any source is present or expected before finishes can dry, or attain proper cure.
      b. Allow surfaces to dry and attain required temperatures and conditions before proceeding or continuing previously started work.
   3. Humidity: Follow manufacturer's directions for extremes.
   4. Ventilation: Verify adequate continuous ventilation as recommended/required by manufacturer.

5. Illumination: Provide temporary lighting to attain surface lighting level/minimum 15 foot candles per square foot unless more stringent levels are required by governing Codes and ordinances.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Manufacturer: Except where specified to be a specific manufacturer's product, furnish products offered by the following manufacturers subject to compliance with the Specifications:
   1. Benjamin-Moore, Cloverdale Paint Corp., General Paint, Glidden Professional, Kelly-Moore Paints, Miller Paint Co., PPG Architectural Coatings, Sherwin-Williams, Rodda, Tnemec Company, Inc.

B. Material Quality
   1. Provide the best quality grade of the various types of coatings as regularly manufactured by approved paint materials manufacturers. Materials not displaying the manufacturer's identification as a standard, best-grade product will not be acceptable.
   2. Provide undercoat paint produced by the same manufacturer as the finish coats. Use only thinners approved by the paint manufacturer, and use only to recommended limits.
   3. Provide paints of durable and washable quality.

C. Colors & Finishes
   1. All interior general use wall paint shall be equal to Sherwin Williams "ProMar 200 Zero VOC Interior Latex Eg-Shel" B20W2600 Series no VOC, low odor interior waterborne latex-based paint, or approved, with a gloss level of 10 to 25 units @ 60 deg. and a sheen level of 10 to 35 units @ 85 deg.
   2. Paint for restrooms shall be equal to Sherwin Williams "ProMar 200 Zero VOC Interior Latex Semi-Gloss" B31W2600 Series no VOC, low odor interior waterborne latex-based paint, or approved, with a gloss level of 20 to 35 units @ 60 deg. and a sheen level of minimum 35 units @ 85 deg.
   3. Colors: As designated on Drawings or otherwise selected by Architect.

D. Caulking Compound: Furnish paintable white caulking compound, as approved.

2.02 MIXING & THINNING

A. Proprietary Products: Mix and thin only in accordance with manufacturer's printed directions.

PART 3 - EXECUTION

3.01 INSPECTION

A. Inspection Of Surfaces
   1. Applicator shall examine areas and conditions under which painting work is to be applied and notify Contractor in writing of conditions detrimental to proper and timely completion of work. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to applicator.
   2. Starting of painting work will be construed as Applicator's acceptance of surfaces and conditions within any particular area.
   3. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions otherwise detrimental to formation of a durable paint film.

B. Alkali Content Testing: Test precast concrete, cast-in-place concrete and masonry surfaces for alkalinity by performing appropriate tests, and neutralize as required for pH reading between 5 and 7, unless otherwise recommended by paint manufacturer. Test for pH following test method as described in ASTM D4262, utilizing litmus paper.

C. Moisture Content Testing: Test concrete and masonry surfaces for moisture content by performing appropriate tests. Maximum moisture content shall not exceed 15 percent as determined by a moisture meter, unless otherwise required by paint manufacturer.

3.02 PREPARATION OF SURFACES

A. Surface Conditions
   1. Before Starting Work Under This Section: Do not proceed until any discovered defects have been corrected and surfaces are approved as ready to receive the work under this Section.
   2. Upon Starting Work:
      a. Conform to Field Quality Control requirements specified hereinafter.
      b. Starting work under this Section constitutes acceptance of surfaces by painter.
      c. Unless otherwise specified, surfaces considered the responsibility of other trades for work under this Section include:
         1) Shop prime coats of miscellaneous metal and other shop prime coated metal items except for minimal spot touch-up painting at field welds and surfaces abraded during their installation.
         2) Gypsum board finishing of joints, moldings and fastenings.

B. Surface Preparation - All Work
   1. General:
      a. Prepare surfaces to receive scheduled work under this Section as hereinafter set forth.
      b. Before applying paint or other finish, remove or provide ample protection for hardware, accessories, plates, factory-finished mechanical work, lighting fixtures, and similar items; remove protection or replace upon completion.
      c. Use only skilled mechanics for removing and reinstalling above items.
   2. Pre-Cleaning: Remove oil and grease prior to mechanical cleaning as hereinafter specified by methods outlined in SSPC-SP 1 “Solvent Cleaning.”
   3. For Mildew Removal: Scrub with a non-sudzing biodegradable detergent solution, then rinse with potable water and let thoroughly dry.
   4. Painting of Factory-Primed Door Hardware: Prior to painting, mask all operating parts so that item works freely after paint is dry. Remove any excess paint from operating parts and clean and free-up the operation of any parts which do not operate smoothly due to the painting operation.
   5. Wood Products:
      a. Test surfaces with moisture meter to assure that moisture content does not exceed 15 per cent.
      b. Sandpaper smooth, except where rough surface is used for the finish surface; dust off.
      c. After prime or stain coat has been applied, fill holes and cracks with putty or plastic wood; for natural and stain finish, color putty to match stained wood.
      d. For surfaces to be painted, remove dirt and contamination. Sand, then wipe off all dust and grit prior to painting; if surface is to be painted, sand between coats.
      e. Turn over to carpenters an adequate quantity of stain that they may apply one brush coat of stain to jobsite cut ends and edges as installation proceeds
   6. Miscellaneous Steel, Iron and Sheet Metal: Put in proper condition to receive paint. Grease, rust, scale, dirt and dust are required to be removed by other trades except as otherwise noted. Use only prime paints compatible with finish coats.
      a. Surfaces shop primed by others:

1) At field welded or abraded spots, apply a phosphoric acid etch solution. Let set as recommended by acid etch manufacturer. Rinse with potable water. When thoroughly dry, immediately apply prime coat.
2) Clean previously primed surfaces free of any remaining oil and grease.

b. Surfaces not previously shop primed:
1) Remove rust and scale by wire brushing, sandblasting, or other approved methods.
2) Remove rust, dirt, oil and grease. Clean surfaces using solvent wash. Apply phosphoric acid solution. Let set as recommended by acid etch manufacturer. Rinse with potable water. When thoroughly dry, immediately apply prime coat. Any defects showing in prime surface are required to be repaired by other trades. Re-prime over repaired defects.

7. Metal Doors and Their Frames: Prepare surfaces including tops, bottoms, and surfaces normally concealed from view.
8. Gypsum Board:
a. Surfaces are to be crack-free, properly finished and left clean by other trades.
b. Remove any minor subsequent contamination, dust and dirt.
c. If surface defects appear after prime coating, have defects repaired by and at the expense of the drywall trade after defects are corrected, proceed with finish painting again using primer over repaired areas.
9. Mechanical and Electrical Work: Prepare metal surfaces as specified for "Miscellaneous Steel and Iron" and "Non-ferrous Metals" as applicable to type of material scheduled to be painted. Remove dirt, grease and oil from canvas and cotton insulation covering.

C. Additional Surface Preparation Requirements For Existing Surfaces Scheduled Or Required To Be Re-Finished
1. General:
a. Coordinate repair work for the various existing finish wall and ceiling surfaces specified herein with work for same specified under other Sections.
b. On existing finished surfaces to be re-painted or re-finished, remove all loose, blistered, scaled, or crazed finish to bare base material surface.
c. Wash, with Tri-Sodium Phosphate (T.S.P.) or approved cleaning solution as required to remove any accumulated film of wax, oil, grease, smoke or other foreign matter which would impair bond of, or bleed through new finishes; after washing, rinse with clean water and let thoroughly dry.
2. Existing Painted Ferrous Metal:
a. Sand rough edges of bare areas to featheredge adjacent sound paint.
b. Remove rust to bare metal.
c. Prime with primer specified in the Applicable Division for like work.
d. Clean existing surfaces to receive new paint.
e. Extent of work: Include exposed surfaces of existing remaining exterior and interior metal doors and frames within project area and other metal items adjacent to or altered by new work.
3. Existing Wood: Remove all blistered and loose paint. Sand rough edges of bare areas to featheredge adjacent sound paint and dust off. Prime all bare spots.

D. Materials Preparation
1. Mix and prepare painting materials in accordance with manufacturer's directions. Do not mix together paints of different manufacturers.
2. Store materials not in actual use in tightly covered containers. Maintain containers used in storage, mixing and application of paint in a clean condition, free of foreign materials and residue.

3. Stir materials before application to produce a mixture of uniform density, and stir as required during the application of the materials. Do not stir surface film into the material. Remove the film and, if necessary, strain the material before using.

E. Application Of Caulking Compound
   1. Apply caulking compound to all gaps between hollow metal door frames, millwork, casework, window frames, metal locker, room accessories, and the like, and adjacent wall finish, filling gaps solid and wiping smooth, as approved. Remove all excess compound from adjacent wall and frame surfaces.
   2. Apply caulking compound to all gaps in joints of new exterior plywood siding, filling gaps solid and wiping smooth, as approved. Remove all excess compound from adjacent wall surfaces.

3.03 APPLICATION OF PAINT & FINISH

A. Workmanship, General
   1. Highest quality consistent with trade practice, performed by skilled mechanics.
   2. Sandpaper interior surfaces between coats.
   3. Apply paint and finish materials by method at painter's option to achieve the best results, except spray or roll apply finish coat on hollow metal doors; spread material evenly, without runs or sags.
   4. Vary color of successive coats to prevent skipping; first finish coat of all wall and ceiling paint coatings shall be tinted at a 4:1 ratio using 4 gallons of finish color with 1 gallon of white tint base.
   5. Apply additional coats when undercoats, stains or other conditions show through the final coat of paint, until the paint film is of uniform finish, color and appearance.
   6. Cut sharp lines against glass, other materials, and different colors.
   7. Allow ample time between coats for thorough drying not less than manufacturer's recommended minimum time.
   8. Paint surfaces behind movable equipment the same as similar exposed surfaces. Paint surfaces behind permanently-fixed equipment of furniture with prime coat only.
   9. Paint the back sides of access panels, and removable or hinged covers to match the exposed surfaces.

B. Finish Film Thickness: Apply primer, intermediate, and finish coats to not less than wet and dry film thicknesses and spreading rates as recommended by product manufacturer for each of the various types of specified materials, unless otherwise specified herein.

C. Cleaning
   1. As the work proceeds, and on its completion, promptly remove all spilled, splashed or splattered paint. Remove in such a manner as not to damage surfaces. Thoroughly clean paint and splatters from glass, mirrors, and other such surfaces. Take care not to scratch surfaces.
   2. During progress of work, keep premises free from any unnecessary accumulation of tools, equipment, surplus materials, and debris resulting from the work of this Section. At work's conclusion, leave premises neat and clean.

D. Protection
   1. Protect surrounding areas and surfaces to preclude damage during work of this Section.
   2. Make good any damage caused by failure to provide suitable protection, but not any damage caused by other trades.
   3. Removal of Hardware and Miscellaneous Items:
      a. Remove electrical outlet and switch plates, mechanical diffusers, escutcheons, registers, surface hardware, fittings, and the like prior to starting work.

b. Carefully store, clean and reinstall these items on completion of work in each area. Do not use cleaning agents detrimental to permanent lacquer finishes.

3.04 EXTERIOR PAINTING & FINISHING SCHEDULE

A. General
1. Work specified herein is in ADDITION to shop coats called for under other Sections.
2. All coats including primer to be shaded differently; see paragraph 3.03A.4 above regarding tinting requirements.
3. All colors specified herein are subject to Architect's review and approval of final color selection.

B. Exterior Hollow Metal Doors & Frames
1. Surfaces to be Painted: Include exterior and interior faces, ends and edges of all exterior hollow metal doors and exposed frame surfaces, as applicable.
2. Field Prime Coat: Apply one (1) coat Sherwin Williams “Pro Industrial Pro-Cryl Universal Primer,” or approved, applied to a 1.9 - 3.8 mils dry film thickness.
3. Finish Coats: Apply two (2) coats Sherwin Williams “Pro Industrial Waterbased Acrolon 100” water-based urethane, or approved, with high gloss; 1.8 - 3.6 mils dry film thickness each coat.
4. Finish Color: As selected by Architect. At door frames, extend 'exterior' color to and include exterior edge of stop. Color of all interior door and frame surfaces exposed when door is in the closed position shall be color as selected for interior hollow metal work.

C. Exterior Steel Items
1. Surfaces to be Painted: Include all exposed surfaces of all new exterior structural steel members for building entry canopy support post members, and the like.
2. Field Prime Coat: Apply one (1) coat Sherwin Williams “Pro Industrial Pro-Cryl Universal Primer,” or approved, applied to a 1.9 - 3.8 mils dry film thickness.
3. Finish Coats: Apply two (2) coats Sherwin Williams “Pro Industrial Waterbased Acrolon 100” water-based urethane, or approved, with high gloss; 1.8 - 3.6 mils dry film thickness each coat.
4. Finish Colors: As selected by Architect.

D. Exterior Wood Surfaces - Semi-Transparent Stain Finish
1. General:
a. Include all Cedar siding and associated trim members.
b. Stain may be applied by either roller or brush application; spray application permitted only when coating is back-brushed upon application.
2. Finish Coating Standard of Quality: Cabot "Semi-Transparent Deck & Siding Stain" or Olympic “Semi-Transparent Water Repellent” linseed oil based stain, or approved.
3. System Application - Wood Siding & Trim:
a. One prime and backprime coat exterior oil alkyd primer on all faces, ends and edges prior to its installation; color as selected.
b. One coat same on exposed face, ends and edges after installation.
4. Color: Semi-transparent stain color as selected by Architect.

E. PVC Downspout Piping & Associated Wall Brackets
1. One coat exterior latex undercoat / primer.
2. One coat exterior acrylic latex semi-gloss finish paint, color to match color of adjacent wall finish.

F. Masonry Wall Surfaces: Water repellent treatment as specified and provided under Section 07 19 30.

3.05 INTERIOR PAINTING & FINISHING SCHEDULE

A. General
   1. Work specified herein is in ADDITION to shop coats called for under various other Divisions and Sections.
   2. Unless otherwise specifically noted on Drawings, or set forth hereinafter, all interior surfaces shall be painted, or enameled and/or finished in accordance with the number and type of coats as hereinafter specified.
   3. All coats including primer to be shaded differently. All colors specified herein are subject to Architect's review and approval of final color selection.

B. Interior Wood
   1. General: All exposed wood trim and finish lumber surfaces in occupied spaces, which are not otherwise specified herein to receive other finishes or specified under work of other Sections to be factory finish, shall be finished as specified below.
   2. Clear Finish:
      a. Finish Coating Standard of Quality: Benjamin-Moore BENWOOD STAYS CLEAR Acrylic Polyurethane Flat W425 clear acrylic urethane, or approved.
   3. System Application:
      a. Fine sand to provide clean smooth base.
      b. Apply one (1) coat clear sealer on all exposed surfaces.
      c. Paint Finish:
         1) Primer: Benjamin-Moore NATURA Premium Interior Primer 511 acrylic latex primer, or approved.
         2) Finish Coating Standard of Quality: Benjamin-Moore NATURA Premium Interior Paint & Primer 514 semi-gloss acrylic latex coating, or approved.
         3) System Application:
         4) One (1) prime and backprime coat primer on all faces, ends and edges prior to its installation; color as selected.
         5) Two (2) finish coats on exposed surfaces after installation.

C. New Wood Doors: Seal top and bottom of doors with two coats sealer as hereinbefore specified, including factory finished doors.

D. Gypsum Board Wall & Ceiling Surfaces
   1. Primer Coat For All New Gypsum Board Wall and Ceiling Surfaces: In addition to primer coat specified under Section 09 29 00, apply one coat Sherwin Williams "ProMar 200 Zero VOC Interior Latex Primer", or approved.
   2. Finish Coats - Restrooms, Mud Room & Shower: Over primer coat apply two (2) coats Sherwin Williams “ProMar 200 Zero VOC Interior Latex Semi-Gloss” B31W2600 Series, or approved, applied to a minimum 1.5 mils DFT each coat.
   3. Finish Coats - All Other Gypsum Board: Over primer coat apply two (2) coats Sherwin Williams “ProMar 200 Zero VOC Interior Latex Eg-Shel” B20-2600 Series, or approved, applied to a minimum 1.7 mils DFT each coat.
   4. Finish Colors: As designated on Drawings or otherwise selected by Architect.

E. New Interior Hollow Metal Doors & Door & Relit Frames
   1. Surfaces To Be Painted: Include both faces, ends and edges of all interior hollow metal door and relite frame surfaces.
   2. Prime Coat: Apply one (1) coat Sherwin Williams “Pro Industrial Pro-Cryl Universal Primer,” or approved, applied to a 1.9 - 3.8 mils dry film thickness.

3. Finish Coats: Apply two (2) coats Sherwin Williams “Pro Industrial Waterbased Acrolon 100” water-based urethane, or approved, with high gloss; 1.8 - 3.6 mils dry film thickness each coat.
4. Finish Color: As selected by Architect.

F. Sealer Finish Coat For Interior Slabs to be Left Exposed and Sealed: Sealer to be provided as specified in Section 03 39 00.

G. Mechanical Equipment, Ducts, Grilles & Diffusers
1. Inside ducts just behind grilles and diffusers: Paint to 12 inches back from grilles, one coat dead black flat metal paint.
2. Exposed pipes: Paint exposed pipes in occupied and otherwise public areas with finish-painted walls and ceilings to match same system as on walls or ceilings except no painting required in Mechanical rooms and spaces.
3. Ducts exposed in occupied spaces: Paint exposed ducts in occupied and otherwise public areas with finish painted walls and ceilings with semi-gloss enamel paint, color as selected; no painting required in Mechanical rooms and spaces.
4. All other mechanical equipment: Surfaces are factory-finished; no painting or finishing required.

H. Electrical Equipment
1. Surface-mounted panels: No painting or finishing required.
2. Conduit: No painting required in Electrical rooms and spaces. At all other locations, paint exposed conduit in areas with finish-painted walls and ceilings with same system as specified above for adjacent surface and of same finish color as adjacent wall and/or ceiling, as applicable.

END OF SECTION

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Provide labor, equipment and materials to complete and finish as specified herein all interior floors where "HPF1" high performance epoxy floor finish is scheduled in Finish Schedule, Sheet A-621, consisting of 100% solids polyamine cured epoxy with fiber reinforcement and an integrated topcoat system.

1.02 RELATED SECTIONS

A. Section 03 30 00 - Cast-In-Place Concrete

B. Section 09 29 00 - Gypsum Board

1.03 REFERENCES

A. International Concrete Repair Institute (ICRI) Guide No. 03732, "Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings and Polymer Overlays."

B. ASTM D4263-83 (1999), "Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method".

C. ASTM F1869-98, "Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride".

1.04 QUALITY ASSURANCE

A. Single Source Responsibility: Obtain primary resinous floor materials including hardening agents, finish or sealing coats from a single manufacturer with not less than 5 years of successful experience in manufacturing and installing the principal materials described in this section. Provide secondary materials only of type and from a source recommended by the manufacturer of the primary material.

B. Installer Qualifications: Flooring system installation shall be by and under the supervision of the floor system manufacturer's representative employing personnel experienced in flooring system applications.

C. Pre-application Meeting: Convene a pre-application meeting Two (2) weeks before start of application of coating systems. Require attendance of parties directly affecting work of this section, including Contractor, Architect, applicator, and manufacturer's representative. Review the following:

1. Environmental requirements.
2. Protection of surfaces not scheduled to be coated.
3. Surface preparation.
4. Application.
5. Repair.
6. Field quality control.
7. Cleaning.
8. Protection of coating systems.
9. Coordination with other work.

D. Manufacturer Supervision: A representative of the materials manufacturer shall be present on site for the duration of the preparation and for all phases of the installation of the specified coating materials.

1.05 SUBMITTALS

A. Comply with Section 01 33 00 - Submittal Procedures.

B. Product Data: Submit manufacturer's product data for each coating, including generic description, complete technical data, surface preparation, SDS sheets, and application instructions.

C. Samples:
   1. Submit samples of finished product on substrate to be applied:
      a. Prepare samples on each type of material to be covered.
      b. Make samples not less than four (4) inches square.
   2. Color Samples: Submit manufacturer's color samples showing full range of standard colors.

D. Manufacturer's Quality Assurance: Submit manufacturer's certification that coatings comply with specified requirements and are suitable for intended application.

E. Applicator's Quality Assurance: Submit list of a minimum of 5 completed projects of similar size and complexity to this Work. Include for each project:
   1. Project name and location.
   2. Name of Owner.
   3. Name of Contractor.
   4. Name of Architect.
   5. Name of coating manufacturer.
   6. Approximate area of coatings applied.
   7. Date of completion.

F. Warranty: Submit manufacturer's warranty as specified.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying:
   1. Coating or material name.
   2. Manufacturer.
   3. Color name and number.
   4. Batch or lot number.
   5. Date of manufacture.
   6. Mixing and thinning instructions.

B. Storage:
   1. Store materials in a clean dry area and within temperature range in accordance with manufacturer's instructions.
   2. Keep containers sealed until ready for use.
   3. Do not use materials beyond manufacturer's shelf life limits.

C. Handling: Protect materials during handling and application to prevent damage or contamination.

1.07 JOB CONDITIONS

A. Environmental Requirements:
   1. Comply with manufacturer's recommendations as to environmental conditions under which coatings and coating systems can be applied. Surfaces to be coated shall be between 65°F and 85°F. Do not apply coating systems at temperatures beyond those limits stated in the manufacturer's technical data sheet unless given written permission by the manufacturer.
   2. Concrete substrates shall be properly cured for a minimum of 30 days.
   3. Do not apply finish in areas where dust is being generated.

B. Ventilation: Provide ventilation during coating evaporation stage in confined or enclosed areas in accordance with manufacturer's instructions.

C. Dust and Contaminants:
   1. Schedule coating work to avoid excessive dust and airborne contaminants.
   2. Protect work areas from excessive dust and airborne contaminants during coating application and curing.

D. Protections: Cover or otherwise protect finished work of other trades and surfaces not being coated concurrently or not to be coated.

1.08 WARRANTY

A. Manufacturer shall furnish a single, written warranty covering 100% of the material and labor costs protecting the Owner from delamination, disbondment, and osmotic/hydrostatic failure for a period of five (5) years from date of installation.
   1. Issuance of warranty shall be a condition contingent on the receipt of final payment to the Installer.
   2. Extent of warranty shall be limited to the repair or replacement of defective surfaces at no cost to the Owner, and for any damage directly resulting from such defects during the warranty period. The warranty shall not include any remedy for defects caused by abuse, improper maintenance or operation, or by normal wear, tear and usage.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Prime Coat Corporation, Libertyville, IL. Prime Coat (www.primecoat.com); contact: Kurt Schilling (Direct: 217-971-3746); email: kschilling@primecoat.com.

B. Tnemec Company Incorporated, 6800 Corporate Drive, Kansas City, Missouri 64120. Tnemec contact: Jenny Senner 206-762-5755 or direct line 206-330-6608. Web Site www.tnemec.com.

2.02 SYSTEMS

A. Floor System HPF1: Seamless, integrated system for floors consisting of 100% solids accelerated aliphatic amine cured epoxy with chopped strand fiberglass and Kevlar® reinforcement, and an integrated Pathocide topcoat system.
   1. Basis of Design Product: “Seamless Shower System 5130”.
   2. System Characteristics:
      a. Color: Light Gray C03.
      b. Wearing Surface: Textured for slip-resistance per Owner selection from manufacturer's full range.
      c. Cove Base: Showers/Bathrooms 2 inch Cant-styled.
      d. System Thickness: 1/8 inch.
   3. System Components: Manufacturer's standard components which are compatible with each other as follows:
      a. Primer All Surfaces:
         1) Resin: 100% solids epoxy. Product PC 100 EPOXYCOAT.
         2) Application method: spray and backroll to force material into voids.
         3) Minimum installed thickness: 6-8 mils.
         4) Type: clear.
         5) Number of coats: 1.
      b. Floor Base Coat:
         1) Resin: 100% solids plural component Bisphenol A epoxy.

2) Product: PC 310 with broadcast
3) Application method: broadcast silica.
4) Minimum installed thickness of neat resin: 20 mils.
5) Number of coats: 1.

c. Fiberglass and Kevlar® Reinforced Body Coat: applied to all flooring/cove base surfaces:
1) Resin: 100% solids Kevlar and Fiberglass reinforced epoxy.
2) Product: PC 200.
3) Application Method: 45:1 air-powered airless spray w/gravity-fed hopper.
4) Reinforcement: Chopped strand fiberglass and Kevlar®.
5) Minimum installed thickness: 45 mils.
6) Number of coats: 1.

d. Top Coat All Surfaces
1) Resin: 100% solids Bisphenol A chemically resistant epoxy.
2) Product: PC 400 with PC 498 MRSA Guard.
3) Application Method: Roller or spray.
4) Minimum Installed Thickness: 10-12 mils for floors.
5) Anti-Microbial: Integrated into topcoat.
6) Type: Pigmented.
7) Floor Finish: To meet ADA requirements by broadcasting PCA 337 into floor topcoat to achieve proper slip resistant texture.
8) Base Finish: Smooth.

4. Resinous flooring system shall meet minimum published standards in accordance with flooring system manufacturer's product data sheets as specified in this section. Wall and flooring components shall form a monolithic reinforced coating system that forms a continuous reinforced barrier joining flooring surfaces with specified coating system without breaks in material including at interfaces of inside and outside corners and interfaces between walls and floors

2.03 ACCESSORIES

A. Patching and Fill Material: Resinous product of resinous flooring manufacturer as specified above.

B. Joint Sealants: Formulated by resinous flooring manufacturer for type of service and joint condition indicated in each case.

PART 3 - EXECUTION

3.01 INSPECTION

A. Examine surfaces scheduled to receive coatings for conditions that will adversely affect execution, permanence or quality of work and which cannot be put into an acceptable condition through preparatory work as included in 3.03. PREPARATION OF SURFACES.

B. Verification: Verify that all substrate and environmental conditions are in compliance with requirements discussed during Pre-installation conference.

C. Mandatory Testing of Floor Slabs:
1. Prior to the installation of flooring, it is mandatory that all surfaces are tested for moisture content, pH, and alkalinity levels that would be detrimental to the adhesion of coating materials. For tests to be accurate, temperatures and humidity levels should be stabilized for a minimum of 72 hours. NOTE: Testing performed by any method in unconditioned spaces will not yield consistent results. Tests below shall be completed in accordance with documented Test Methods:

a. Plastic Sheet tests per ASTM D 4263
b. Calcium Chloride Tests per ASTM F 1869
c. Relative Humidity [in situ] Testing per ASTM F 2170
d. pH Testing per ASTM F 710

2. Do not proceed with installation if moisture levels exceed 5% or 3 lbs. per 1,000 sf per 24 hours or if ambient temperature is less than 5°F above dew point unless approved by material manufacturer.

D. Notify Owner's agent immediately upon determination that surfaces scheduled to receive coating are unacceptable for proper adhesion or subsequent performance.

E. Do not proceed with surface preparation or coating application until conditions are suitable.

3.02 PREPARATION OF SURFACES

A. General: Prepare and clean substrates in accordance with manufacturer's written instructions for substrate indicated. Provide clean, dry, and neutral pH substrate for resinous floor/wall application.

B. Gypsum Board: Prior to installation of high performance coatings, walls and ceilings shall receive a visual inspection by the onsite manufacturer's representative to assure that the substrate is acceptable for coating. The Drywall Contractor is to correct deficiencies.

1. Remove all loose coating using random orbital sanders.
2. Patch damaged areas using Gypsum patching materials.
3. All surfaces shall be clean, dry and free of contaminants prior to installing coating system.
4. Remove any finish in excess of Level 3.

C. New Concrete Floors Slabs on Grade:

1. Smooth troweled dense finish concrete, which shall have been properly cured not less than twenty-eight (28) days after placement.
2. Employ a radio frequency moisture meter to determine that residual un-combined moisture content of concrete slab is less than five (5) percent by weight. Conduct ASTM F 1869 to further record the Moisture Vapor Emission Rate. Do not apply thin-film high performance floor coatings to floor slabs that exceed 5 percent moisture content or 3 pounds per 1,000 square feet per 24 hours unless approved by the material manufacturer.
3. For thin-film coatings and floors under 1,000 sf or with limited access: Diamond grind to expose concrete matrix and profile concrete floor surfaces to a classification of ICRI CSP2.
4. For all other floor systems: Shot blast all concrete floor surfaces to a classification of ICRI CSP5. Vacuum clean concrete to remove all dirt, dust, and other loose materials
5. Where visual inspection of shot blasted surface indicates that oil-based penetration of the surface has occurred, the stained areas shall be treated with a 15% by volume solution of aqueous tri-sodium phosphate (TSP) or other proprietary de-greasing agent. Rinse and dry all floor surfaces scheduled to receive high performance floor system finish prior to commencement of resinous flooring application.
6. Remove and legally dispose of all debris and contaminants produced by the shot blasting process. Steel media resulting from the shot blasted floor slab surface shall be removed from cracks, slab edges, construction joints, and corners by magnets, magnetic broom, air blast, vacuum, or stiff bristle broom.

3.03 APPLICATION

A. General Requirements: Apply components of each resinous coating system according to manufacturer's written instructions to produce a uniform, monolithic wearing surface at the specified thicknesses.

1. Do not apply initial coating until moisture content of surface is within limitations recommended by coating manufacturer and never install coatings when the substrate temperature is less than 5 degrees above dew point unless specifically approved, in writing, by the manufacturer.
2. Coordinate application of components to provide optimum adhesion of resinous floor/wall system to substrate and intercoat adhesion.
3. At substrate control, isolation, and expansion joints, provide joint as necessary in resinous flooring in compliance with manufacturer's directions and engineering details for each joint type.
    a. Apply backer rod and elastomeric joint compound into isolation or expansion joints in compliance with manufacturer's directions.

B. Epoxy Coating System - Seamless Shower System 5130:
1. Moisture Mitigation Primer: Apply manufacturer’s recommended moisture mitigation primer in strict accordance with manufacturer’s recommended procedures.
2. Cove Base: Trowel apply cove base by using a mixture of 100% solids epoxy PC 310 and aggregates PCA 322 to make mortar system, and allow to set.
3. Floor Base Coat: Mix floor Base Coat components with Jiffy Mixer for 2 minutes, pour onto floor in a bead, squeegee apply, backroll. Apply at 20 mils, or 80 square feet per mixed gallon. While Base Coat is wet, broadcast PCA 322 aggregate into base coat to rejection and allow to dry. Sweep off/vacuum up all excess aggregate.
4. Build Coat: Mix PC 200 fiberglass/Kevlar®-reinforced body coat with a Jiffy Mixer for a minimum of 2 minutes and apply to all previously primed floors with a 45:1 air-powered airless spray rig with gravity-fed hopper at and allow curing. Minimum thickness of 45 mils required on floors including base.
5. Final Finish/Glaze Coat: After build coat is fully cured, abrade all surfaces to remove any exposed fiberglass and other imperfections. Mix PC 400 with PC 499 Additive and apply to all floor surfaces at a minimum of 10-12 mils on floor surfaces. Broadcast and back-roll PCA 337 slip resistant additive into final floor finish encapsulating the slip resistant additive to achieve ADA requirements.

3.04 CURING

A. Cure resinous flooring components according to manufacturer's written instructions. Prevent contamination during curing processes.
1. Temperatures shall be maintained at 70°F - 80°F if at all possible.
2. Water leaks must be prevented as they will compromise epoxy components ability to set properly - drips may compromise or stain finishes.
3. Steam or any airborne contamination will adversely affect curing.

3.05 CLEANING

A. Remove debris promptly from work area and dispose of properly.

B. Remove spilled, splashed, or splattered coating materials from all surfaces.

C. Floor and walls may be cleaned prior to final inspection, providing complete curing has taken place. Generally, non-chlorinated detergents should be used for the first month after curing is complete.

D. Do not mar surface finish of items being cleaned.

3.06 FIELD QUALITY CONTROL

A. Manufacturer’s Field Service: Manufacturer will send qualified technical representative to the Project site for the following purposes:
1. Coordinate schedule, environmental requirements, and pre-installation work with other trades.

2. Advise Installer's personnel of procedures and precautions for use of flooring materials.
3. Attend moisture testing and all other testing procedures with the Architect, the Owner's Representative, and the Installer.
4. Ascertain that each component of the resinous flooring system is being installed in accordance with manufacturer's directions.
5. Maintain a log of environmental conditions, work procedures, testing procedures, and protection measures to be included in job site file submittal.
6. Manufacturer's representative shall be on site throughout the entire product installation including all of the above, all surface preparation and product installation.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Glass Markerboards .

1.02 RELATED REQUIREMENTS

A. Section 05 40 00 - Cold-Formed Metal Framing: Concealed supports.

1.03 SUBMITTALS

A. Product Data: Provide manufacturer's data on penboards, trim and accessories.

B. Shop Drawings: Indicate dimensions, special anchor details.

C. Manufacturer's printed installation instructions.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.05 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Glass Penboards:
   1. Fulbright Glass Boards: www.fulbrightglassboards.com.
   2. Best-Rite Manufacturing: www.schooloutfitters.com.
   3. MOORECO Inc.: www.moorecoinc.com.

2.02 VISUAL DISPLAY UNITS

A. Magnetic Glass Markerboards:
   1. Writing Surface: Tempered Glass.
   2. Backing Material: Galvanized steel sheet.
   3. Color: Designer White.
   4. Frame: Frameless.
   5. Height: 48 inches.
   6. Length: 72 inches.
   7. Mounting Devices: Brushed stainless steel standoffs standard with manufacturer.
   8. Accessories: Full length aluminum marker / eraser tray.
   9. Basis of Design: Fulbright "Premium" magnetic glass board or Best-Rite Manufacturing “Visionary Magnetic Glossy White Glass Markerboard”.

2.03 ACCESSORIES

A. Temporary Protective Cover: Sheet polyethylene, 8 mil (0.2 mm) thick.

B. Marker Tray: Aluminum, manufacturer's standard profile one piece full length of penboard.

C. Magnets: Furnish each board with four (4) magnets standard with magnetic boards.

NOT FOR CONSTRUCTION
FOR REFERENCE ONLY

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that internal wall blocking is ready to receive work.

3.02 PREPARATION

A. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

A. Install boards in accordance with manufacturer's instructions, of sizes and in locations as shown on Drawings.

B. Secure units level and plumb, to height indicated on Interior Elevations.

3.04 CLEANING

A. Clean board surfaces in accordance with manufacturer's instructions.

B. Cover with protective cover.

C. Remove temporary protective cover at Date of Substantial Completion.

END OF SECTION

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PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Commercial toilet and room accessories.

B. Shower and bath accessories.

C. Janitor mop holder.

1.02 RELATED REQUIREMENTS

A. Section 05 40 00 - Cold-Formed Metal Framing: Blocking and supports.

B. Section 09 29 00 - Gypsum Board.

C. Section 09 31 00 - Tiling.

1.03 REFERENCE STANDARDS

A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products 2017.

B. ASTM A269/A269M - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service 2015a (Reapproved 2019).

C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2020.

D. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar 2015.

E. ASTM B456 - Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium 2017.

F. ASTM C1036 - Standard Specification for Flat Glass 2021.

G. ASTM C1503 - Standard Specification for Silvered Flat Glass Mirror 2018.

1.04 SUBMITTALS

A. Product Data: Submit data on accessories describing size, finish, details of function, and attachment methods.

B. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention.

1.05 QUALITY ASSURANCE

A. General

1. Use concealed fastenings wherever possible.
2. Provide anchors, bolts and other necessary fasteners, and attach equipment and items securely to ceilings, walls and floors in locations as shown and/or directed.
3. Provide products of the same manufacturer for each type of equipment unit and for units exposed in the same areas, wherever possible. Coordinate with the Architect for acceptable designs and finishes.

1.06 PRODUCT DELIVERY, STORAGE & HANDLING

A. Delivery, Storage & Protection

1. Deliver materials protected from inclement weather and other damage.
2. Store materials in dry, heated room or building at site.

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PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Basis of Design: Products listed are made by Bobrick Washroom Equipment, Inc., www.bobrick.com, unless otherwise indicated.

B. Other Approved Manufacturers - Commercial Accessories:
   1. ASI - American Specialties, Inc: www.americanspecialties.com.
   2. Bradley Corporation: www.bradleycorp.com.
   3. Substitutions: Section 01 61 00 - Common Product Requirements.

2.02 MATERIALS

A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
   1. Grind welded joints smooth.
   2. Fabricate units made of metal sheet of seamless sheets, with flat surfaces.

B. Stainless Steel Sheet: ASTM A666, Type 304.

C. Stainless Steel Tubing: ASTM A269/A269M, Grade TP304 or TP316.

D. Galvanized Sheet Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G90/Z275 coating.

E. Mirror Glass: 1/4 inch Float glass, ASTM C 1036 Type I, Class 1, Quality Q2, with silvering, copper coating, and suitable protective organic coating to copper backing in accordance with GSA CID A-A-3002.

F. Fasteners, Screws, and Bolts: Tamper-proof, security type as recommended by the manufacturer.

G. Expansion Shields: Fiber, lead, or rubber as recommended by accessory manufacturer for component and substrate.

2.03 FINISHES

A. Stainless Steel: Satin finish, unless otherwise noted.

B. Chrome/Nickel Plating: ASTM B456, SC 2, polished finish, unless otherwise noted.

C. Baked Enamel: Pretreat to clean condition, apply one coat primer and minimum two coats epoxy baked enamel.

D. Galvanizing for Items Other than Sheet: Comply with ASTM A123/A123M; galvanize ferrous metal and fastening devices.

2.04 STANDARD COMMERCIAL ROOM ACCESSORIES

A. Grab Bars (GB): Furnish Bradley No. 812 Series or Bobrick No. B-6806 Series, or equivalent, Type 304 stainless steel 1-1/2 inch o.d. satin finish grab bars in toilet rooms of lengths and configurations shown for each application, and mounting conditions as required for wall construction on which they are mounted.
   1. Side Horizontal Grab Bar (GB-1): B-6806 x 42.
   2. Back Horizontal Grab Bar (GB-2): B-6806 x 36.
   3. Vertical Grab Bar (GB-3): B-6806 x 18.

B. Surface Mounted Seat Cover Dispensers (TSCD-1): Dispensers to be furnished by Owner for installation by Contractor (FOIC). One dispenser to be provided for each water closet in toilet rooms as indicated; exact locations as shown or otherwise directed by the Architect in the field.

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C. Paper Towel Dispensers (PTD-1): Dispensers to be furnished by Owner for installation by Contractor; exact locations as shown or otherwise directed by the Architect in the field; in addition to toilet rooms, include at all other sink locations.

D. Combination Paper Towel Dispenser And Waste Receptacle (PTD/GD-1): Bobrick Item No. 813061, or approved, recessed convertible paper towel dispenser and waste receptacle constructed of Type-304 stainless steel with welded construction; exposed surfaces shall have satin finish. Flange shall be drawn and beveled, one-piece, seamless construction.

1. Door shall be secured to cabinet with a full-length stainless steel piano-hinge and equipped with a semi-concealed tumbler lock keyed like other Bobrick washroom accessories. Paper towel dispenser shall dispense 600 C-fold or 800 multifold paper towels.
2. Removable waste receptacle shall be secured to cabinet with a tumbler lock, have front and side edges of bottom and all top edges hemmed for safe handling, and shall have a minimum capacity of 6 gal.
3. Furnish complete with Bobrick Model No. 3944-130 “TowelMate” accessory allowing for paper towels to dispense one at a time without bulging or sagging, or falling through the towel tray opening.

E. Surface-Mounted Soap Dispensers (SD): Dispensers to be furnished by Owner for installation by Contractor. One dispenser to be provided for each lav/sink in toilet rooms, break room, prep room, and the like, all as indicated on Interior Elevations; exact locations as shown or otherwise directed by the Architect in the field.

F. Surface-Mounted Sanitary Disposal Bag Dispenser: Furnish Bobrick Item No. B-3541 sanitary disposal bag dispenser, or approved, constructed of Type-304 stainless steel. Exposed surfaces shall have satin finish. Cover shall snap off wall plate for refilling. Unit shall have a capacity of one sanitary disposal bag box.

G. Mop and Broom Holder: Item No. B-223 x 24, 0.05 inch (1.3 mm) thick stainless steel, Type 304, hat-shaped channel with 12 gauge hooks. Provide three hooks..

1. Holders: Three spring-loaded rubber cam holders.
2. Length: 24 inches.
3. Provide 1 unit at service sink (floor sink) at Custodian 111.

H. Framed Glass Mirrors Without Shelves

1. Furnish framed mirrors conforming to material and construction provisions of Fed. Spec. DD-M-0411(1), Class 2, Style E, except furnish of sizes as shown or noted on Drawings, Bobrick Model B-290 Series, or equivalent, with bright polished finish stainless steel frames.
2. For mirrors to be installed over both plastic laminate wainscot and gypsum board finishes, with upper portion of frame extending above top edge of wainscot wall finish, provide solid 1/4 inch thick tempered hardboard backing for that portion of frame extending above tile finish. All back surfaces of frames shall abut tight against backing.
3. Side edges of backing material shall be finished with sealant of color matching adjacent painted wall surface as close as possible and to Architect’s approval.

I. Double-Roll Toilet Tissue Dispensers (TTD-1): Double-roll toilet tissue dispenser shall have a heavy-duty cast-aluminum bracket with satin finish; Bobrick Item No. B-27460, or approved. Bracket shall be equipped with a tumbler lock to secure spindles in place. Vandal-resistant spindles shall be molded high-impact ABS. Unit shall accommodate two standard-core toilet tissue rolls up to 6" (152mm) diameter (2000 sheets).

J. Clothes Hook: Bobrick Model No. B-6777, or approved, heavy-duty stainless steel, single-prong, rectangular-shaped bracket and backplate for concealed attachment, satin finish.

1. Furnish two (2) adjacent to shower at Shower 118-A.

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K. Shower Curtain Rod: Item No. B-207. Stainless steel tube, 1 inch outside diameter, 20 gauge, satin-finished, with 3 inch outside diameter, minimum 0.04 inch thick satin-finished stainless steel flanges, for concealed mounting. Cut to required length appropriate for shower.

L. Shower Curtain & Hooks:
   1. Material: Opaque vinyl, 0.008 inch (0.2 mm) thick, matte finish, with antibacterial treatment, flameproof and stain-resistant.
   2. Size: 42 x 72 inches (WxH), hemmed top, bottom and side edges.
   3. Grommets: Nickel-plated brass or corrosion-resistant metal; pierced through top hem on 6 inch (150 mm) centers.
   4. Color: White.
   5. Shower curtain hooks: Item No. B-204-1. Minimum 0.09 inch stainless steel wire rings, as approved.
   6. Product: 204-2 as manufactured by Bobrick.

M. Fold-Down Shower Seats: Furnish for shower in Shower 188-A, Bobrick Model No. B-517 (right-handed seat), or Bradley or Parker equivalent, or approved, with the following characteristics:
   1. Seat: 2 Inch thick overall with 1-1/2 inch thick closed-cell polyurethane foam padding mounted on a 1/2 inch thick plywood base, covered in white naugahyde water-resistant, reinforced vinyl fabric.
   2. Support Frame: 18-8, Type 304 stainless steel with satin finish, 16-gauge, 1-1/4 inch square members and 18-gauge 1 inch diameter tubing.
   3. Mounting Flanges: 18-8, Type 304, 3/16 inch thick stainless steel with satin finish. 3 inch diameter with three (3) mounting screw holes.
   4. Base Plate: 18-8, Type 304, heavy-gauge stainless steel.
   5. Spring: 17-7, Type 301, 24 gauge stainless steel, spot welded to baseplate.
   6. Guide Bracket: 18-8, Type 304, 16-gauge stainless steel with satin finish.

N. Recessed Shower Soap Dish: Furnish Bobrick Item No. B-4390, or approved, recessed heavy-duty soap dish with bar constructed of type-304 stainless steel with matte polished finish. Shell and flange shall be 19 gauge (1.0mm) with drawn and beveled, one-piece, seamless construction. Bar shall be 3/16" (5mm) thick stainless steel and welded to front of shell flange. Unit shall be equipped with a 22-gauge (0.8mm) retaining lip and furnished with machine screws.

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PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify exact location of accessories for installation.

C. Verify that field measurements are as indicated on drawings.

D. See Section blocking, reinforcing plates, and concealed anchors in walls and ceilings.

3.02 PREPARATION

A. Deliver inserts and rough-in frames to site for timely installation.

B. Provide templates and rough-in measurements as required.

3.03 INSTALLATION

A. Installation - General
   1. Do not install accessories which are observed to be defective in any way.

2. Securely anchor accessories in accurate locations, secured to solid wood blocking. Install in proper alignment, free from warp, twist or distortion, plumb, level and true, in accord with final shop drawings, manufacturer's instructions and recommendations for particular conditions of installation in each case, except where more stringent requirements are indicated or specified, and except where project conditions require extra precautions or provisions to ensure satisfactory performance of work.
3. If printed instructions are not available or do not apply to project conditions, consult manufacturer's technical representative for specific recommendations before proceeding with work.
4. Conform to typical mounting heights as shown on Drawings.
5. Install concealed mounting devices and fasteners fabricated of the same material as the accessories or of galvanized steel.
6. Install exposed mounting devices and fasteners finished to match the accessories.
7. Provide tamper-resistant fasteners for all accessory mountings.

B. Mounting Heights: As required by accessibility regulations, unless otherwise indicated. Refer also to Drawings for Standard Mounting Heights.

3.04 PROTECTION & CLEANING

A. Protection
1. While installing products, protect adjacent surfaces against damage, stains.
2. Protect products during, after installation against damage of every nature so that there will be no indication of use or damage at time of final project acceptance.

B. Cleaning/Repairing
1. Remove manufacturer's temporary labels, protective coatings, marks of identification if provided; thoroughly wash surfaces, remove foreign material, polish metal surfaces.
2. Exposed finishes shall be free from scratches, dents, permanent discoloration's and other defects in workmanship, material.
3. Except where use of field applied touch-up paint is allowed, remove and replace damaged parts, surfaces which are not free from imperfections, or which have been damaged during installation or thereafter before time of final project acceptance. Where approved, touch-up damaged areas in shop applied finish with field applied touch-up paint.
4. Leave entire work in neat, orderly, clean condition.

END OF SECTION

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PART 1 - GENERAI.

1.01 DESCRIPTION

A. General Description Of Work: The extent of fire extinguishers and extinguisher cabinets are indicated on the Drawings and as otherwise specified herein.

1.02 RELATED REQUIREMENTS

A. Section 05 40 00 - Cold-Formed Metal Framing.

B. Section 09 29 00 - Gypsum Board.

1.03 SUBMITTALS

A. Shop Drawings & Brochures: Submit for approval, items, where specified or required by Architect, in accordance with Section 01 33 00. Submit brochures for all stock items specified herein not requiring special detail work, in accordance with the requirements for shop drawings specified hereinabove.

PART 2 - PRODUCTS

2.01 FIRE PROTECTION PRODUCTS

A. Fire Extinguishers & Extinguisher Cabinets

1. Provide as manufactured by Amerex Corp., Larsen's Mfg. Co., Potter-Roemer Inc., Kidde Frynetics and J.L. Industries Inc., or approved, subject to conformance with the Contract Documents.
2. Furnish extinguisher and extinguisher cabinets of Larsen model types listed hereinafter, or approved, for all extinguisher locations indicated on Drawings.
3. Cabinet boxes shall be fabricated from furniture steel with white baked enamel finish. Cabinet doors shall be clear tempered glass with vertical black “Fire Extinguisher” lettering applied to inside face of glass. Trim shall be fabricated from furniture steel with red baked enamel finish; Larsen “Gemini Series”, or approved substitute
4. Door hardware shall be continuous type hinge permitting door to open 180 degrees. Provide with lever handle with roller latch.
5. Furnish extinguishers filled and pressurized to 100% capacity.
6. Furnish extinguisher and cabinet types as designated on Drawings as follows:

Designation	Cabinet/Bracket Model (Type)	Extinguisher Type (Model)
FE	B-2 (Bracket)	For extinguisher locations in Mechanical Spaces: 4A-60B:C Multi-Purpose Dry Chemical (MP10); 10 lb. Capacity.
FEC	G2409-6R (Semi-Recessed)	For extinguisher at all other locations: 4A-60B:C Multi-Purpose (MP10); 10 lb. Capacity.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install cabinets, brackets and extinguishers in locations indicated on Drawings or as otherwise directed by Architect in the field, with mounting height to comply with governing authorities. Confirm locations with Architect prior to framing walls. Prepare recesses in walls as

required. Securely fasten to structure, square and plumb, in accordance with manufacturer's instructions

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Plastic laminate lockers at Mud Room 118; Locker Type "LO-1".

1.02 RELATED REQUIREMENTS

A. Section 05 40 00 - Cold-Formed Metal Framing.

B. Section 06 10 00 - Rough Carpentry: Wood base construction.

C. Section 09 65 00 - Resilient Flooring: Rubber base.

1.03 REFERENCE STANDARDS

A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design 2010.

B. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards, U.S. Version 3.1 2017, with Errata (2019).

C. ICC A117.1 - Accessible and Usable Buildings and Facilities 2017.

1.04 SUBMITTALS

A. Product Data: Manufacturer's published data on locker construction, sizes, fittings, and accessories.

B. Shop Drawings: Indicate locker plan layout, numbering plan.

C. Manufacturer's Installation Instructions: Indicate component installation assembly.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with at least five years of documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store lockers in a dry, ventilated area until ready for installation.

1.07 FIELD CONDITIONS

A. Ambient Conditions: Maintain temperature and relative humidity within range recommended by wood locker manufacturer during and after installation of lockers.

1.08 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Wood Lockers:

1. Hollman, Inc: www.hollman.com.
2. Ideal Products, Inc: www.idealockers.com.
3. List Industries, Inc: www.listindustries.com.

2.02 LOCKER APPLICATIONS

A. Type LO-1 Lockers: Hollman, Inc. Model Z double-tier lockers, wall mounted for base indicated on drawings.

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1. Width: 18 inches (457 mm).
2. Depth: 18 inches (457 mm).
3. Compartment Height: 36 inches.
4. Overall Height (Excluding Base): 72 inches (1829 mm).
5. Configuration: Two tier.
6. Fittings: Size and configuration as indicated on drawings.
   a. Coat rod.
   b. Hooks: One double prong.
7. Ventilation: By metal mesh grille inserts in locker front as shown on drawings.
8. Locking: Padlock hasps, for padlocks provided by Owner.

2.03 MATERIALS

A. Locker Frame: Tops, sides, and back shall be constructed of 5/8'' high density thermo-fused melamine.

B. Visible Edges: Sealed with a 1.5 millimeter PVC edge banding to closely match locker doors.

C. Locker Doors:
   1. Laminate: 5/8 inch high-industrial grade particle board core with .030 inch vertical grade high pressure plastic laminate. Matching laminate applied to interior & exterior door face.
      a. Door Face Laminate Color: As selected by Architect from manufacturer's full laminate collection.
   2. Door edges sealed with eased edge 1.5 mm PVC edge banding to closely match laminate.

D. Standard Hardware:
   1. Number disk, 1-1/2'' Dia. flush mounted disc with 3/8'' high contrast digits. US Block 1L font.
   2. Coat Rod, 1'' Dia. recessed rod.
   3. Coat Hook(s), 2-prong metal hooks.
   4. Hinges: Two per door, nickel finished, concealed, heavy duty European steel allowing 110 degree door opening with a limited lifetime warranty.

E. Locks: Centered vertically in door & spaced horizontally per lock type.

F. Venting: 12 millimeter openings between door and top and bottom of locker and dividers on multiple opening frames provide continuous natural air flow.

G. Wire Mesh: Furnish equal to McNichols Wire Mesh, Square, Stainless Steel, Type 304, Mill Finish, Woven - Intercrimp Weave, I3I3 Crimp Style, 0.5000" x 0.5000" Opening (Square), 0.063" Thick (16 Gauge) Wire Diameter, 79% Open Area.

2.04 FABRICATION

A. Quality Standard: Custom Grade, in accordance with AWMAC/WI (NAAWS), unless noted otherwise.

B. Accessibility: Comply with ICC A117.1 and ADA Standards.

C. Locker shall be fabricated using doweled and glued & nailed assembly process.

D. Fabricate lockers and benches square, rigid and without warp, with the finished faces flat and free of scratches and chips.

E. Machine all parts and attachment holes accurately and without chips.

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PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that prepared bases are in correct position and configuration.

B. Verify bases and embedded anchors are properly sized.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions in Mud Room 118 in location and configuration shown.

B. Place and secure on prepared base.

C. Install lockers plumb and square.

D. Install end panels and filler panels.

E. Touch up damaged finish to match original, using materials provided by fabricator; replace components that cannot be refinished like new.

F. Replace components that do not operate smoothly.

3.03 CLEANING

A. Clean locker interior and exterior surfaces.

END OF SECTION

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PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Provide fall restraint posts/anchors as specified herein at new raised roof deck roofing assembly.

1.02 RELATED WORK IN OTHER SECTIONS

A. Section 06 10 00 - Rough Carpentry: New plywood roof deck and associated roof deck framing.

B. Section 07 54 00 - Thermoplastic Membrane Roofing.

1.03 SYSTEM DESCRIPTION

A. General: Provide structural fall restraint anchors capable of withstanding loads and stresses within limits and under conditions specified in OSHA and other applicable safety codes. Provide fall protection anchors permanently attached to roof structure, located at existing anchor locations.

B. Performance Requirements: System and components tested for resistance of following loads:

1. Fall Restraint: 4 persons simultaneously applied.
2. Fall Arrest: 2 persons.
3. Design fall protection anchors to resist at least 5,000 pound applied in any direction at a height of approximately 8 inches above top of roof deck or provide engineered system designed meeting the requirements of OSHA 1926.502(d)(8).

1.04 SUBMITTALS

A. Product Data: For each type of fall prevention device specified, including manufacturer's standard fabrication details and installation instructions.

B. Shop Drawings: Show layout, profiles, and anchorage details. Include structural analysis data. Shop drawings & calculations to be stamped by a Washington Professional Engineer

C. Test Reports: Indicate compliance with required performance requirements.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Firm having at least 5 years continuous experience in manufacturing fall safety equipment similar to systems specified and exhibiting records of successful in-service acceptability and performance.

B. OSHA Standards: Comply with Occupational Safety and Health Administration Standards for the Construction Industry 29 CFR § 1926.500 Subpart M (Fall Protection), and with applicable State Administrative Code safety standards for Fall Restraint and Fall Arrest.

C. Testing: Perform quality control tests for each system per manufacturer's requirements.

1.06 COORDINATION

A. Coordinate installation of structural deck reinforcements and anchorages to receive fall protection anchors.

B. Coordinate placement of roofing system insulation and flashings to ensure water-tight integrity to roof.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Provide fall prevention system manufactured by XS Platforms BV, 4200 AM Gorinchem, The Netherlands, and Distributed by Guardian Fall Protection Inc., 26609 79th Ave S, Kent WA, phone 800-466-6385, fax 800-670-7892, or approved equal.

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B. Substitutions: See Section 01 61 00 - Common Product Requirements.

2.02 MATERIALS

A. Steel Plates, Bars: ASTM A240 / A240M Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.

B. Wire Rope: ASTM A492 Standard Specification for Stainless Steel Rope Wire.

C. Aluminum: ASTM B221 Standard Specifications for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

2.03 MANUFACTURED ASSEMBLIES

A. Guardian CB-18 Roof Anchors with Guardian attached pass-through cap allowing connection of pass thru components to be connected to Guardian CB anchors.

B. Tensioner Set: Stainless Steel and Aluminum tensioning unit with turnbuckle and tension indicator.

C. Intermediate supports: Intermediate straight and elbow units to attach to XTS Impact posts, allowing cable to slide freely.

D. Lifeline: Continuous 8 mm stainless steel cable as tested by fall prevention device manufacturer to permit worker mobility and safety.

E. Terminations: Swaged terminations to attach cable to end anchors. Cable clamps are not acceptable.

F. Connectors: Locking runner providing secure attachment to cable at any location.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine framing and substrate and verify conditions comply with structural requirements for proper system performance.

B. Proceed with installation of roof anchors only after verifying conditions are satisfactory.

3.02 INSTALLATION

A. CB Anchors: Anchors shall be installed according to manufacturer's instructions and recommendations for application to plywood and metal roof deck substrates at single-ply roofing assemblies.

B. Anchor point / pass-through caps and horizontal lifeline and related hardware shall be installed by factory-trained personnel according to manufacturer's instructions and recommendations.

C. Provide on-site inspection of installation by factory-trained representative.

3.03 DEMONSTRATION

A. Instruct Owner's designated safety engineer in proper use of fall protection safety devices.

B. Test and adjust system devices. Replace damaged or malfunctioning items.

END OF SECTION

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PART 1 GENERAL

1.01 SECTION INCLUDES

A. Manual roller shades and accessories for all exterior storefront windows.

1.02 RELATED REQUIREMENTS

A. Section 05 40 00 - Cold-Formed Metal Framing: Concealed blocking for attachment of shade brackets and accessories.

B. Section 08 41 13 - Exterior Aluminum Entrance & Storefront Window Framing.

1.03 REFERENCE STANDARDS

A. C2C (DIR) - C2C Certified Products Registry; Cradle to Cradle Products Innovation Institute Current Edition.

B. NFPA 701 - Standard Methods of Fire Tests for Flame Propagation of Textiles and Films 2019.

C. UL (GGG) - GREENGUARD Gold Certified Products Current Edition.

D. WCMA A100.1 - Safety of Window Covering Products 2018.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Sequencing:

1. Do not fabricate shades until field dimensions for each opening have been taken with finished conditions in place. "Hold to" dimensions are not acceptable.
2. Do not install shades until final surface finishes and painting are complete.

1.05 SUBMITTALS

A. See Section 01 33 00 – Submittal Procedures, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for each product to be used including materials, finishes, fabrication details, dimensions, profiles, mounting requirements, and accessories.

C. Shop Drawings: Include shade schedule indicating size, location and keys to details.

D. Source Quality Control Submittals: Provide test reports indicating compliance with specified fabric properties.

E. Selection Samples: Include fabric samples in full range of available colors and patterns.

F. Manufacturer's Instructions: Include instructions for storage, handling, protection, examination, preparation, and installation of product.

G. Project Record Documents: Record actual locations of control system components and show interconnecting wiring.

H. Operation and Maintenance Data: List of all components with part numbers, and operation and maintenance instructions; include copy of shop drawings.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than ten years of documented experience.

B. Installer Qualifications: Company specializing in performing work of this type with minimum ten years of documented experience with shading systems of similar size, type, and complexity; manufacturer's authorized representative.

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1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver shades in manufacturer's unopened packaging, labeled to identify each shade for each opening.

B. Handle and store shades in accordance with manufacturer's recommendations.

1.08 FIELD CONDITIONS

A. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.09 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Provide manufacturer's standard, non-depreciating warranty, for interior shading only, covering the following:

1. Shade Hardware: 10 years unless otherwise indicated.
2. Shade Fabric: 10 years unless otherwise indicated.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis of Design: MechoShade Systems LLC; www.mechoshade.com.

B. Substitutions: Section 01 61 00 - Common Product Requirements.

2.02 ROLLER SHADES

A. General:

1. Provide shade system components that are capable of being removed or adjusted without removing mounted shade brackets or cassette support channel.
2. Provide shade system that operates smoothly when shades are raised or lowered.
3. Provide shade system that is Cradle-to-Cradle certified and listed in C2C (DIR).

B. Roller Shades - Basis of Design: MechoShade Systems LLC; Mecho/5 System; www.mechoshade.com.

1. Description: Single roller, manually operated fabric window shades.
   a. Provide universal drive capability to offset drive chain for reverse roll or regular roll shades.
   b. Drop Position: Regular roll.
   c. Mounting: Window jamb mounted.
   d. Size: As indicated on drawings.
   e. Fabric: As indicated under Shade Fabric article.
2. Brackets and Mounting Hardware: As recommended by manufacturer for mounting indicated and to accommodate shade fabric roll-up size and weight.
   a. Material: Steel, 1/8 inch (3 mm) thick.
   b. Multiple Shade Band Operation: Provide hardware as necessary to operate more than one shade band using a single clutch operator.
3. Roller Tubes:
   a. Material: Extruded aluminum.
   b. Size: As recommended by manufacturer; selected for suitability for installation conditions, span, and weight of shades.
   c. Fabric Attachment: Utilize extruded channel in tube to accept vinyl spline welded to fabric edge. Shade band to be removable and replaceable without removing roller tube from brackets or inserting spline from the side of the roller tube.

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d. Roller tubes to be capable of being removed and reinstalled without affecting roller shade limit adjustments.

4. Hembars: Designed to maintain bottom of shade straight and flat.
   a. Style: Full wrap fabric covered bottom bar, flat profile with heat sealed closed ends.
5. Clutch Operator: Manufacturer's standard material and design integrated with bracket/brake assembly.
   a. Provide a permanently lubricated brake assembly mounted on a oil-impregnated hub with wrapped spring clutch.
   b. Brake must withstand minimum pull force of 50 pounds (22.7 kg) in the stopped position.
   c. Mount clutch/brake assembly on the support brackets, fully independent of the roller tube components.
6. Drive Chain: Continuous loop stainless steel beaded ball chain, 95 pound (43 kg) minimum breaking strength. Provide upper and lower limit stops.
   a. Chain Retainer: Chain tensioning device complying with WCMA A100.1.
7. Managed Lift: Required lifting force of 3 pounds (1.4 kg) to a maximum of 8.5 pounds (3.9 kg) for single band or multi-band shades up to 5 bands and a maximum of 30 pounds (13.6 kg) hanging weight.
8. Accessories:
   a. Fascia: Removable extruded aluminum fascia, size as required to conceal shade mounting, attachable to brackets without exposed fasteners; clear anodized finish.
      1) Fascia to be capable of installation across two or more shade bands in one piece.
      2) Provide single fascia to accommodate regular roll shades.
      3) Color: Standard color as selected by Architect.
      4) Profile: Square.
      5) Configuration: Captured and continuous, as indicated on drawings.

2.03 SHADE FABRIC

A. Fabricfor All Shades: Non-flammable, color-fast, impervious to heat and moisture, and able to retain its shape under normal operation.
   1. Material Composition:
      a. 100 percent polyester.
   2. Material Certificates and Product Disclosures:
      a. Low-Emitting Material Certification: Greenguard Gold certified and listed in UL (GGG).
      b. Cradle to Cradle Material Health Certificate: Achievement level of Bronze.
      c. Health Product Declaration (HPD): Complete, published declaration with full disclosure of known hazards.
      d. Declare label.
   3. Performance Requirements:
      a. Flammability: Pass NFPA 701 large or small scale test.
   4. Maximum Roll Width: 96 inches (2438 mm).
   5. Color: As selected by Architect from manufacturer’s full range of colors.
   6. Fabrication:
      a. Fabric Orientation: Railroaded, fabric is turned 90 degrees off the roll.
         1) Battens: Manufacturer's standard material, full width of shade, and enclosed in welded shade fabric pocket; locate as indicated on drawings.
         2) Seams for Railroaded Fabric: Manufacturer's standard sewn seam; locate as indicated on drawings.

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b. Provide welded zipper edge full height on both sides of fabric to ensure smooth operation within ShadeLoc channels.

7. Products:
   a. MechoShade Systems LLC Inc; EcoVeil Sheer - 6750 Series (3% open): www.mechoshade.com.

2.04 ROLLER SHADE FABRICATION

A. Field measure finished openings prior to ordering or fabrication.

B. Dimensional Tolerances: Fabricate shades to fit openings within specified tolerances.
   1. Vertical Dimensions: Fill openings from head to sill with 1/2 inch (13 mm) space between bottom bar and window stool.
   2. Horizontal Dimensions - Outside Mounting: Cover window frames, trim, and casings completely.

C. At openings requiring continuous multiple shade units with separate rollers, locate roller joints at window mullion centers; butt rollers end-to-end.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine finished openings for deficiencies that may preclude satisfactory installation.

B. Start of installation shall be considered acceptance of substrates.

3.02 PREPARATION

A. Prepare surfaces using methods recommended by manufacturer for achieving best result for substrate under the project conditions.

B. Coordinate with window installation and placement of concealed blocking to support shades.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions and approved shop drawings, using mounting devices as indicated.

B. Adjust level, projection, and shade centering from mounting bracket. Verify there is no telescoping of shade fabric. Ensure smooth shade operation.

3.04 SYSTEM STARTUP

A. Motorized Shade System: Provide services of a manufacturer's authorized representative to perform system startup.

3.05 CLEANING

A. Clean soiled shades and exposed components as recommended by manufacturer.

B. Replace shades that cannot be cleaned to "like new" condition.

3.06 CLOSEOUT ACTIVITIES

A. See Section 01 78 00 - Closeout Submittals, for closeout submittals.

B. See Section 01 79 00 - Demonstration and Training, for additional requirements.

C. Training: Train Owner's personnel on operation and maintenance of system.
   1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.

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2. Provide minimum of two hours training by manufacturer's authorized personnel at location designated by the Owner.

3.07 PROTECTION

A. Protect installed products from subsequent construction operations.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

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