

**Stone Hill TC - Tract 30  
18708 Limestone Commercial Drive  
Pflugerville, TX 78660**

**ARCHITECT**

Osborn & Vane Architects, Inc.  
2000 Bering Drive, Suite 210  
Houston, Texas 77057  
David Bryant  
[dbryant@ovarc.com](mailto:dbryant@ovarc.com)

**MECHANICAL, ELECTRICAL & PLUMBING ENGINEERS**

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**CIVIL ENGINEERS**

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Houston, Texas 77377  
956-206-7147  
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**LANDSCAPE ARCHITECT**

CMB Landscape Architecture, LP  
18135 FM 362  
Navasota, TX 77868  
832-428-1209  
Charles Bridges  
[cbridges@cmblandarch.com](mailto:cbridges@cmblandarch.com)



Project No. 24071  
Date: 07/31/2025

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INSTRUCTIONS TO BIDDERS – Section 00100

To be considered, Bids must be in accordance with these Instructions to Bidders:

**SUBMITTAL:**

1. Opening Date & Time: Will be provided by Owner.
2. Email Bids To:

NewQuest Properties  
8807 W. Sam Houston Pkwy. N  
Suite 200  
Houston, TX 77040

Osborn & Vane Architects, Inc.  
2000 Bering  
Suite 210  
Houston, TX 77057

Attn: Ben Keillor  
Phone: 281-477-4397  
[bkeillor@newquest.com](mailto:bkeillor@newquest.com)

Attn: David Bryant  
Phone: 713-781-5262  
[dbryant@ovarc.com](mailto:dbryant@ovarc.com)

3. The bids shall be opened privately and read privately.
4. Evaluation of bids and decision on their acceptance shall follow the bid opening privately by Owner.

**BASIS OF BID:**

1. The bidder must include the lump-sum price, all alternates, isolated prices and other information requested on the Bid Form; failure to comply might be cause for rejection.
2. Segregated Bids or assignments will not be considered.

**SUBCONTRACTORS:**

1. Names of principal subcontractors must be listed and attached to the Bid.
2. There shall be only one subcontractor name for each classification listed.
3. All subcontractors must be licensed in the jurisdiction in which construction will occur

**DOCUMENTS:**

1. Bona Fide prime bidders selected by the Owner will be provided access to the SharePoint website
2. Bidders will purchase documents at their own expense

**EXAMINATION:**

1. Bidders shall carefully examine the documents and the construction site to obtain first-hand knowledge of existing conditions.
2. Contractors will not be given extra payments for conditions which can be

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determined by examining the site and documents.

QUESTIONS:

1. Submit all questions about the Bid Documents in writing to the Architect and Owner.
2. Replies will be issued to all bidders of record as Addenda to the Bid Documents will become part of the Contract.
3. The Architect and Owner will not be responsible for oral clarification.
4. Questions received less than 72 hours before the bid opening cannot be answered.

SUBSTITUTIONS:

1. Refer to Section 01630.

PREPARATION OF BIDS:

1. Bids shall be made on a Bid Form containing the information listed on sample Bid Form attached in the Project Manual.
2. Bids shall be signed with name typed below signature.
3. Where bidder is a corporation, bids must be signed with the legal name of the corporation followed by the name of the legal signatures of an officer authorized to bind the corporation to a contract.

INSURANCE:

1. Refer to General Conditions and Supplementary Conditions.

MODIFICATION AND WITHDRAWAL:

1. Bids may not be modified after submittal.
2. Bidders may withdraw bids at any time before bid opening, but may not resubmit them.
3. Bids may not be withdrawn or modified after the bid opening for 60 days from the bid opening date, except where the award of Contract has been delayed.

DISQUALIFICATIONS:

1. The Owner reserves the right to disqualify bids, before or after opening, upon evidence of collusion with intent of defraud or other illegal practices upon the part of the bidder.

EXECUTION OF CONTRACT:

1. The Owner reserves the right to accept any bid, and to reject any and all bids, or to negotiate contract terms with the various Bidders, when such is deemed by the Owner to be in his best interest.

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EVIDENCE OF EXPERIENCE:

1. Each Bidder shall be prepared, if so requested by the Owner, to present evidence of his experience, qualifications, and financial ability to carry out the terms of the Contract.

COMMENCEMENT OF WORK:

1. Notwithstanding any delay in the preparation and execution of the formal Contract Agreement, each Bidder shall be prepared, upon written notice of bid acceptance, to commence work within 5 days following receipt of official written order to the Owner to proceed, or on date stipulated in such order.
2. The accepted Bidder shall assist and cooperate with the Owner in preparing the formal Contract Agreement, and within 30 days following its presentation, a contract agreement will be issued, that Agreement being the latest edition of the A.I.A. Document A101, Standard Form of Agreement Between Owner and Contractor where the basis of payment is stipulated sum.

END OF SECTION

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BID FORM - Section 00300

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VIA EMAIL BID TO: Ben Keillor (NewQuest Properties)  
[bkeillor@newquest.com](mailto:bkeillor@newquest.com)

Copy: David Bryant (Osborn & Vane Architects, Inc.)  
[dbryant@ovarc.com](mailto:dbryant@ovarc.com)

I have received the documents for the project referenced above consisting of the Project Manual and the following drawings:

Architectural	_____	thru	_____
Civil	_____	thru	_____
Structural	_____	thru	_____
Electrical	_____	thru	_____
Plumbing	_____	thru	_____
Landscaping	_____	thru	_____

1. The undersigned bidder after careful examination of the plans, specifications, and site, hereby agrees to furnish all material, labor, equipment, tools, and supervision.

A. Bid for Sitework \_\_\_\_\_ Dollars  
(\$ \_\_\_\_\_)

B. Bid for Building Shell \_\_\_\_\_ Dollars  
(\$ \_\_\_\_\_)

C. Bid for 8" Water Line Extension \_\_\_\_\_ Dollars  
(\$ \_\_\_\_\_)

D. Total combined bid for A, B and C \_\_\_\_\_ Dollars  
(\$ \_\_\_\_\_)

**Bidder will do everything necessary to complete the work in \_\_\_\_ calendar days from the Commencement of Construction.**

2. The following Addenda are included:

Nos.	_____	_____	_____	_____	_____
Dates	_____	_____	_____	_____	_____

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BID FORM - Section 00300

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3. Alternates: Include any alternates noted in the Contract Documents or any Addenda.  
Alternates include Profit and Overhead

I agree that if any or all the alternates are incorporated and accepted, I will adjust the Base Bid by the amount indicated opposite the alternates listed below:

Alternate No. 1: State the change to the sum above for a Performance - Labor/Material Payment Bond  
Add \_\_\_\_\_ Dollars  
(\$ \_\_\_\_\_)

Alternate No. 2: State the change to the sum above to add single 3'-0" x 7'-0" building standard aluminum and glass door in **proposed** storefront  
Add \_\_\_\_\_ Dollars  
(\$ \_\_\_\_\_)

Alternate No. 3: State the change to the sum above to add double 3'-0" x 7'-0" building standard aluminum and glass doors in **proposed** storefront  
Add \_\_\_\_\_ Dollars  
(\$ \_\_\_\_\_)

Alternate No. 4: State the change to the sum above to modify **installed** storefront to receive building standard 3'-0" x 7'-0" single door, aluminum storefront and glass  
Add \_\_\_\_\_ Dollars  
(\$ \_\_\_\_\_)

Alternate No. 5: State the change to the sum above to modify **installed** storefront to receive building standard double 3'-0" x 7'-0" doors, aluminum storefront and glass  
Add \_\_\_\_\_ Dollars  
(\$ \_\_\_\_\_)

Alternate No. 6: State the change to the sum above to provide and install one building standard painted 3'-0" x 7'-0" hollow metal door and frame in **proposed** concrete tilt wall  
Add \_\_\_\_\_ Dollars  
(\$ \_\_\_\_\_)

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BID FORM - Section 00300

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Alternate No. 7: State the change to the sum above to cut an opening for one building standard 3'-0" x 7'-0" painted hollow metal door and frame including concrete in slab leave-out to receive threshold in **installed** concrete tilt wall

Add \_\_\_\_\_ Dollars  
(\$ \_\_\_\_\_)

Alternate No. 8: State the change to the sum above for not providing joint sealant shown in saw cut control joint detail on the civil drawings

Deduct \_\_\_\_\_ Dollars  
(\$ \_\_\_\_\_)

Alternate No. 9: State the change to the sum above to seal the concrete sidewalk around the building perimeter

Add \_\_\_\_\_ Dollars  
(\$ \_\_\_\_\_)

Alternate No. 10: State the change provide a 60 mil measuring fastened TPO roofing system in lieu of the specified modified bitumen roofing system

Deduct \_\_\_\_\_ Dollars  
(\$ \_\_\_\_\_)

4. The bid includes all labor and accessories necessary for completion of the work related to items bid directly to the Owner.

5. Unit Prices: Any items on which unit prices have been requested; Unit Prices include profit and overhead

Unit Price UPA: One hundred cubic yards of imported select fill (including placement and compaction per geotech)

Unit Price UPB: One hundred cubic yards of imported common fill (including placement and compaction per geotech)

Unit Price UPC: One hundred cubic yards of dirt haul off

Unit Price UPD: Ten lineal ft of curb

Unit Price UPE: One thousand s.f. of sod

Unit Price UPF: One thousand s.f. of hydromulch

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Unit Price UPG: One hundred square ft. of light duty concrete paving including specified reinforcing and earthwork

Unit Price UPH : One hundred square ft. of medium duty concrete paving including specified reinforcing and earthwork

Unit Price UPI: One hundred square ft. of heavy duty concrete paving including specified reinforcing and earthwork

Unit Price UPJ: Ten lineal of storm sewer, including installation

Unit Price UPK: Ten lineal of underground domestic water, including installation

Unit Price UPL: Ten lineal of sanitary sewer, including installation

Unit Price UPM: Ten lineal of underground fire main, including installation

6. Extra Work: The undersigned agrees that should any change in the Work or extra Work be ordered where unit prices are set out above are not applicable, the following applicable percentage shall be added to material and labor costs to cover overhead and profit:

A. Allowance to Contractor for overhead and profit for extra Work performed by Contractor’s own forces: 5 Percent

B. Allowance to Contractor for overhead and profit for extra Work performed by a subcontractor and supervised by Contractor. 5 Percent

7. Isolated Prices: Any items on which prices have been requested. The price of these items has been included in the base bid. Isolated prices include overhead and profit.

8. Official Substitution Sheet:

**Bid shall be based on those brands and items called for on the plans and in the specifications.** Bidders desiring to offer substitutions for specified brands or items shall list such proposed substitutions below and state the amount, if any, to be added to or deducted from the bid. **No such substitutions shall be incorporated into the work without prior written consent of the Owner.**

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BID FORM - Section 00300

DIVISION	ITEM SPECIFIED	SUBSTITUTION	ADD	DEDUCT
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

9. No later than 3 hours after the bids are due, the following information must be faxed to the owner and architect. The principal subcontractors proposed for use on this project are:

- A. Earthwork \_\_\_\_\_
- B. Concrete Foundation \_\_\_\_\_
- C. Concrete Flatwork \_\_\_\_\_
- D. Masonry \_\_\_\_\_
- E. Structural Steel \_\_\_\_\_
- F. Steel Studs \_\_\_\_\_
- G. Storefront Systems \_\_\_\_\_
- H. Waterproofing \_\_\_\_\_
- I. Door & Frames \_\_\_\_\_
- J. Rough Carpentry \_\_\_\_\_
- K. Roofing/Flashing \_\_\_\_\_
- L. Plaster / EIFS \_\_\_\_\_
- M. Paint \_\_\_\_\_
- N. Aluminum Canopy \_\_\_\_\_
- O. Plumbing \_\_\_\_\_
- P. Electrical \_\_\_\_\_
- Q. Fire Protection \_\_\_\_\_
- R. Landscaping \_\_\_\_\_

The Owner reserves the right to reject any proposed subcontractor(s). Subcontractors proposed by the bidder must be used on the work for which they are proposed and shall not be changed without the written approval by the Owner. Rejection of proposed subcontractors shall be pre-emptory; it will not be expected or required to state cause.

The undersigned hereby acknowledges that the Owner reserves the right to accept any of the proposals submitted or to reject all proposals and to waive any irregularities of informalities in any proposal, as his interest are best served. The undersigned further agrees to honor this bid for a minimum of sixty (60) days after receipt of bid.

10. Listed below are the persons who will be in charge of construction:

Project Manager: \_\_\_\_\_

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BID FORM - Section 00300

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Construction  
Superintendent: \_\_\_\_\_

Others (with titles) \_\_\_\_\_

11. A Certificate of Insurance indicating insurance and its limits Contractor currently has in force accompanies this bid proposal. If Owner elects to modify Contractor’s insurance causing additional expense to Contractor, the contract sum shall be increased by that additional expense.

12. Qualifications:

In submitting this proposal, it is hereby understood that the Owner reserves the unrestricted privilege to reject any and all bids, or parts of bids.

The bidder is licensed in the jurisdiction in which the work is being performed.

Should the Owner deem it necessary to require the specified bonds (refer to Instructions to Bidders, Section 00100), the undersigned certifies that his state of business and financial affairs is such that the Owner will find it possible to secure bonds in the amount of 100% of the contract amount.

The statutory bond, which prevents a lien claimant from filing suit against Owner or Owner’s property, must (i) be in the sum at least equal to the total of the original contract amount (ii) be in favor of the Owner, (iii) have the written approval of the Owner endorsed on it, (iv) be executed by both the original contractor as principal and corporate surety authorized to do business in Texas, and (v) be conditioned on the prompt payment of all labor, subcontracts, materials, and payment of all other items required pursuant to Section 53.202 of the Texas property Code, or any successor legislation.

The surety company providing these bonds must be listed in the current U.S. Treasury Department’s list of Surety Companies Acceptable On Federal Bonds with underwriting limitation at least equal to the amount of the bond. In addition, the surety company must be authorized to do business in the State of Texas.

The additional premium for both statutory and performance bonds will be in the amount of \$ \_\_\_\_\_. If the Owner elects to have this project bonded, it is understood that the Owner will pay the premiums for such bonds.

13. In consideration of the foregoing, the undersigned hereby agrees to enter into a contract with the Owner within five (5) days of receipt of the Contract Agreement from the Owner, and to faithfully execute said contract according to its terms mutually agreed upon.

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BID FORM - Section 00300

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BID FORM - Section 00300

OFFICIAL ADDRESS:

\_\_\_\_\_  
\_\_\_\_\_

FIRM NAME:

\_\_\_\_\_

BY: \_\_\_\_\_

DATE: \_\_\_\_\_

TITLE: \_\_\_\_\_

State whether a:

( ) Corporation

( ) Partnership

( ) Sole Proprietorship

Respectfully submitted,

\_\_\_\_\_  
Name of Bidder

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

\_\_\_\_\_  
Business Address

\_\_\_\_\_  
Telephone Number

\_\_\_\_\_  
Date

SEAL

(If bidder is a corporation)

END OF SECTION

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FORM OF AGREEMENT - Section - 00500

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The “Standard Form of Agreement Between Owner and Contractor – “Stipulated Sum”, AIA Document A101. The contractor is responsible for using the latest edition. **Where the following Addendum conflicts with Supplemental Conditions, Section 00800, the more stringent requirement governs.**

END OF SECTION

**ADDENDUM  
TO  
AIA DOCUMENT A101-2017  
STANDARD FORM OF AGREEMENT BETWEEN  
OWNER AND CONTRACTOR  
BETWEEN  
A-S XXX  
AND  
CONTRACTOR**

The following modifications are made to the AIA Document A101 (2017 Edition) to which this Addendum is attached:

A. Subparagraph 5.1.8 is hereby deleted in its entirety and replaced with the following:

"5.1.8 If final completion of the Work is thereafter materially delayed through no fault of the Contractor, the Owner shall pay the Contractor any additional amounts in accordance with Section 9.10.3 of AIA Document A201-2017."

B. Paragraph 5.3 is modified by adding "0%" at the end thereof.

The following modifications are made to the provisions of the General Conditions of the Contract for Construction, AIA Document A201 (2017 Edition) (the "General Conditions"), which are in addition to modifications made to the General Conditions as attached to and made a part of the Agreement. The modifications shall supersede the printed terms and conditions of the General Conditions with respect each portion, which is modified. Except as hereby modified and amended, the General Conditions are and shall remain part of the Agreement. The rules for capitalization and interpretation contained in Paragraphs 1.3 and 1.4 of the General Conditions shall apply to this Addendum. Where conflicts occur with the Supplementary Conditions, Section 00800, this addendum governs.

A. All references to the "Architect" in the standard form of agreement between owner and contractor and in the general conditions shall be read as referring to the Owner or Owner's authorized representative, unless an Architect is engaged by Owner or unless Owner designates the Architect to act pursuant to 1.2.1 below; provided that it is acknowledged that XXX Architects has done the design work for the Project, and if requested by Owner shall as appropriate sign draw requests and other documentation concerning the work as reasonably required by Owner's lender. In no event shall the Owner have any liability or responsibility for the design of the work.

B. Subparagraph 1.2.1 is deleted in its entirety and replaced with the following:

"1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by any one Contract Document shall be as binding as if required by all. Any differences between the requirements of the Drawings and the Specifications or any differences noted within the Drawings themselves or within the Specifications themselves have been referred to the Owner and Architect by Contractor prior to the submission of bids and have been clarified by an Addendum issued to all bidders. If any differences or conflicts within or between the Contract Documents were not called to the Owner's and the Architect's attention, the Architect shall decide which of the conflicting requirements will govern based upon the most stringent of the requirements, and, subject to the approval of the Owner, the Contractor shall perform the Work at no additional cost and/or time to the Owner in accordance with the Architect's decision. Work not covered in the Contract Documents will not be required unless it is consistent therewith and is reasonably inferable therefrom as being necessary to procure the intended results."

Exhibit F

C. Subparagraph 2.3.4 is deleted in its entirety and replaced with the following:

"2.3.4 To the extent required for the performance of the Work, the Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The furnishing of such surveys and descriptions shall not relieve the Contractor from its duties under the Contract Documents in general and Subparagraphs 1.2.2 and 1.2.3 of the General Conditions."

D. Subparagraph 3.2.1 is deleted in its entirety and replaced with the following:

"3.2.1 In addition to and not in derogation of Contractor's duties under Subparagraphs 1.5.2 and 1.2.1 hereof, Contractor shall carefully study and compare the Contract Documents with each other and with information furnished by the Owner pursuant to Subparagraph 2.2.3 and shall at once report to the Owner and Architect errors, inconsistencies or omissions discovered. The Contractor shall not be liable to the Owner or Architect for damage resulting from undiscovered errors, inconsistencies or omissions in the Contract Documents.

E. Subparagraph 3.3.2 is deleted in its entirety and replaced with the following:

"3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons performing portions of the Work under a contract or other arrangement with the Contractor. It is agreed that the relationship between Contractor and Owner shall be that of an independent contractor and not of an agent or employee."

F. Paragraph 3.3 is modified by adding the following as Subparagraph 3.3.4:

"3.3.4 The bench marks shall be maintained and established by others. The Contractor shall establish and maintain all other grades, lines and levels necessary for the Work, report any errors or inconsistencies to the Owner and Architect before commencing Work and review the placement of the building(s) and permanent facilities on the site with the Owner after all lines are staked out and before the foundation Work is started. Contractor shall provide access to the Work for the Owner, persons designated by Owner and governmental inspectors, any non-permitted encroachment created by Contractor and showing on the "as built survey" shall be cured by Contractor at Contractor's sole expense in a manner acceptable to Owner and Owner's title insurance company. All encroachments shall be remedied by Contractor prior to the release of project retainages. "

G. Paragraph 3.5 is modified by adding the following as Subparagraphs 3.5.3 and 3.5.4:

"3.5.3 All warranties shall include labor and material and shall be signed by the manufacturer or Subcontractor as the case may be and countersigned by the Contractor. All warranties shall be addressed and delivered to the Owner upon completion of the Work and before or with the submission of request for final payment.

"3.5.4 The Contractor shall issue in writing to the Owner as a condition precedent to final payment a "General Warranty" reflecting the terms and conditions of this Paragraph 3.5 for all Work under the Contract. This General Warranty shall be assignable. Subject to subparagraph 3.5.4 herein below, except where a longer warranty time is specifically called for in the Specification Sections, the General Warranty shall be for twelve (12) months and shall be in form and content otherwise satisfactory to Owner.

## Exhibit F

"The Contractor shall warrant for a period of twelve (12) months that the building(s) shall be watertight and leak-proof at every point and in every area, except where leaks can be attributed to damage to the building(s) by external forces beyond the Contractor's control, and the established design limits for the building. Contractor shall, immediately upon notification by the Owner of water penetration, determine the source of water penetration and, at Contractor's own expense, do all work necessary to make the building(s) watertight. Contractor shall also, at its own expense, repair or replace all other damaged material, finishes and furnishings, damaged as a result of this water penetration, to return the building(s) to its (their) original condition.

"The Contractor will take all action necessary to assure that all product and manufacturer's warranties are assigned to Owner and that Owner receives the maximum coverage and benefit from all such warranties.

"If for any reason the Contractor cannot warrant any part of the Work using material or construction methods which have been specified, or shown, it shall notify the Owner and Architect in writing, as soon as the issue is discovered, giving reasons, together with the name of product and data on substitution it can warrant."

H. Subparagraph 3.7.1 is modified by adding the following at the end thereof:

"The Contractor shall procure all certificates of inspection, use, and occupancy, and give all notices necessary (except to Tenants), and incidental to the due and lawful prosecution of the Work. Certificates of inspection, use, and occupancy shall be delivered to the Owner upon completion of the Work in sufficient time for occupation of the project in accordance with the approved schedule for the Work."

I. Subparagraph 3.7.3 is modified by adding the following after "to correction" in the last line thereof:

", which costs shall include, without limitation, all fines and penalties as well as all other losses and expenses arising out of such violation of law, statute, ordinance, rule or regulation, as it relates to Contractor work"

J. Subparagraph 3.10.1 is deleted in its entirety and replaced with the following:

"3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's review and approval a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised as required herein and at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work. The schedule shall indicate the proposed starting and completion dates for the various subdivisions of the Work as well as the totality of the Work. The schedule shall be updated every thirty (30) days and submitted to Owner and Architect with Contractor's Applications for Payment. Each schedule shall contain a comparison of actual progress with the estimated progress for such point in time stated in the original schedule. If any schedule submitted sets forth a date for Substantial Completion for the Work or any phase of the Work beyond the scheduled Date(s) of Substantial Completion established in the Contract (or the original schedule approved by Owner as the same may be extended as provided in the Contract Documents), then Contractor shall submit to Architect and Owner for their review and approval a narrative description of the means and methods which Contractor intends to employ to expedite the progress of the Work to ensure timely completion of the various phases of the Work as well as the totality of the Work. To ensure such time completion, Contractor shall, at Owner's direction, take all necessary action including, without limitation, increasing the number of personnel and labor on the Project and implementing overtime and double shifts. In such event, Contractor shall not be entitled to an adjustment in the Contract Sum or the schedule if the cause of delay is attributable in whole or in substantial part to Contractor."

Exhibit F

K. Paragraph 3.15 is modified by adding the following as Subparagraph 3.15.3:

“3.15.3 The Contractor shall be responsible for damaged or broken glass, which is damaged by Contractor or its’ Subcontractors and at completion of the Work shall replace such damaged or broken glass. The Contractor shall perform the following final cleaning at completion of the Work:

- (a) Remove all temporary protections; and
- (b) Remove marks, stains, fingerprints and other soil or dirt from all surfaces and other work; and
- (c) Remove spots, mortar, plaster, soil and paint from ceramic tile, marble, and other finish materials from all surfaces and other work; and
- (d) Clean fixtures, cabinetwork and equipment, removing stains, paint, dirt, and dust and leave in an undamaged and new condition; and
- (e) Clean all surfaces and other work in accordance with recommendations of the manufacturer.”

L. The last sentence of Paragraph 3.17 is deleted in its entirety and replaced with the following:

“However, if the Contractor has reason to believe that the required design, process or product is an infringement of a copyright or a patent, the Contractor shall be responsible for the loss unless such information is promptly furnished to the Architect.”

M. Paragraph 4.2 is modified by adding the following as Subparagraph 4.2.15:

“4.2.15 In reviewing the quality and progress of the Work and submittals received from the Contractor, the Architect is acting solely for the convenience of the Owner in following the Work. Neither the Owner nor Architect has any responsibility to assist the Contractor in the supervision or performance of the Work. Unless otherwise expressly agreed in writing by Owner in each instance, no action, approval or omission to act or failure to advise the Contractor as to any matter by the Owner or Architect shall in any way relieve the Contractor from its responsibility for the performance of the Work in strict accordance with the Contract Documents.”

N. Subparagraph 6.1.1 is deleted in its entirety and replaced with the following:

“6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces and to award separate contracts in connection with other portions of the Project or other construction or operations on the site; provided, however, Owner will use commercially reasonable efforts to prevent Owner's work and such separate contracts from unreasonably interfering with Contractor's Work.”

O. Subparagraph 9.3.1 is modified by adding the following at the end thereof:

“The Application for Payment shall be on a form as provided by the Owner and shall be accompanied by a certification by an officer of Contractor to the effect that there are no known mechanics', materialmen's or laborers' liens or claims or any other liens or claims, legal or equitable, contractual, statutory or constitutional, outstanding or known to exist at the date of this Application; all bills due and payable with respect to the Work have been paid to date or are included in the amount requested in the current Application and there is no known basis for the filing of any mechanics', materialmen's or laborers' lien or

Exhibit F

claim or any other lien or claim, legal or equitable, contractual, statutory or constitutional, on the Work; and waivers and releases from all Subcontractors, laborers and materialmen for Work done and material furnished have been obtained in such form as to constitute an effective waiver and release of all such liens and claims under the laws of the state within which the Project is located and shall be delivered to Owner together with Contractor's waiver and release of liens and claims at the time of submission of the Application for Payment."

P. Subparagraph 9.6.1 is modified by adding the following at the end thereof:

"Notwithstanding the foregoing, the Owner may refuse to make payment on any Certificate for Payment (including, without limitation, the final Certificate for Payment) while any default under any of the Contract Documents remains uncured, and in such case, the Owner shall not be deemed in default by reason of withholding such payment."

Q. Subparagraph 9.6.7 is modified by adding the following after "this provision" in the last line thereof:

“; provided, however, Owner does not waive any right or remedy provided by law”

R. The last sentence of Subparagraph 9.6.8 is deleted in its entirety and replaced with the following:

“Within ten (10) days of the filing of such lien or other claim for payment, the Contractor shall remove such lien (or substitute a surety bond for the property against which the lien or other claim for payment has been asserted in accordance with applicable law).”

S. Subparagraph 9.8.1 is deleted in its entirety and replaced with the following:

"9.8.1 Substantial Completion is the stage in the progress of the Work when the Work, or designated portion thereof which the Owner agrees to accept separately, is sufficiently completed in accordance with the Contract documents so the Owner can occupy or utilize the Work for its intended use. The Work will not be considered suitable for Substantial Completion review until (i) all Project systems included in the Work are operational as designed and scheduled, (ii) all designated or required governmental inspections that are under the control of the Contractor have been performed and approved by the necessary governmental entities, (iii) all designated or required certifications have been obtained and posted, (iv) Owner's personnel have been instructed in the operation of all systems in a manner satisfactory to Owner, (v) all final finishes required by the Contract are in place, and (vi) the only remaining Work shall be nonmaterial and of a "punch list" nature, so that the Owner and/or Owner's tenants can occupy the building on that date, and the completion of the Work by the Contractor would not materially interfere or hamper the Owner's or Owner's tenants' (or those claiming by, through or under Owner) normal business operations. As a further condition of Substantial Completion acceptance, the Contractor shall certify that all remaining Work will be completed within thirty (30) consecutive calendar days (or as otherwise agreed upon in writing by Owner and the Contractor) following the Date of Substantial completion."

T. Subparagraph 9.10.4 is deleted in its entirety.

U. Paragraph 10.4 is modified by adding the following after "Article 7" in the last line thereof:

“; provided, however Contractor shall receive additional compensation and/or an extension of time on account of an emergency only to the extent (i) Owner was fully informed by Contractor of the risks involved in the rise of such materials or substances before they were brought to the site, and (ii) such

Exhibit F

emergency was not caused by the negligence or willful misconduct of Contractor, Contractor’s subcontractors, or anyone performing work on behalf of or at the request of Contractor or its subcontractor”

V. Article 11 is modified by adding the following as Paragraph 11.6:

"11.6 Notwithstanding anything to the contrary in any other provision of this Agreement (including Exhibit A attached hereto addressing “Insurance and Bonds”) or these General Conditions, Contractor will maintain all insurance coverage specified in this Paragraph 11.6. Prior to beginning work, Contractor and each subcontractor must furnish to Owner copies of current policies of insurance, with Owner and Owner's lender named as additional insured and with endorsements for waiver of subrogation as to said additional insured, as follows:

"Coverage Minimum Amounts and Limits

"1. Worker's Compensation.

Worker's Compensation	Statutory Limits
Employer's Liability	\$1,000,000

This policy shall include a Waiver of Subrogation in favor of all Indemnitees (as defined in Section 11.7).

"2. Commercial General Liability.

Bodily Injury/ Property Damage (Occurrence Basis)	\$1,000,000 each occurrence, or equivalent, subject to a \$2,000,000 aggregate applicable to the Project
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This policy shall be on a form acceptable to Owner, be endorsed to include the Indemnitees as additional insureds, contain cross-liability and severability of interest endorsements, state that this insurance is primary insurance as regards any other insurance carried by an Indemnitee, and shall include the following coverages:

- a. Premises/Operations;
- b. Products and Completed Operations;
- c. Contractual Liability, insuring the Indemnity sections of this Agreement;
- d. Broad Form Property Damage (including Completed Operations);
- e. Delete Exclusions relative to Collapse, Explosion and Underground Hazards; and,
- f. Personal Injury Liability with employee and contractual exclusions removed; and
- g. Comprehensive Automobile Liability (\$1,000,000 combined single limit for bodily injury and property damage.

"This policy shall be on a standard form written to cover all owned, hired and non-owned automobiles. The policy shall be endorsed to include the Indemnitees as additional insureds, contain cross-liability and severability of interest endorsements, and state that this insurance is primary insurance as regards any other insurance carried by any Indemnity.

"3. Umbrella Excess Liability Insurance

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Bodily Injury/	\$10,000,000 per occurrence
Property Damage	\$10,000,000 aggregate
(Occurrence Basis)	

"This property shall be written on a following form umbrella excess basis above the coverages required under this Article 11 and shall include all Indemnitees as additional insured.

"4. Contractor shall carry completed value form builder's risk property insurance (subject to a deductible per loss not to exceed \$5,000.00) upon the entire Work for 100% of the full replacement cost value thereof (which shall include all soft costs, including, without limitation, architectural, engineering and consultant fees, loss of rental income, interest on money borrowed to finance construction, legal and accounting fees and other costs to renegotiate and prepare revised contracts and other documents, general overhead and admin expenses, insurance premiums, permit and inspection fees, advertising and promotional expenses, and realty taxes and realty assessments, ). This policy shall include the interests of the Owner and all other Indemnitees, and Contractor, as named insureds, as their interest may appear, and shall be on an "All Risk" basis for physical loss or damage including, without limitation, fire, flood, earthquake, subsidence, hail, theft, vandalism and malicious mischief and shall include, without limitation, coverage for portions of the Work while it is stored off the site or is in transit. This policy shall provide, by endorsement or otherwise, that Contractor shall be solely responsible for the payment of all premiums under the policy. Any insured loss or claim of loss shall be adjusted by the Owner, and any settlement payments shall be made payable to the Owner, as trustee for the requirements of any applicable (adjustable with Contractor and made payable to Owner) mortgagee clause. Upon the occurrence of an insured loss or claim of loss, monies received will be held by Owner who shall make distribution in accordance with an agreement to be reached in such event between Owner and Contractor. If the parties are unable to agree between themselves on the settlement of the loss, such dispute shall be submitted to a court of competent jurisdiction to determine ownership of the disputed amounts but the Work of the Project shall nevertheless progress during any such period of dispute without prejudice to the rights of any party to the dispute. The Contractor shall be responsible for any loss within the deductible area of the policy. The builder's risk policy described herein shall include a Waiver of Subrogation in favor of all Indemnitees."

W. Article 11 is modified by adding the following as Paragraph 11.7:

"11.7 INDEMNIFICATION. To the fullest extent permitted by applicable law, Contractor shall and does agree to indemnify, protect, defend and hold harmless the Owner, Owner's partners, Owner's lenders, if any, Architect, and each of the aforementioned parties respective affiliated companies, partners, successors, assigns, heirs, legal representatives, devisees, trustees, officers, directors, shareholders, employees and agents (collectively, "Indemnitees") for, from and against all liabilities, claims, damages, losses, liens, fines, penalties, costs, causes of action, suits, judgments and expenses, (including court costs, attorney fees and costs of investigation), of any nature, kind or description of any person or entity, directly or indirectly arising out of, caused by, or resulting from (in whole or in part), (1) the Work performed hereunder, or any part thereof, (2) the Contract, or (3) any act or omission of Contractor, any Subcontractor, anyone directly or indirectly employed by them, or anyone that they control or exercise control over, (collectively, "Liabilities"). The only Liabilities with respect to which Contractor's obligation to indemnify the Indemnitees does not apply is with respect to Liabilities resulting from the sole negligence or willful misconduct of an Indemnitee. This Indemnification shall not be limited to damages, compensation or benefits payable under insurance policies, workers' compensation acts, disability benefit acts or other employees' benefit acts. The provisions of this Section shall be cumulative and in addition to any other indemnities provided."

X. Paragraph 12.3 is modified by making the current paragraph titled "Acceptance of Nonconforming Work" Subparagraph 12.3.1 and adding the following as Subparagraph 12.3.2:

"12.3.2 No change in the Work, whether by way of alteration or addition to the Work, shall be the basis of any addition to the Contract Sum or a change in the Contract Time unless and until such alteration or

Exhibit F

addition has been authorized by a Change Order executed and issued in accordance with and in strict compliance with the requirements of the Contract Documents. This requirement is of the essence of the Contract Documents. Accordingly, no course of conduct or dealing between the parties, nor express or implied acceptance of alterations or additions to the Work, and no claim that the Owner has been unjustly enriched by any alteration or addition to the Work whether or not there is in fact any such unjust enrichment, shall be the basis for any claim to an increase in the Contract Sum or change in the Contract Time."

Y. Article 13 is modified by adding the following as Paragraph 13.6:

"13.6 ATTORNEYS FEES AND LIEN CLAIMS.

"13.6.1 If any action at law or in equity is necessary to enforce or interpret the terms of the Contract, the prevailing party shall be entitled to reasonable attorneys' fees, costs, and necessary disbursements in addition to any relief to which it may be entitled."

"13.6.2 If Contractor has been paid by Owner, Contractor shall save and keep Owner, Owner's loan proceeds and Owner's property free from all mechanics' and materialmen's liens and all other liens and claims, legal, or equitable, arising out of Contractor's Work under the Agreement. In the event any such lien or claim is filed by anyone claiming by, through or under Contractor, Contractor shall remove and discharge same within ten (10) days of the filing thereof. If a lien is contested, then Contractor shall bond around the contested lien in a manner acceptable to Owner and Owner's title company"

Z. Article 13 is modified by adding the following as Paragraph 13.7:

"13.7 MECHANICS 'S AND MATERIALMEN'S LIENS

13.7.1 Contractor shall and hereby does subordinate any and all liens, rights and interest (whether choate or inchoate and including, without limitation, all mechanics' and materialmen's liens under the applicable laws of the State of Texas, whether contractual, statutory or constitutional) owned, claimed or held, or to be owned, claimed or held by Contractor in and to any part of the Work or the property on which the Work is performed, to the liens securing payments of sums now or hereafter borrowed by Owner in connection with the development, design and/or construction of the Project and to all liens, rights and interests of any long term ground lessee of the Project. Contractor shall execute such further and additional evidence of the subordination of lien rights and interests as Owner, Owner's interim or permanent lenders, or any long-term ground lessee may require. The subordination of lien is made in consideration of and as an inducement to the execution and delivery of the Contract Documents, and shall be applicable despite any dispute between the parties hereto or any others, or any default by Owner under the Contract Documents or otherwise.

"13.7.2 Contractor shall include in every subcontract relating to the Work to which it is a party and in each and every lower tier subcontract, provisions (1) that the person or entity doing Work, performing labor or furnishing materials pursuant to each labor or furnishing materials pursuant to each subcontract agrees to subordinate any mechanics' or materialmen's lien on any part of the Work or the property on which the Work is performed or materials furnished under the Contract Documents or such subcontract, to the liens securing payment of sums now or hereafter borrowed by Owner in connection with the development, design and/or construction of the Project, (2) that the required subordinations are made in consideration of and as an inducement to the execution and delivery of the Contract Documents and the subcontract in which it appears, and shall be applicable despite any dispute between or among Owner, Contractor, or any Subcontractor or any default by owner, Contractor or any Subcontractor under the Contract Documents or any other subcontract or agreement, and (3) that Owner, Owner's interim and permanent lenders and any long term ground lessee are express third-party beneficiaries who have supplied consideration for such subordinations."

Exhibit F

AA. The second line of Subparagraph 14.1.3 is deleted in its entirety and replaced with the following:

“If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days’ written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed and actual out-of-pocket costs caused directly by such termination.”

BB. The fifth line of Subparagraph 14.1.4 is modified by adding “written” immediately before “notice”.

CC. Subparagraph 14.4.1 is modified by adding the following after “without cause” in the last line thereof:

“; provided, however, if Owner terminates the Contract without cause pursuant to this subsection 14.4, Owner shall pay \$100 to the Contractor”

DD. Paragraph 14 is modified by adding the following as Subparagraphs 14.5 and 14.6:

"14.5 Contractor agrees to co-operate with Owner in all reasonable ways to satisfy the requirements of Owner's lender in the transaction (the "Lender"), including, without limitation, the Contractor shall at appropriate times as required by the Lender supply to Owner for the Lender the following items:

1. Evidence of contractor's liability and workmen’s compensation coverage (containing coverages and amounts as required hereunder).
2. Evidence that the property and improvements are in compliance with all applicable laws, regulations, and ordinance (architect's certification letter attached);
3. Signed copy of the general construction contract, along with a list of proposed subcontractors with addresses, phone numbers and contract amounts;
4. Subordination agreement from the contractor and all subcontractors subordinating their lien claims and contracts to the Lender;
5. Construction Schedule;
6. A Performance Bond and a Statutory Labor and Material Bond as to the Contractor;
7. AIA Document G702 and G703 (modified). These documents are acceptable as the Contractor's requisition. Please submit original documents, which have been appropriately signed by both the Contractor, supervising architect and Owner's representative; and,
8. Partial waiver and subordination of mechanic's lien claims and final waiver and subordination of mechanic's lien claims, as appropriate.

"14.6 Not less than thirty days after completion of the Work (as evidenced by the Certificate of Completion), and as a condition for payment of the final retainage, Contractor shall deliver to Owner the following:

1. As-built / Improvement survey (if applicable).
2. As-built / Record drawings, showing actual improvements: One (1) set of Mylar film reproducible drawings, and one (1) set of specifications.

Exhibit F

3. Certificate of Substantial Completion.
4. Signed Punch List, with all items noted as complete.
5. Original Certificates of Occupancy (and Certificate of Compliance, if applicable).
6. Final List of Subcontractors, including final contract amounts.
7. Final Lien Waivers and/or Release from the general contractor and all subcontractors.
8. Fully executed Contractor's Affidavit of Payment of Debts and Claims (AIA Document G706).
9. Warranties, Bonds, etc, for all improvements and equipment, from the general contractor and all Subcontractors and Suppliers.

EE. The third line of Subparagraph 15.1.3.1 is modified by adding “written” immediately before “notice”.

FF. The first line of Subparagraph 15.1.5 is modified by adding “written” immediately before “notice”.

GG. The first line of Subparagraph 15.1.6.1 is modified by adding “written” immediately before “notice”.

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PERFORMANCE AND PAYMENT BONDS - Section - 00610

The AIA Document A312, “Performance Bond and Payment Bond”. The contractor is responsible for using the latest edition

END OF SECTION

Stone Hill TC – Tract 30  
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GENERAL CONDITIONS - Section - 00700

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The AIA Documents A-201-, "General Conditions of the Contract for Construction". The contractor is responsible for using the latest edition

Modifications and changes to the General Conditions are enumerated under the Supplementary Conditions (Section 00800) of these specifications.

END OF SECTION

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PROPOSAL REQUEST – Section 00710

The A.I.A. Document G709 “Work Change Proposal Request”. The contractor is responsible for using the latest edition

END OF SECTION

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APPLICATION AND CERTIFICATE FOR PAYMENT – Section 00720

The AIA Documents G702 and G703. The contractor is responsible for using the latest edition

**SUBMISSION OF MONTHLY APPLICATIONS AND CERTIFICATES FOR PAYMENT SHALL BE VIA TEXTURA CONSTRUCTION PAYMENT MANAGEMENT (SEE ATTACHED). NEWQUEST WILL PAY THE FEE FOR THE GC, BUT THE SUBCONTRACTORS PAY CURRENT PERCENTAGE RATE OF THEIR CONTRACT VALUE TO ORACLE.**

END OF SECTION

## Oracle's Textura Payment Management: Work Faster and More Efficiently

### What Is Textura (TPM®)?

Oracle's TPM is an Internet-based construction invoicing and payment solution. With the TPM system, subcontractors can electronically sign and submit their pay applications—including invoices, sworn statements, and conditional and/or unconditional lien waivers. Payments are made electronically via ACH (Automated Clearing House) resulting in faster access to your funds. In addition, TPM facilitates submission and tracking of compliance documents and sub-tier lien waivers. In short, TPM has revolutionized the construction payment process. Thousands of subcontractors currently use TPM to submit their pay applications every month.

### Sign Pay Applications and Submit Electronically

TPM automatically generates the required Pay Application documents and transmits them to your GC electronically at the click of a button.

- Invoices are created by simply entering a percent complete or dollar value by line item of your budget
- Electronic submission of documents eliminates the expense and inconvenience of fax or hand delivery
- Invoice amounts are verified with lien waiver and payment amounts, reducing the risk of error

### Receive Payments via ACH

TPM uses the secure ACH network for electronic deposit of funds to accelerate draw payments.

- ACH will deliver funds faster than a manual check. Payments are made through TPM directly by the GC and are subject to the terms of your contract.
- ACH works like direct deposit. Funds are immediately available, no waiting for checks to clear.
- TPM alerts you via email that payment has been disbursed.

### Know What is Happening, When It Happens

TPM offers complete visibility throughout the draw process and notifies users of critical events.

- Receive real-time notifications when a draw is opened, change order issued, payment disbursed, etc.
- Receive email reminders to update expiring insurance documents and notification of non-compliance.
- Online invoice approval and rejection ensures that both parties are informed of final invoice amounts.

### Manage Documents Online

Project documents created in or uploaded to the system are available for viewing, printing or downloading to your computer. TPM will store these documents for a minimum of ten years.

- Pay Application backup documents are submitted quickly and easily via an upload attachment feature.
- Electronic submission & tracking of legal documents such as insurance certificates reduces payment holds.
- Possibility for lost or delayed documents resulting in held payments is virtually eliminated

### What Does It Cost to Use TPM?

#### **0.22% of contract value\***

- Maximum – \$3,750
- Sub-tier subcontractors – \$100

### Payment Methods

- ACH (default) or Credit Card

*\*Plus applicable taxes*

### Technical Requirements:

TPM is completely web-based- there is no software to install. Users need only:

- Internet access (high-speed recommended)
- Email access for each user
- Adobe Acrobat Reader 6.0 or higher (free download)

### Free Training & Support:

Our Training Supports your training needs with:

- Free webinars
- Individual training by phone

**Support representatives are available to answer your questions at 866 -TEXTURA (866-839-8872).**

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CHANGE ORDER – Section 00730

The AIA Documents G701. The contractor is responsible for using the latest edition

END OF SECTION

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PAYMENT OF DEBTS AND CLAIMS – Section 00740

The AIA Documents G706. The contractor is responsible for using the latest edition

END OF SECTION

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RELEASE OF LIENS – Section 00750

The AIA Documents G706A. The contractor is responsible for using the latest edition

END OF SECTION

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CERTIFICATE OF SUBSTANTIAL COMPLETION – Section 00760

The AIA Documents G704. The contractor is responsible for using the latest edition

END OF SECTION

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CONSENT OF SURETY OF FINAL PAYMENT – Section 00770

The AIA Documents G707. The contractor is responsible for using the latest edition

END OF SECTION

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CONSENT OF SURETY TO REDUCTION IN OR PARTIAL RELEASE PAYMENT-Section  
00780

The AIA Documents G707A. The contractor is responsible for using the latest edition.

END OF SECTION

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SUPPLEMENTARY CONDITIONS – Section -00800

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The following supplements modify, change, delete from or add to the "General Conditions of the Contract for Construction", AIA Document A201. The contractor is responsible for using the latest edition. Where any Article of the General Conditions is modified or any Paragraph, Subparagraph or Clause thereof is modified or deleted by these Supplementary Conditions, the unaltered provisions of that Article, Paragraph, Subparagraph or Clause shall remain in effect.

ARTICLE 1 - GENERAL PROVISIONS

1.2 EXECUTION, CORRELATION AND INTENT

ADD the following:

1.2.4 In cases of discrepancy concerning dimension, quantity and location, the Drawing shall take precedence over the Specifications. Explanatory notes on the Drawings shall take precedence over conflicting drawn indications; large scale details shall take precedence over smaller scale drawings and figured dimensions shall take precedence over scaled measurements. Where figures are not shown, scale measurements shall be followed but shall in all cases be verified by measuring actual conditions of Work already in place. In cases of discrepancy concerning quality and application of materials and non-technical requirements over materials, the Specifications shall take precedence over the Drawings.

1.3 OWNERSHIP AND USE OF ARCHITECT'S DRAWINGS, SPECIFICATION AND OTHER DOCUMENTS

1.3.1 The Contractor will be responsible for paying for all drawings and specifications (in addition to the 3 issued for bidding and paid for by the Owner), issued for construction.

ARTICLE 3 - CONTRACTOR

3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR.

ADD the following Clause to Subparagraph 3.2:

3.2.4 If the Contractor has god reason for objecting to the use of any material, appliance, or method of construction as shown or specified, he shall make a report of such objection the Architect, and obtain proper adjustment before

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SUPPLEMENTARY CONDITIONS – Section -00800

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the Contract is made and shall proceed with the work only with the understanding that a satisfactory job will be required.

3.7 PERMITS FEES AND NOTICES

ADD the following Subparagraph to Paragraph 3.7:

3.7.5 Any reference in the Specifications text to codes, standard specifications or manufacturer's instructions shall mean the latest printed edition of each in effect at the contract date unless noted otherwise.

3.15 Cleaning up.

3.15.3 Except for trucks and automobiles, tires on rolling construction equipment shall be white.

3.15.4 Rolling scaffolds used for application or installation of items that if dropped may stain surfaces below the scaffold shall be equipped with diapers.

3.15.5 The project shall, in general, be turned over to the Owner in a thoroughly clean and workmanlike condition ready for the Owner's use in every respect.

ADD the following:

3.19 The contractor, superintendent, and/or project manager and major sub contractors shall attend meetings to review among other items, the progress of the work. The schedule, quantity, location and attendees of such meetings will be determined by the Owner.

3.20 Temporary facilities

3.20.1 Office

1. Contractor to provide and maintain temporary office facilities for proper execution of the construction of this project. It is to be of adequate size to comfortably hold all parties associated with project for job site meetings. Minimum size allowed is 12' x 40'.
2. Facilities to include the following:
  - a. HVAC/Heating
  - b. Telephone/Fax
  - c. Restroom per local code in working order for duration of project
  - d. Drinking Water

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SUPPLEMENTARY CONDITIONS – Section -00800

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- e. Facsimile machine
  - f. Drawing racks for current construction drawings, permit set and as-builts of entire project
  - g. Table of size adequate for layout and review of plans
  - h. Computer with e-mail capabilities for use by the superintendent for correspondence to architects, engineers and owners.
  - i. First aid station
3. Office facility to be kept orderly and neat throughout duration of project with no exceptions. Drawings are to be kept current at all times with voided drawings indicated as void and dated.
  4. Building to be located by Contractor as approved by Owner's representative.
  5. Contractor and subcontractors may provide and maintain such other offices and storage facilities on site as required for execution of the work. All additional buildings must be approved and their locations approved by Owner's representative prior to installation. This approval does not make the Owner liable for any actions taken by public jurisdictions or private entities.
  6. Contractor will be responsible for adhering to and maintaining all requirements of the American with Disabilities Act and any and all OSHA requirements with respect to a temporary facility.
  7. Contractor is responsible for all costs associated with temporary facilities including, but not limited to, utilities, costs associated with delivery, set up and removal and maintenance of the building.

3.20.2 Storage

1. Contractor shall provide, maintain and use weathertight material storage facilities for the storage of materials subject to damage by exposure to the weather.
2. Facilities shall be well ventilated, have floors raised and maintained above ground level, and shall be kept neat and clean.
3. Contractor shall bear all costs of temporary storage facilities.
4. Contractor shall remove the storage facilities upon completion of the work, or as directed by the Owner's representative or Architect.

3.20.3 Toilets

1. Contractor shall install self-contained toilet units or temporary toilets connected to public water and public sewer. The facilities shall be permitted by governing regulations. Use of pit-type privies will not be

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permitted. Toilets in the office will not replace self-contained toilet units.

3.20.4 Smoking will not be permitted in any of the temporary facilities.

3.21 Documentation

3.21.1 Photographs

1. Contractor to provide digital photographs indicating weekly progress of construction and other items requested by Owner's representative.
  - a. 12 photographs minimum; Owner's representative reserves the right to additional photos.
  - b. If available, contractor may place them on its website, if not, e-mail to
    - aa. Owner's representative
    - bb. Architect

3.22 Meetings

3.22.1 Job Site Meetings

1. Following an initial job site pre-construction meeting, job site meetings will be held once a week (unless otherwise requested by the Owner's representative) in the contractor's office located at the site.
2. Attendance includes
  - a. The contractor's project manager (who will lead the meetings).
  - b. The contractor's superintendent.
  - c. Principal sub-contractors.
  - d. The Owner's representative either in attendance or via telephone.
  - e. The architect and/or engineers at the discretion of the Owner's representative either in attendance or via telephone.
  - f. Other parties at the discretion of the Owner's representative, contractor, contractor's project manager or contractor's superintendent either in attendance or via telephone.
3. Within 5 working days of meeting, the contractor will issue minutes of the meeting to
  - a. Attendees
  - b. The following
    - i. Owner's representative
    - ii. Contractor's project manager

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- iii. Contractor's superintendent
- iv. Principal subcontractors
- v. Architect and all consultants

3.22.2 Post Construction Meetings

1. A post construction meeting will be held at the job site.
2. Attendance includes
  - a. The contractor's project manager (who will lead the meeting).
  - b. The contractor's superintendent.
  - c. Principal subcontractors
  - d. The Owner's representative either in attendance or via telephone.
  - e. The architect and/or engineers at the discretion of the Owner's representative either in attendance or via telephone.
  - f. Other parties at the discretion of the Owner's representative, contractor, contractor's project manager or contractor's superintendent either in attendance or via telephone.
3. Within 5 working days of the meeting, the contractor will issue minutes of the meeting to
  - a. Attendees
  - b. The following if not in attendance
    - i. Owner's representative
    - ii. Contractor's project manager
    - iii. Contractor's superintendent
    - iv. Principal subcontractors
    - v. Architect and all consultants

ARTICLE 7 – CHANGES IN THE WORK

- 7.3.10 The contractor shall respond, on letterhead, stating proposed changes in contract price and contract time limits, or stating that no change is required. Prices, whether proposed additions or deductions, shall be accompanied by an itemized breakdown, with the specifications, in sufficient detail to be evaluated in the following manner:
1. Describe each change in a detailed manner referencing architectural drawing numbers, sketches, dates, item location, etc.
  2. Break out material cost for each change. List material and quantities.
  3. Break out labor cost for each change. List man/hours or man/days required and rate per hour. On a separate sheet of paper give a detailed break out base rate, federal unemployment, state

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- unemployment, FICA, workmen's compensation and other miscellaneous insurance.
4. Break out overhead after all cost for proposed changes have been totaled.
  5. Break out profit after overhead cost and give total cost of proposed changes.

ARTICLE 8 - TIME

- 8.3.1.2 Adverse weather conditions shall be defined as weather extremes (precipitation, temperature and/or winds) which prohibit any type of construction activity scheduled during the time of adverse weather.
- 8.3.1.3 Requests for extensions of construction time due to adverse weather conditions shall include U.S. Weather Bureau Climatological Reports, for the time involved, from the nearest reporting station. Extensions of time may be requested for any month of construction for days lost due to adverse weather.

ARTICLE 9 - PAYMENTS AND COMPLETION

9.3 APPLICATIONS FOR PAYMENT

ADD the following Clause to Subparagraph 9.3.1.:

- 9.3.1.3 The Agreement will provide a basis of payment of ninety percent (90%) and retention of ten percent (10%) of the Contractor's costs as shown by him on the approved Application for Payment Form.

9.10 FINAL COMPLETION AND FINAL PAYMENT

ADD the following Clause to Subparagraph 9.10.2:

- 9.10.2.1 Additionally, the Contractor shall submit to the Architect all Certificates of Guarantee called for in the Trade Sections of the Specifications and Contractor's one-year guarantee for the Project as a whole (except where the Specifications require a longer guarantee); and all operating or maintenance manuals called for in the Trade Sections of the Specifications.

ARTICLE 10 - PROTECTION OF PERSONS AND PROPERTY

10.2 SAFETY OF PERSONS AND PROPERTY

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ADD the following:

- 10.2.8 Whenever any part or all of the work is suspended for any reason whatsoever, the Contractor shall close up, secure and protect all of the work exposed to possible injury or loss from any cause.

ARTICLE 11 - INSURANCE AND BONDS

ADD the following:

- 11.5 During the term of the Contract, the Contractor and each subcontractor shall, at his own expense, purchase and maintain insurance in companies properly licensed and satisfactory to Owner. The Contractor shall accompany his bid proposal with a Certificate of Insurance indicating insurance and its limits Contractor currently has in force. If Owner elects to modify Contractor's insurance causing additional expense to Contractor, contract sum shall be increased by that additional expense.

- 11.6 All Risk Builders Risk Insurance: Owner accepts only the risks covered by a standard builders "All Risk" insurance policy subject to the exclusions contained therein and subject to a deductible, in the name of Owner and subcontractor including the interest of contractor/sub on: (1) The work that is done; and (2) all insurable items of work and materials to be incorporated in the work, title to which has been acquired by Owner, but such insurance shall not cover any property owned, leased or otherwise used in construction of the work.

The Contractor shall maintain for a period of at least five days subsequent to the written acceptance by the Owner of the project and pay for Builder's Risk Insurance in a company or companies satisfactory to the Owner in an amount of coverage equal to the sum of the contract. The contractor shall file certification of such with Owner. The Owner, at his sole discretion, may choose to provide Builder's Risk Coverage.

The provisions of this Article shall in no way relieve the Contractor of liability for any loss for which he would otherwise be liable.

Contractor/Sub shall be responsible for the first \$10,000.00 of any loss covered by the builders risk insurance policy.

- 11.7 Worker's Compensation Insurance

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The Contractor shall secure and keep in effect such insurance as will protect him from claims under all Worker's Compensation laws, including Occupational Disease.

Certificates of such insurance shall be filed by the Contractor with the Owner and shall be subject to the Owner's approval as to carrier and adequacy, prior to commencement of work.

The Contractor shall ascertain that all Subcontractors secure and keep in effect similar insurance covering their employees.

In addition to the certificate of insurance, the contractor will provide additional insured endorsements. Those endorsements should:

1. State the Owner is an additional insured to the policy.
2. State that the contractor's policy is primary to Owner.
3. State that subrogation rights are waived for worker's compensation liens.
4. State that the insurer will notify the additional insured at least (30) days prior to policy changes and cancellations.

No work shall be performed under this agreement unless the insurance coverage required hereunder shall be in full force and effect.

If at any time during the performance of this Contract the Owner shall deem it necessary to increase the limits of liability set forth above, the Owner shall notify the Contractor of the new requirements and the Contractor shall within fifteen (15) days thereafter furnish the Owner duplicate copies of a rider or endorsement in compliance with such new requirements. The Owner shall pay for the cost thereof.

The fact that insurance coverages are required as specified herein shall not prejudice in any way the Owner's claim against the Contractor for total indemnity against any and all losses as hereinbefore stated.

ARTICLE 12 - UNCOVERING AND CORRECTION OF WORK

12.3 ACCEPTANCE OF NON-CONFORMING WORK

- 12.3.1.1 "Appropriate Reduction" shall be taken to mean an amount equal to the entire cost of replacing the work as originally covered in the Contract Documents.

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ARTICLE 15 - ADDITIONS TO SUPPLEMENTARY CONDITIONS

15.1 DEFINITIONS

15.1.1 Directed, or Required, or Acceptable: When they refer to work or its performance, they shall imply the direction or requirement of the Architect or acceptable to, the Architect.

15.1.2 Or Equal: Shall mean equal in quantity, quality, function, and appearance. Approval of such proposed item must be given by the Architect prior to bidding.

15.1.3 N.I.C.: Indicates Work "Not in Contract".

15.1.4 Furnish: To supply at the job site the material, equipment, etc. referred to. Installation is not required of the supplier by the Specifications but shall be arranged for by the General Contractor.

15.1.5 Provide: To furnish and install in the location shown or approved at the job, the material, equipment, etc. referred to.

15.1.6 Selected: Chosen by the Architect or designated representative from manufacturer's standard colors, patterns, etc. unless specified otherwise.

15.2 MEASUREMENTS

15.2.1 Before ordering any material or doing any work, Contractor shall verify all measurements of the work and shall be responsible for the correctness of same. Any difference which may be found shall be submitted to the Architect for consideration before proceeding with the work. No extra charge or compensation will be allowed on account of difference between actual dimensions and the measurements indicated on the Drawings.

15.3 SUBSTITUTIONS OF MATERIALS

15.3.1 Refer to Section 01630.

END OF SECTION

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SUMMARY OF WORK – Section 01010

1.01 PROJECT DESCRIPTION

The project consists of construction of a 7,170 SF cold, dark shell building on a 1.018 acre tract within an existing development. The scope of work includes clearing, excavation, fill, compaction, grading, paving, landscaping, irrigation, utilities and parking lot lighting. Monument sign will be provided by others, electrical for the monument sign will be in the contract.

The Owner reserves the right to utilize separate contractors for other portions of construction excluded from this contract. This contractor shall be responsible for coordinating the work with separate contractors. This includes cooperation and access.

The architect will apply for the building permit. The Owner will purchase the building permit.

The project manager is David Bryant.

END OF SECTION

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JOB OBSERVATIONS – Section-01015

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- 1.01 GENERAL: Job Observations are required for the work indicated in this section. General Contractor shall notify the Architect and appropriate Engineer as indicated below. Where applicable, general contractor shall notify the Owner 72 Hours in advance of when the Owner's certified windstorm inspector is required to inspect the work.
- 1.02 UTILITY LINE BACKFILL: Before any complete portion of this work is covered up, notify Architect and appropriate Engineer
- 1.03 COMPACTED FILL WORK: Notify Architect and Testing Laboratory 48 hours PRIOR to starting this work.
- 1.04 LIME STABILIZATION: Notify Architect and Testing Laboratory 48 hours PRIOR to starting this work.
- 1.05 CONCRETE PAVING WORK: Notify appropriate engineer and Testing Laboratory 48 hours PRIOR to starting this work.
- 1.06 DRILLED FOOTINGS AND FOUNDATIONS: Notify appropriate engineer and Testing Laboratory 48 hours PRIOR to starting this work.
- 1.07 BUILDING SLAB: Notify appropriate engineer and Testing Laboratory 48 hours PRIOR to pouring concrete
- 1.08 ELECTRICAL WORK: Notify appropriate engineer and Testing Laboratory 48 hours PRIOR to starting this work.
- 1.09 PLUMBING WORK: Notify Architect and Testing Laboratory 48 hours PRIOR to starting this work.
- 1.10 OTHER OBSERVATIONS: Carefully review the Construction Documents for other required observations.

END OF SECTION

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SUBMITTALS – Section - 01050

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- 1.01 CERTIFICATES OF INSURANCE AND BONDS: Submit in accordance with Article 11 of the General Conditions and Supplementary Conditions.
- 1.02 LIST OF SUBCONTRACTORS: Submit no later than 5 days after execution of Owner-Contractor agreement. Subcontractors listed shall be for all portions of the work and with whom the contractor has an executed agreement.
- 1.03 SCHEDULE OF VALUES: No later than 30 days after execution of Owner-Contractor agreement in format provided by Owner.
- 1.04 APPLICATIONS FOR PAYMENT: Submit in accordance with Article 9.3 of the General Conditions. All applications for payment shall be typed on AIA Form G702 and Continuation Sheet AIA Form G703.
- 1.05 CONSTRUCTION PROGRESS SCHEDULE: Submit in accordance with Article 4.10 of the General Conditions. Submit horizontal bar chart with separate bar for each operation, identifying the first work day of each week.
- 1.06 OTHER SUBMITTALS: Submit in accordance with the requirements of the Project Manual and General Conditions.

END OF SECTION

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REFERENCE STANDARDS - Section - 01090

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1.01 REQUIREMENTS INCLUDED

1. Abbreviations and acronyms used in Contract Documents to identify reference standards.

1.02 QUALITY ASSURANCE

1. **Application:** When a standard is specified by reference, comply with requirements and recommendations stated in that standard, except when requirements are modified by the Contract Documents, or applicable codes establish stricter standards.
2. **Publication Date:** The publication in effect on the date of issue of Contract Documents, except when a specific publication date is specified.

1.03 ABBREVIATIONS, NAMES AND ADDRESSES OF ORGANIZATIONS

1. Obtain copies of referenced standards direct from publication source, when needed for proper performance of Work, or when required for submittal by Contract Documents.

AA            Aluminum Association  
                 818 Connecticut Avenue, N.W.  
                 Washington, DC 20006

ACI           American Concrete Institute  
                 Box 19150  
                 Redford Station  
                 Detroit, MI 48219

AWS          American Welding Society  
                 2501 NW 7<sup>th</sup> Street  
                 Miami, FL 33125

NAAMM      National Association of Architectural  
                 Metal Manufacturers  
                 221 North LaSalle Street  
                 Chicago, IL 60601

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REFERENCE STANDARDS - Section - 01090

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AISC	American Institute of Steel Construction 1221 Avenue of the Americas New York, NY 10020
AISI	American Iron and Steel Institute 1000 16 <sup>th</sup> Street N.W. Washington, DC 20036
ANSI	American National Standards Institute 1430 Broadway New York, NY 10018
ASME	American Society of Mechanical Engineers 345 East 47 <sup>th</sup> Street New York, NY 10017
ASTM	American Society for Testing and Materials 1916 Race Street Philadelphia, PA 19103
AWPA	American Wood-Preservers Association 7735 Old Georgetown Road Bethesda, MD 20014
BIA	Brick Institute of America 11490 Commerce Park Drive Reston, VA 22091-1525
CRSI	Concrete Reinforcing Steel Institute 180 North LaSalle Street, Suite 2110 Chicago, IL 60601
EIMA	E.I.F.S. Industry Members Association 3000 Corporate Center Drive, Suite 270 Morrow, GA 30260
FM	Factory Mutual System 1151 Boston-Providence Turnpike

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REFERENCE STANDARDS - Section - 01090

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	Norwood, MA 02062
FS	Federal Specification General Services Administration Specifications and Consumer Information Distribution Section (WFSIS) Washington, DC 20407
GA	Gypsum Association 1603 Orrington Avenue Evanston, IL 60201
GANA	Glass Association of North America 2945 Southwest Wanamaker Drive, Suite A Topeka, KS 66614
MIL	Military Specification Naval Publications and Forms Center 5801 Tabor Avenue Philadelphia, PA 19120
MLSFA	Metal Lath/Steel Framing Association 2211 North LaSalle Street Chicago, IL 60601
NCMA	National Concrete Masonry Association 2303 Horse Pen Road, P.O. Box 781 Herndon, VA 2
NFPA	National Fire Protection Association 470 Atlantic Avenue Boston, MA 02210
NFPA	National Forrest Products Association 1519 Massachusetts Avenue, N.W. Washington, DC 20036
PCA	Portland Cement Association

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REFERENCE STANDARDS - Section - 01090

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	5420 Old Orchard Road Skoki, IL 20076
PS	Product Standard U.S. Department of Commerce Washington, DC 20203
SDI	Steel Deck Institute Box 3812 St. Louis, MO 63122
SJI	Steel Joist Institute 1703 Parham Road, Suite 204 Richmond, VA 23229
SMACNA	Sheet Metal and Air Conditioning Contractors National Association 8224 Old Court House Road Vienna, VA 22180
TCA	Tile Council of American, Inc. Box 326 Princeton, NJ 08540
UL	Underwriters Laboratories, Inc. 333 Pfingston Road Northbrook, IL 60062

END OF SECTION

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SHOP DRAWINGS, PRODUCT DATA, SAMPLES - Section 01340

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1.01 GENERAL

- A. Submit Shop Drawings, Product Data and samples required by Contract Documents.
- B. The requirements of this section are in addition to the requirements of Article 4.12 the General Conditions.

1.02 SHOP DRAWINGS

- A. Drawings shall be presented in a clear and thorough manner.
  - 1. Details shall be identified by reference to sheet and detail, schedule or room number of Contract Drawings.
- B. Identify field dimensions. Show relation to adjacent critical features or adjacent to the Work or products.
- C. Shop drawings to be in digital format.
- D. Submittal & Resubmittal Requirements: Comply with this section.
- E. General Contractor to allow approximately 10 working days for review of submittals.

1.03 PRODUCT DATA

- A. Submit only the pages, which are pertinent.
  - 1. Mark each copy of the standard printed data to identify pertinent products, referenced to Specification Section and Article number.
  - 2. Show reference standards, performance characteristics, and capacities; component parts; finishes; dimensions; and required clearances.
- B. Modify the manufacturer's standard schematic drawings and diagrams to supplement the standard information and to provide information specifically applicable to the Work. Delete the information not applicable.
- C. Provide manufacturer's preparation, assembly, and installation instructions.
- D. Required Printing: Submit the number of product data required by individual specifications sections.
- E. Submittal & Resubmittal Requirements: Comply with this section.

1.04 SAMPLES

- A. Submit full range of manufacturer's standard finishes except when more restrictive requirements are specified, indicating colors, textures, and

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SHOP DRAWINGS, PRODUCT DATA, SAMPLES - Section 01340

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- patterns, for Architects selection.
- B. Submit samples to illustrate the functional characteristics of products, including parts and attachments.
- C. Approved samples, which may be used in the Work, are indicated in the Specification section.
- D. Submit the number of samples required by individual specifications sections.
- E. Label each sample with the identification required for transmittal letter.

1.05 CONTRACTOR REVIEW

- A. Review Shop Drawings, Product Data and Samples prior to submission, to Architect.
- B. Determine and verify the following:
  - 1. Field measurements
  - 2. Field construction criteria
  - 3. Catalog numbers and similar data
  - 4. Conformance with specifications
- C. Coordinate each submittal with requirements of the Work and of the Contract Documents.
- D. Sign each sheet of shop drawings and product data. Sign each sample label to certify compliance with requirements of Contract Documents. Notify Architect in writing at time of submittal, of any deviations from requirements of Contract Documents.

1.06 SUBMITTAL REQUIREMENTS

- A. Transmit the shop drawings, product data and samples in a sequence to avoid delay in the Work or the work of other contracts.
- B. Provide 8 x 4 inch blank space on each submittal for Contractor's and Architect's stamps.
- C. Apply Contractor's stamp, signed, certifying to review, verification of products, field dimensions and field construction criteria, and coordination of information with requirements of the Work and the Contract Documents.
- D. Coordinate the submittals into logical groupings to facilitate interrelation of the following items:
  - 1. Finishes which involve the Architect's selection of colors, textures, or patterns.
  - 2. Associated items which require correlation for efficient function or

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SHOP DRAWINGS, PRODUCT DATA, SAMPLES - Section 01340

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- for installation.
- E. Submit under company transmittal letter. Identify the Project by title and number. Identify the Work and product by Specifications section and Article number.
  
  - F. Where items deviating from the specifications and/or drawings have been approved by the Owner under the “Or Approved Equal” clause, shop drawings for these substituted items shall be submitted to the Owner for approval before fabrication.

1.07 RE-SUBMITTAL REQUIREMENTS

- A. Make resubmittals under procedures specified for the initial submittals. Identify the changes made since the previous submittal.

1.08 CONTRACTOR RESPONSIBILITY

- A. Approval by the Owner or Contractor of shop drawings and/or schedules shall not relieve the Contractor of any responsibility for deviations from the Owner’s drawings and specifications unless he has in writing the Owner’s attention to such deviations at the time of submission, nor shall it relieve hem from the responsibility for errors of any sort in shop drawings and/or schedules, nor from responsibility for the proper fitting and construction of the work.

END OF SECTION

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TESTING LABORATORY SERVICES - Section 01410

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1.01 REQUIREMENTS INCLUDED

- A. The owner shall employ the services of a quality control and material testing service to perform observations, testing and reports described below. Refer to Section 02010.
- B. Contractor shall cooperate with the laboratory to facilitate the execution of its required services.
- C. Employment of the laboratory shall in no way relieve Contractor's obligations to perform the Work of the Contract.

1.02 QUALIFICATION OF LABORATORY

- A. Laboratory shall meet "Recommended Requirements for Independent Laboratory Qualification", published by American Council of Independent Laboratories.
- B. Laboratory shall be authorized to operate in the State in which the Project is located.

1.03 REFERENCE STANDARDS

- A. Requirements, abbreviations and acronyms for reference standards are defined in Section 01090.
- B. ASTM D698 - Standard Methods of Test for Moisture Density Relations of Soils Using 5.5 lb. (2.5kg) Rammer and 12-inch (304.8-mm) Drop.
- C. ASTM C31 - Standard Method of Making and Curing Concrete Test Specimens in the Field.
- D. ASTM C39 - Test for Compressive Strength of Cylindrical Concrete Specimens.
- E. ASTM C4 - Standard Method of Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
- F. ASTM C143 - Standard Method of Test for Slump of Portland Cement Concrete.

1.04 LABORATORY DUTIES

- A. Cooperate with Owners Project Manager and Contractor. Provide qualified personnel after due notice.
- B. Perform services listed in "Schedule of Inspections and Testings".
- C. Comply with specified reference standards.

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- D. Ascertain compliance of materials with requirements of Contract Documents.
- E. Promptly notify Owners Project Manager of observed irregularities or deficiencies of Work.
- F. Promptly submit one written report of each test and inspection to each of the following:
  - 1. Osborn & Vane Architects, Inc. (Attention: David Bryant), 2000 Bering Drive, Suite 410, Houston, TX 77057, 713-781-5262, [dbryant@ovarc.com](mailto:dbryant@ovarc.com)
  - 2. NewQuest Properties (Attention: Ben Keillor), 8807 W. Sam Houston Pkwy. N., Suite 200 Houston, TX 77040, 281-477-4397, [bkeillor@newquest.com](mailto:bkeillor@newquest.com)
  - 3. General Contractor
  - 4. ALJ Lindsey, LLC (Attention: Roger Blair), 18635 North Eldridge Parkway, Suite 200, Tomball, TX 77377, 956-206-7147, [rblair@aljindsey.com](mailto:rblair@aljindsey.com)
  - 5. Dally & Associates, Inc. (Attention: Erasmo Morales), 9800 Richmond Ave., Suite 460, Houston, TX 77042, 713-337-8881, [emorales@dallyassociates.com](mailto:emorales@dallyassociates.com)
- G. Each report shall include:
  - 1. Date issued.
  - 2. Project Title and number.
  - 3. Testing laboratory name, address and telephone number.
  - 4. Name of laboratory inspector and job number.
  - 5. Date and time of sampling or inspection.
  - 6. Record of temperature and weather conditions.
  - 7. Date of test.
  - 8. Identification of specification section.
  - 9. Location of sample or test in the Project.
  - 10. Type of inspection or test.
  - 11. Results of tests and compliance with Contract Documents.
  - 12. Interpretation of test results.
- H. Perform additional tests as required by Owners Project Manager.

1.05 LIMITATIONS OF AUTHORITY OF TESTING LABORATORY

- A. Laboratory is not authorized to release, revoke, alter or enlarge on requirements of Contract Documents.
- B. Laboratory is not authorized to approve or accept any portion of the Work.

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- C. Laboratory is not authorized to perform any duties of the Contractor.

1.06 SCHEDULE OF INSPECTIONS AND TESTINGS

- A. Soils Testing: Section 02200 Earthwork
  - 1. Sample materials proposed for select fill, borrow, subgrade and backfill. Prepare and test for suitability, classification, moisture density relationship and compressive strength in accordance with civil drawings.
  - 2. Perform nuclear density tests to determine moisture content and compaction.
- B. Concrete Testing: Concrete Paving Section 02512
  - 1. Sample materials, perform tests and cast test specimens in accordance with civil drawings.
  - 2. Perform compressive strength tests

1.07 CONTRACTOR'S RESPONSIBILITIES

- A. Contractor shall cooperate with laboratory personnel, provide access to the Work.
- B. Contractor shall secure and deliver to the laboratory adequate quantities of representational samples of materials proposed to be used and which require testing.
- C. Contractor shall provide to the laboratory the design mix proposed to be used for concrete, asphaltic concrete paving and base course and other materials and mixes other materials mixes which require control by the testing laboratory.
- D. Furnish incidental labor and facilities:
  - 1. To provide access to Work to be tested.
  - 2. To obtain and handle samples at the Project site.
  - 3. To facilitate inspections and tests.
- E. Notify laboratory 24 hours in advance of operations to allow for laboratory assignment for personnel and scheduling of tests.

END OF SECTION

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SUBSTITUTIONS – Section - 01630

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1.01 LIMITATIONS ON SUBSTITUTIONS

- A. During Bidding period, Instructions to Bidders may govern the times for submitting requests for substitutions under requirements specified in this Section.
- B. Requests for substitutions of products will be considered only within 15 days after date of Owner-Contractor Agreement. Subsequent requests will be considered only in case of product unavailability or other conditions beyond control of Contractor.
- C. No substitutions or variations from the Specifications and Drawings, other than those which are approved by the Owner from the Official Substitution Sheet and incorporated into the Agreement, will be permitted after the Agreement is signed, except that where “or approved equal” is used.
- D. The Owner shall be the sole judge of the suitability, acceptability and equality of the substitute material and may accept or reject the same. No material, not accepted by the Owner in writing, may be substituted for a specified material.
- E. If the substitution of any material or equipment increases costs in any way, these costs shall be borne by the Contractor.
- F. Substitutions indicated on the shop drawings or product data submittals will NOT be considered without separate formal request.
- G. Substitutions will NOT be considered when requested directly by subcontractor or supplier.
- H. Substitutions will NOT be considered when acceptance will require substantial revision of Contract Documents.
- I. Substitute products shall NOT be ordered or installed without written acceptance.

1.02 REQUESTS FOR SUBSTITUTIONS

- A. Contractor Representation:
  - 1. Request for substitution constitutes a representation that the Contractor has investigated the proposed product and has determined that it is equal to or superior in all respects to the specified product.
  - 2. Request for substitution constitutes a representation that the Contractor will provide same warranty for substitution as for specified product.

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SUBSTITUTIONS – Section - 01630

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3. Request for substitution constitutes a representation that the Contractor will coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.
- B. Submit separate request for each substitution. Document each request with complete data substantiating compliance of proposed substitution with requirements of Contract Documents.
- C. Identify the product by Specifications Section and Article numbers. Provide manufacturer's name and address, trade name of product, and model or catalog number. List fabricators and suppliers as appropriate.
- D. Attach product data as specified in Section 01340.
- E. Give itemized comparison of proposed substitution with the specified product, listing the variations, and reference to Specifications Section and Article numbers.
- F. Give quality and performance comparison between proposed substitution and the specified product.
- G. Give cost data comparing proposed substitution with specified product, and the amount of net change to the Contract Sum.
- H. List the availability of maintenance services and replacement materials.
- I. State the effect of the substitution on the Construction Schedule, and state the effect of changes required in other work or products.

1.03 SUBMITTAL PROCEDURES

- A. Submit three copies of request for substitution.
- B. Owner's Project Manager will review Contractor's request for substitutions with reasonable promptness.
- C. During the bidding period, Architect will record acceptable substitutions in Addenda.
- D. After award of Contract, Owner's Project Manager will notify contractor, in writing, of the decision to accept or reject the requested substitution within the 30 working days.
- E. For accepted products, submit shop drawings, product data, and samples in accordance with Section 01340

END OF SECTION

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CONTRACT CLOSEOUT - Section - 01700

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PART 1 – GENERAL

1.01 WORK INCLUDED

- A. Closeout procedures
- B. Final cleaning
- C. Adjusting
- D. Project record documents
- E. Operation and maintenance data
- F. Spare parts and maintenance products
- G. Warranties and bonds
- H. Maintenance service
- I. The requirements of this section are in addition to the requirements of the General Conditions and Division 1.

1.02 CLOSEOUT PROCEDURES

- A. After the contractor has developed a punch list and it is completed, submit it and a written Certification to Owner and Architect that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Architect's review.
- B. Contractor, Owner and Architect to review construction and develop the Owner/Architect's punch list. Contractor to complete Owner/Architect's punch list within 30 calendar days from its development.
- C. Within 30 days of issuance of the Owner / Architect's punch list to the contractor, the contractor shall:
  - 1. Provide submittals to Architect that are required by governing or other authorities.
  - 2. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.
  - 3. Submit completed AIA G706, Contractor's Affidavit of Payment of Debts and Claims and G706A, Contractor's Affidavit of Release of Liens.

1.03 FINAL CLEANING

- A. Execute final cleaning as described below prior to development of Owner / Architect's punch list.
- B. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces.
- C. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- D. Clean or replace filters of operating equipment.

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CONTRACT CLOSEOUT - Section - 01700

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- E. Clean debris from roofs, gutters, downspouts, and drainage systems.
- F. Clean site; sweep paved areas, power wash, rake clean landscaped surfaces.
- G. Remove waste and surplus materials, rubbish, and construction facilities from the site.

1.04 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.

1.05 OPERATION AND MAINTENANCE DATA

- A. Submit data bound in 8 ½ x 11 inch text pages, three side ring binders with durable plastic covers.
- B. Prepare binder cover with printed title “OPERATION AND MAINTENANCE INSTRUCTIONS”, title of project, and subject matter of binder when multiple binders are required.
- C. Internally subdivide the binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.
- D. Contents: Prepare a Table of Contents for each volume, with each product or system description identified, typed on 24 pound white paper, in three parts as follows:
  - 1. Part 1: Directory, listing names, addresses, and telephone numbers of Architect, Contractor, Subcontractors, and major equipment suppliers.
  - 2. 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:
    - a. Significant design criteria.
    - b. List of equipment.
    - c. Parts list for each component.
    - d. Operating instructions.
    - e. Maintenance instructions for equipment and systems.
    - f. Maintenance instructions for finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.

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3. Part 3: Project documents and certificates, including the following:
  - a. Shop drawings and product data.
  - b. Air and water balance reports.
  - c. Certificates.
  - d. Photocopies of warranties and bonds.

- E. Submit 1 draft copy of completed volumes 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.
- F. Submit two sets of revised final volumes, within 10 days after final inspection.

1.06 SPARE PARTS AND MAINTENANCE PRODUCTS

- A. Provide spare parts, maintenance, and extra products in quantities specified in individual specification sections.
- B. Deliver to Project site and place in location as directed; obtain receipt prior to final payment.

1.07 WARRANTIES AND BONDS

- A. Provide duplicate notarized copies.
- B. Execute and assemble transferable warranty documents from Subcontractors, suppliers, and manufacturers.
- C. Provide Table of Contents and assemble in three side ring binder with durable plastic cover.
- D. Submit completed AIA G707, Consent of Surety to Final Payment.
- E. Submit prior to final Application for Payment.
- F. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within 10 days after acceptance, listing date of acceptance as start of warranty period.

1.08 MAINTENANCE SERVICE

- A. Furnish service and maintenance of components indicated in specification sections.
- B. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
- C. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by manufacturer of the original component.

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CONTRACT CLOSEOUT - Section - 01700

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- D. Maintenance service shall not be assigned or transferred to any agent or Subcontractor without prior written consent of the Owner.

1.09 PROVIDE

- A. Disk of all information above in digital format
- B. A survey of the work sealed by a registered surveyor in an AutoCad format in a disk

1.10 ELECTRICAL

- A. Contractor is responsible for establishing account and transferring to Owner's name upon completion

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION

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PROJECT RECORD DOCUMENTS – Section - 01720

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- 1.01 The Contractor shall obtain at his own expense a complete set of blue line prints on which he shall keep an accurate record of all deviations and changes in the installation of all materials and systems covered by his contractual agreement.
- 1.02 The Project Record Documents ("As-Built Drawings") are required of all Contractors on the following work:
  1. General Construction work including site work.
  2. Storm sewer work
  3. Plumbing work
  4. Electrical Work
- 1.03 Indicate the locations of all equipment and the routing of all systems. All piping and conduit buried in concrete slabs, walls and below grade shall be accurately and neatly located by dimensions, horizontally and vertically, unless a surface mounted device in each space indicates the exact location.
- 1.04 Indicate graphically and by dimension the actual installed location of all circuiting, control valves, drains, man-holes, water, gas, sanitary and storm sewer lines, inlets.
- 1.05 Project Record Documents Drawings shall be kept current by timely entries of information.
- 1.06 Deliver completed Project Record Documents to the owner upon completion and acceptance of the work, before final application for payment is submitted.

END OF SECTION

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GEOTECHNICAL INVESTIGATION REPORT - Section 02010

- 1.01 Geotechnical Engineering Report  
Travis Town Center  
Retail/Commercial Development  
SH 130 and SH 45  
Pflugerville, Texas
- 1.02 Prepared By: Terracon, 5307 Industrial Oaks Boulevard, Suite 160, Austin,  
TX 78735, 512-442-1122
- 1.03 Project No.: 96065338-C
- 1.04 Dated: April 3, 2007
- 1.05 Prepared For: NewQuest Properties  
6807 West Sam Houston Parkway North  
Houston, TX 77040  
Attention: Mr. Rene Paul Joubert
- 1.06 The Geotechnical Investigation Report is included in this project manual  
and is part of the contract documents. Amendments are not necessarily  
included however and the Contractor is advised to verify any additions or  
modifications with the Geotechnical firm noted above. The Architect and  
Engineers assume no liability for the soil report.

END OF SECTION

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EARTHWORK - Section 02200

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PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Earthwork for utilities and concrete
- B. Work specified elsewhere
- C. The requirements of this section are in addition to the requirements of the General Conditions, Supplementary Conditions and Division 1.

1.02 RELATED WORK

- A. Utility Backfilling, Section 02225

1.03 WORKING CONDITIONS

- A. Concealed conditions: Variations from Contract Documents will be adjusted as described in the Contract Conditions, for conditions not visually apparent prior to start of the Work.
- B. Soil stiffness: In the absence of information concerning sub-surface soil stiffness, assume an angle of repose of 45 degrees under optimum moisture conditions. No angle of repose can be assumed when soil is under adverse moisture conditions. Where concrete surfaces are shown vertical or steeper than the angle of repose, forms are required.

1.04 QUALITY ASSURANCE

- A. Upon completion of earthwork, provide Owner with testing laboratory report certifying compliance with all earthwork specifications and requirements below building and adjacent sidewalks.

PART 2 - PRODUCTS

2.01 FILL MATERIALS

- A. Match existing

2.02 BACK-FILL MATERIAL

- A. Match existing

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EARTHWORK - Section 02200

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PART 3 - EXECUTION

3.01 EXCAVATION

- A. Disposal. Remove excess soil from the site.
- B. Subgrade preparation: Match existing
  - 1. Leveling: Provide for sidewalk, curb and foundation depth shown as a minimum
  - 2. Irregularities: Sharp changes in slab thickness not permitted

3.02 PLACEMENT AND COMPACTION OF FILL

- A. Compaction
  - 1. Test method: ASTM Standard Proctor Compaction Test (ASTM D 698), performed at optimum moisture.
  - 2. Required minimum compaction: 95% maximum density. Add water or dry out to maintain optimum moisture content.
  - 3. Placement: Place fill in loose layers not to exceed 8 inches.
- B. Compaction of trenches under canopy walks and slabs: Comply with the following compaction procedures for the trench widths noted:
  - 1. 12 inches or less: No compaction by lifts is required provided fill material is granular or soft enough to compact readily by water saturation.
  - 2. Between 12 inches and 36 inches: May be compacted by water saturation to within 2 feet of the surface. The final 2 feet 0 inches must be compacted in layers.
  - 3. The upper portions of utility excavations shall be backfilled with properly compacted clayey soils to minimize infiltration of surface water. Provide a clay plug in the trench on the exterior of the building to prevent water from gaining access along the trench to the sub-grade beneath the structure.

END OF SECTION

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FOUNDATION EXCAVATION AND FOOTINGS - Section 02219

1.01 WORK INCLUDED

- A. Excavation as required for building foundations.
- B. The requirements of this section are in addition to the requirements of General Conditions, Supplementary Conditions and Division 1.

1.02 RELATED WORK

- A. Geotechnical Investigation (Refer to Section 02010)

1.03 REFERENCE STANDARDS

- A. Requirements, abbreviations and acronyms for reference standards are defined in Section 01090.
- B. ASTM C31 - Standard Method of Making and Curing Concrete Test Specimens in Field.
- C. ASTM C39 - Test for Compressive Strength of Cylindrical Concrete Specimens.
- D. ASTM C172 - Practice for Sampling Freshly Mixed Concrete.

1.04 JOB OBSERVATION

- A. Is required as specified in Section 01050.

1.05 SOIL TESTING

- A. Testing Laboratory shall provide a soil technician to observe drilling operations of each footing; record cohesive soil consistency, measurements of auger cuttings in bearing stratum; and report findings to the Geotechnical Engineer of Record.

1.06 CONCRETE TESTING

- A. Testing Laboratory and Contractor shall comply with Section 01410.
- B. Testing Laboratory shall make one set of four test cylinders for each 100 cubic yards of concrete placed, or portion thereof in accordance with ASTM C172.
  - 1. Test two cylinders at 7 days, two at 28 days in accordance with ASTM C31 and C39.

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FOUNDATION EXCAVATION AND FOOTINGS - Section 02219

- C. If continuous on-site inspection is performed by Testing Laboratory, the following shall be complied with:
  - 1. If there is noticeable change in the concrete mix or mixes, four additional test cylinders are required (2 tested at 7 days, 2 tested at 28 days).

1.07 PROTECTION

- A. Protect benchmarks and existing roads against damage from equipment and vehicular or foot traffic.
- B. Protect excavations as required to prevent cave-ins or loose dirt from falling into excavations.
- C. Notify Architect of unexpected sub-surface conditions and discontinue work in area until Architect provides notification to resume work.
- D. Protect bottom of excavations and soil around and beneath foundations from frost.

1.08 ACCEPTANCE OF EARTHWORK

- A. Contractor shall hire the geotechnical engineer (See Section 02010) to certify that existing earthwork (Provided by others) satisfies the geotechnical report in Section 02010 of these specifications
- B. Contractor will hire a surveyor registered in the state in which the work is being performed to certify that based on a grid of 25'- 0", the existing earthwork noted is at an elevation that satisfies the finished floor elevation noted on the drawings.
- C. Contractor's bid shall include one investigation each by geotechnical engineer and surveyor to perform noted services. If certification is denied, Owner will require contractor responsible for earthwork and grading to provide earthwork in accordance with geotechnical report (In Section 02010). Subsequent tests and surveys will be provided by others.
- D. Contractor, via U.S. mail, shall notify Owner (See Section 00100) of acceptance or rejection of the earthwork and/or its grades

1.09 PREPARATION AND LAYOUT

- A. Establish the extent of excavation by area and elevation. Designate and identify required elevations.

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#### FOUNDATION EXCAVATION AND FOOTINGS - Section 02219

- B. Set required lines and levels.
- C. Maintain benchmarks, monuments and other reference points.

#### 1.10 UTILITIES

- A. Utilities In Work Area:
  - 1. Before starting excavation, establish location and extent of underground utilities occurring in work area.
- B. Relocation of Utilities:
  - 1. Notify utility companies having jurisdiction to remove and relocate lines, which are in the way of excavation.
- C. Utilities to Remain:
  - 1. Maintain, re-route or extend as required, the existing utility lines to remain which pass through the work area.
- D. Active Utilities:
  - 1. Protect active utility services uncovered by excavation.
- E. Abandoned Utilities:
  - 1. Remove abandoned utility service lines from areas of excavation. Cap, plug or seal such lines and identify at grade.
- F. Project Records:
  - 1. Accurately locate and record abandoned and active utility lines re-routed or extended, on Project Record Documents (As-built Drawings) as specified in Section 01720.

#### 1.11 DRILLED FOOTINGS

- A. Comply with this section for the following:
  - 1. Job observation
  - 2. Concrete testing
  - 3. Testing of soil-bearing capacity
- B. Drilling and Pouring:
  - 1. Drill the footings to required depths and sizes. Comply with Structural Engineer's design requirements.
  - 2. Clear the excavated areas of all debris, water, slush, and soft, unsound, loose or other foreign matter.
  - 3. Shafts shall be drilled vertically, and belled bases shall be of diameters and depths required.
  - 4. Immediately after drilling, clean the bases of drilled footings of loose material, then place reinforcing steel and concrete.

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FOUNDATION EXCAVATION AND FOOTINGS - Section 02219

Perform these operations on same day, for each footing that is drilled.

- C. Concrete Mix and Placement:
  - 1. Compressive Strength: As required by Structural Engineer's design requirements. If not shown on drawings, use minimum 3000 psi at 28 days.
  - 2. Placement: Comply with Section 03311.

1.12 GRADE BEAMS

- A. Excavate grade beams to the required lines, grades and dimensions. Comply with Structural Engineer's design requirements.

1.13 SURPLUS MATERIALS

- A. Remove surplus excavated and unsuitable materials from site and legally dispose.

END OF SECTION

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UTILITY LINE BACKFILLING - Section 02225

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1.01 WORK INCLUDED

- A. Backfilling requirements of this section apply to all underground mechanical, electrical and plumbing work.
- B. Backfilling for other types of work is specified in other sections.
- C. The requirements of this section are addition to the requirements of the General Conditions, Supplementary Conditions and Division 1.

1.02 RELATED WORK

- A. Geotechnical Investigation, Section 02010
- B. Earthwork, Section 02200

1.03 JOB OBSERVATION

- A. Is required as specified in Section 01015.

1.04 TESTING

- A. Unless specified otherwise on the civil engineering drawings, the testing laboratory shall make one density test for each 100 lineal feet of each layer of compact fill.
- B. Testing Lab and Contractor shall comply with Section 01410.

1.05 BACKFILLING

- A. After utilities are installed and are approved by the appropriate Engineer, place fill in 12 inch layers.
- B. Refer to Civil Engineering Drawings.

END OF SECTION

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FINISH GRADING - Section 02265

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PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Place level and compact topsoil to the required finish grade elevations prior to landscaping work.
- B. The requirements of this section are in addition to the requirements of the General Conditions, Supplementary Conditions and Division 1.

1.02 PROTECTION

- A. Protect landscaping and other features remaining as final work.
- B. Protect fences, light standards, utility stub-ups, paving and curbs.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Topsoil: Fertile, friable, sandy-clay loam free from subsoil, roots, grass, excessive amount of weeds, stones and foreign matter. Acidity range (PH) to be adjusted to between 6.0 and 6.5.
  - 1. Existing on-site topsoil may be reused if complying with the specifications above.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Verify site conditions and note irregularities affecting work of this Section.
- B. Beginning work of this Section means acceptance of existing conditions.

3.02 SUBSOIL PREPARATION

- A. Maintain bench marks, monuments, and other reference points. Re-establish if disturbed or destroyed, at not cost to Owner.

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FINISH GRADING - Section 02265

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- B. Eliminate uneven areas and low-spots. Remove debris, roots, branches, stones, in excess of 1/2 inch in size. Remove subsoil contaminated with petroleum products.
- C. Scarify sub-grade to depth of 3 inches where topsoil is scheduled. Scarify in areas where equipment used for hauling and spreading topsoil has compacted subsoil.

3.03 PLACING TOPSOIL

- A. Place topsoil in areas where seeding and planting is scheduled.
- B. Use topsoil in relatively dry state. Place during dry weather.
- C. Fine grade topsoil eliminating rough or low areas. Maintain levels, profiles, and contours of sub-grade.
- D. Remove stone, roots, grass, weeds, debris, and foreign material while spreading.
- E. Lightly compact placed topsoil.
- F. Remove surplus subsoil and topsoil from site.
- G. Leave stockpile area and site clean and raked, ready to receive landscaping.
- H. Refer to Landscape Drawings for preparation to planting mix and for grass work.
  - 1. Pad area openings in pavement left clean, raked and un-planted

3.04 TOLERANCES

- A. Top of Topsoil: Plus or minus 1/2 inch.

END OF SECTION

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TERMITE CONTROL - Section 02281

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PART 1 GENERAL

1.01 WORK INCLUDED

- A. Soil treatment for termite control at interior and exterior foundation perimeter.

1.02 SUBMITTALS

- A. Submit the following in accordance with Section 01340.
  - 1. Product Data: Indicate toxicants to be used, composition by percentage, dilution schedule, intended application rate.
  - 2. Test Reports: Indicate regulatory agency approval reports when required.
  - 3. Manufacturer's Application Instructions: Indicate caution requirements.
  - 4. Manufacturer's Certificate: Certify that toxicants meet or exceed specified requirements.

1.03 SUBMITTALS AT PROJECT CLOSEOUT

- A. Record moisture content of soil before application, date and rate of application, areas of application, diary of toxicity meter readings and corresponding soil coverage.
- B. Maintenance Data
  - 1. Submit under provisions of Section 01700.
  - 2. Maintenance Data: Indicate re-treatment schedule

1.04 QUALIFICATIONS

- A. Applicator: Company specializing in performing the work of this Section with minimum three years documented experience and licensed by the place where the Project is located.

1.05 REGULATORY REQUIREMENTS

- A. Conform to applicable code for requirements for application, application licensing, and authority to use toxicant chemicals in accordance with EPA.
- B. Provide certificate of compliance from authority having jurisdiction indicating approval of toxicants.

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TERMITE CONTROL - Section 02281

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1.06 SEQUENCING

- A. Apply toxicant 12 hours prior to installation of vapor barrier under slabs-on-grade or finish grading work outside foundations.

1.07 GUARANTEE

- A. Provide five-year guarantee.
- B. Guarantee: Include coverage for damage and repairs to building and building contents caused by termites. Repair damage. Re-treat where required.
- C. Inspect and report annually to Owner in writing.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Toxicant Chemical: EPA and local authority approved; synthetically color dyed to permit visual identification of treated soil.
- B. Diluents: Recommended by toxicant manufacturer.

2.02 MIXES

- A. Mix toxicant to manufacturer's instructions.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify site conditions.
- B. Verify that soil surfaces are unfrozen, sufficiently dry to absorb toxicant, and ready to receive treatment.
- C. Certify final grading is complete.

3.02 APPLICATION

- A. Spray apply toxicant in accordance with manufacturer's instructions.
- B. Apply toxicant at locations indicated in Schedule at end of Section.
- C. Apply extra treatment to structure penetration surfaces such as pipe or ducts, and soil penetrations such as grounding rods or posts.

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TERMITE CONTROL - Section 02281

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- D. Re-treat disturbed treated soil with same toxicant as original treatment.
- E. If inspection or testing identifies the presence of termites, re-treat soil and re-test.

3.03 PROTECTION OF FINISHED WORK

- A. Protect finished Work.
- B. Do not permit soil grading over treated work.

3.04 SCHEDULES

- A. Locations:
  - 1. Under slabs-on-grade
  - 2. Both sides of grade beams
  - 3. Expansions joints

END OF SECTION

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CONCRETE SIDEWALKS - Section 02510

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Concrete canopy walks, curbs and ramps, complete with form work, reinforcement, detectable warnings, joint materials and accessories.
- B. The requirements of this section are in addition to the requirements of the General conditions, Supplementary Conditions and Division 1.

1.02 REFERENCE STANDARDS

- A. Requirements, abbreviations and acronyms for reference standard specified in this section are defined in Section 01090.
- B. ASTM C150 - Portland Cement.
- C. ASTM C94 - Ready-Mixed Concrete.
- D. ASTM C260 - Air-Entraining Admixtures for Concrete.
- E. ASTM A185 - Welded Steel Wire Fabric for Concrete Reinforcement.
- F. ASTM A615 - Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
- G. ASTM C33 - Concrete Aggregates.
- H. ASTM C309 - Liquid Membrane-Forming Compounds for Curing Concrete.
- I. ASTM C31 - Standard method of Making and Curing Concrete Test Specimens in Field
- J. ASTM C39 - Test for Compressive Strength of Cylindrical Concrete Specimens.
- K. ASTM C172 - Practice for Sampling Freshly Mixed Concrete.

1.03 JOB OBSERVATION

- A. Required as specified in Section 01015.

1.04 CONCRETE TESTING

- A. Testing Laboratory and Contractor shall comply with Section 01410.
- B. Testing Laboratory shall make one set of four test cylinders for each 150 cubic yards of concrete placed or portion thereof in accordance with ASTM C172.

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CONCRETE SIDEWALKS - Section 02510

PART 2 - PRODUCTS

2.01 CONCRETE MATERIALS

- A. As required by Structural Engineer's Specifications and Geotechnical Investigation, whichever is greater.
- B. Cement: Portland Cement, Type 1, ASTM C150.
- C. Sand: Clean hard free from an excess of salt or alkali conforming to ASTM C33.
- D. Gravel: Hard, conforming to ASTM C33.
- E. Water: Clean and free from injurious amounts of oil, alkali, organic matter, or other deleterious material.
- F. Curing Compound: Liquid membrane-forming type, ASTM C309 quality.
- G. Concrete Sealer (Alternate No. 9) SIKA USA: SikaCem-102 First Seal

2.02 CONCRETE MIX

- A. As required by Structural Engineer's specifications.
- B. Compressive Strength: For Canopy Walks: 3000 psi minimum at 28 days.
- C. Slump: 4 ½" to 5 ½"
- D. For Ready-Mixed Concrete, comply with ASTM C94.

2.03 REINFORCEMENT

- A. Reinforcing Bars: Deformed billet steel bars, ASTM A615, Grade 60, unless otherwise shown.
- B. Wire Fabric: Plain cold-drawn electrically welded steel fabric, ASTM A185, size as shown on drawings.
- C. Joint Dowel Bars: ASTM A615, Grade 60, unless other wise shown. Cut bars true to length with ends free of burrs.
- D. Tie Wire: Minimum 16 gage annealed type.
- E. Fiber Reinforcement: ASTM C948, collated, fibrillated, ¾ inch (19mm) long virgin polypropylene fibers, equal to Bomanite Fibers.

2.04 JOINT MATERIALS

- A. Wood Joint Filler:

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### CONCRETE SIDEWALKS - Section 02510

1. Construction grade redwood, with redwood “top-strips” in preparations for sealants; 1 x size as indicated on drawings, with pre-drilled holes for reinforcing dowels.  
 Optional: Asphalt impregnated fiber board. Allow space for sealant.
2. Distributor: Shepler’s, Houston, Texas
- B. Sealant for Joint Materials:
  1. Type: “Dow Corning 888 SL” .
  2. Color: Gray
- C. Substitution: Comply with Section 01630.

### 2.05 COLORED AND IMPRINTED CONCRETE

- A. The Bomanite Company, 8777 Auburn Folsom Rd. #108, Granite Bay, CA 95746. ASD. Tel 303/369-1115, fax 303/291-0282, email: [info@bomanite.com](mailto:info@bomanite.com), web: <http://www.bomanite.com>
- B. Color:
  1. Integral Color:
    - a. Integral coloring Admixture: Integral Color by The Bomanite Company, synthetic oxide pigment, meeting ASTM C979 and C494.
      1. Type A, cement dispersing / water reducing
      2. Type D, set retarding / water reducing
    - b. Color Hardener:
      1. Bomanite Color Hardener: The concrete shall be colored with Bomanite Color Hardener. Color(s) as scheduled. Refer to Landscape Drawings.
- C. Tools Selection
  1. Imprinting Tools:
    - a. Mat type imprinting tools for texturing freshly placed concrete, in pattern/texture as selected by Architect or as scheduled.
    - b. Imprinting tools used in the execution of this project shall be manufactured by The Bomanite Company.
  2. Bomanite Patterns: Design(s) as scheduled. Refer to Landscape Drawings.
  3. Bomanite Textures and Patterns: Design(s) as scheduled. Refer to Landscape Drawings.
- D. Release Agent Selection:
  1. Powered Release Agent. Color(s) as scheduled. Refer to

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- Landscape Drawings.
  - a. Bomanite Release Agent
- 2. Liquid Release Agent: Clear color.
- E. Cure Agent:
  - 1. BOMANITE Clear Cure by the Bomanite Company
    - a. Curing Compound: Meeting ASTM C309, water-based emulsion.
  - 2. Silicate Cure & Densifier:
    - a. The concrete shall receive a cure treatment utilizing Bomanite Con Shield.
- F. Sealing and Finish Coatings:
  - 1. Colorwax by The Bomanite Company
  - 2. Hydrolock by The Bomanite Company
  - 3. VOC II by The Bomanite Company

PART 3 - EXECUTION

3.01 FORMWORK

- A. Match, tight-fit and adequately stiffen the forms to support weight of concrete without deflection detrimental to tolerances and appearance of concrete. Build forms to the required lines and levels.
- B. Arrange and assemble formwork to permit easy dismantling and stripping, and to prevent damage to concrete during formwork removal.
- C. Refer to drawings for all dimensions and profiles.

3.02 PLACEMENT FOR REINFORCEMENT

- A. Reinforce concrete paving as indicated on drawings. Allow for minimum 1-1/2 inch concrete cover.
- B. Do NOT extend reinforcing through expansion and contraction joints. Provide doweled joints through expansion and contraction joints, with one end of dowels fitted with capping sleeve to allow free movement.

3.03 INSTALLATION OF JOINT MATERIALS

- A. Wood Filler Installations:
  - 1. Locations: Where indicated on drawings.

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### CONCRETE SIDEWALKS - Section 02510

2. Do NOT remove “top strips” until ready to apply sealant
- B. Sealant Application:
  1. Immediately after removing "top-strips" from wood fillers, prepare the joints for sealant work.
  2. Properly prepare surfaces in accordance with sealant manufacturer's published recommendations.
  3. All joints must be free of concrete, dust, dirt and all materials, which could affect a good adhesion of sealant to concrete.
  4. Prime all joints using approved primer.
  5. Apply sealant in accordance with sealant manufacturer's instructions and with relatively straight edges.

### 3.04 CONCRETE PLACEMENT

- A. Thickness: As indicated on drawings.
- B. Preparation:
  1. Before depositing concrete, remove debris from space to be occupied by concrete.
  2. Reinforcement must be in proper locations, clean, free of loose scale, dirt or other foreign coatings, which would reduce bond to concrete. Reinforcement shall be supported by chairs at proper height to prevent sagging during pour.
  3. Joint materials and other items to be embedded must be properly placed and secured as required.
- C. Concrete Pouring:
  1. During Hot Weather: Conform to ACI 305.
  2. During Cold Weather: When outdoor temperatures fall below 40 degrees F., concrete placement shall cease.
  3. Immediately before placement, temperature of concrete batch shall exceed 60 degrees F. Concrete with a batch temperature in excess of 90 degrees F shall NOT be placed.
  4. Convey concrete from mixer to final position by method which will prevent separation or loss of material and which will prevent displacement of reinforcement and concrete accessories.
  5. Under no circumstances will partially hardened concrete be deposited in the work.
  6. Do NOT deposit concrete on concrete, which has sufficiently hardened to cause formation of seams or planes of weakness.

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7. Use mechanical vibrating equipment to thoroughly work the concrete around reinforcement, embedded fixtures and into corners of forms.
  8. Do NOT place concrete underwater.
- D. Color / Imprinted Concrete
1. After consolidating and screeding, float concrete to gradients indicated. Use a straight edge to level and test surface in longitudinal direction to required grade. Finish edges to provide a smooth dense surface with 1/8 inch (3 mm) radius.
  2. Apply Bomanite Color Hardener prior to application of pattern. Apply at rate recommended by manufacturer, evenly to the surface of the fresh concrete by the dry-shake method. Applied in two or more shakes, floated after each shake and troweled only after the final floating.
  3. While concrete is still in its plastic state, apply the tool-texture pattern to the surface of the concrete. Properly tamp tools into the surface to achieve the required texture, with uniformity of pattern and depth of stamping. Utilize bond breaker to keep tools from sticking to fresh concrete. Release material shall be applied to the troweled surface prior to imprinting.
  4. Place curing compound on exposed concrete surfaces immediately after finishing. Apply in accordance with manufacturer's instructions.
  5. Apply secondary stain treatment per approved mock-up or as scheduled to achieve design.
  6. Apply finish sealer per approved mock-up or as specified to achieve design required.
- E. Protection and Curing:
1. Protect concrete from injurious action by the sun, rain, flowing water frost, and mechanical injury at a temperature of not less than 50 degrees F.
  2. Do not allow concrete to dry out from time of placement to end of curing.
  3. Keep wood forms, left in place during curing, damp at all times to prevent opening at the joints and drying of concrete.
  4. No period during which moisture or warmth is lacking shall be counted effective for curing time.
  5. Cure all concrete, for not less than 7 days by the following methods. During this time, do not work or allow traffic on slabs being cured.

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6. Curing shall immediately follow finishing operation by utilizing absorptive mats of fabric kept continuously wet or curing compounds conforming to ASTM C 309. Apply compounds in accordance with recommendations of manufacturer. Do not use on any surfaces against which additional concrete or other cementitious finishing materials are to be bonded, nor on surfaces on which such curing would impair adhesion of coverings, or where prohibited elsewhere.
7. Protect exposed flatwork such as curbs and ledges, with full board or plywood coverings as necessary to protect from damage by impact or from building rubbish.
8. Control the use of water so that no damage to previously installed work is permitted to occur.

3.05 CONCRETE FINISH

- A. For Canopy Walks:
  1. Medium sandpaper-like (magnesium float) finish.
- B. For Ramps & Other Sloped Surfaces:
  1. As indicated on drawings.
  2. Colored concrete at curb ramps. Install per manufacturer's published specifications.
  3. If finish is not indicated on drawings, slightly brush the sloped surfaces to provide a slip-resistant surface.
  4. Brush perpendicular to walking direction.
- C. For color/imprinted concrete:
  1. Refer to drawings
- D. Finish the edges of concrete work with edging tool.
- E. Eliminate tool marks on concrete surface.

END OF SECTION

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SITE PAVEMENT STRIPING - Section 02600

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PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Paving striping, graphic paint.
- B. The requirements of this section are in addition to the requirements of the General Conditions, Supplementary Conditions and Division 1.

PART 2 - PRODUCTS

2.01 STRIPING PAINT

- A. Type: PPG Traffic and Zone Marking Paint 11-5 (50.4% solids by volume), color directly on new pavement to be selected by Owner, unless indicated on the drawings.
  - 1. This paint is formulated for application on concrete pavement.
- B. Color
  - 1. Striping, White
  - 2. Accessible Parking, White
  - 3. International Symbol of Accessibility, Blue No. 15090 in Federal Standard 595A
  - 4. Fire Markings, Red with white letters. Refer to drawings for additional information.

PART 3 - EXECUTION

- 3.01
  - A. Striping directly on new pavement.
    - 1. DO NOT begin striping until pavement surface has been accepted by Owner.
    - 2. Mark off pavement surface with 4" wide lines, length and other dimensions as shown on drawings.
      - a. Paint the thickness required for two coat application. Third coat will be required if complete coverage is not obtained.
      - b. Apply to dry and clean surfaces.
      - c. Lines shall be straight and uniform with sharp edges.
  - B. Fire Lanes
    - 1. DO NOT begin striping until surfaces to receive paint are accepted by Owner

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SITE PAVEMENT STRIPING - Section 02600

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2. Wherever fire lane is bordered by a concrete curb, paint face of curb
3. Where fire lane is not bordered by a curb, paint fire lane striping on pavement.
  - a. Paint the thickness required for two coat application. Third coat will be required if complete coverage is not obtained.
  - b. Apply to dry and clean surfaces.
  - c. Lines shall be straight and uniform with sharp edges.

END OF SECTION

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SITE IMPROVEMENTS - Section 02800

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PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Wheel stops, complete with anchor pins
- B. The requirements of this section are in addition to the requirements of the General Conditions, Supplementary conditions and Division 1.

1.02 DELIVERY, STORAGE, HANDLING

- A. All materials shall be protected from damage. Remove any damaged items from site and replace at no cost to Owner.

PART 2 - PRODUCTS

2.01 WHEEL STOPS (Where noted)

- A. Local manufacturer, pre-cast 6-foot concrete bumpers with steel anchor pins.

PART 3 - EXECUTION

3.01 SETTING WHEEL STOPS

- A. Drill holes in paving for anchor pins.
- B. Fill holes at anchor pins with sealant.
- C. Carefully align wheel stops in locations shown on the drawings.
- D. Replace any damaged stops.

END OF SECTION

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CAST-IN-PLACE CONCRETE - Section 03300

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PART 1-GENERAL

1.01 WORK INCLUDED

- A. Cast-in-place concrete work for tilt-up, site cast concrete wall panels, load-bearing, erected from mold to position, complete with supports, devices, load-bearing supports and attachments.
- B. The requirements of this section are in addition to the requirements of the General Conditions, Supplementary Conditions and Division 1.

1.02 RELATED WORK

- A. Foundation excavation, Section 02219.
- B. Reinforced Concrete, Section 03311.

1.03 JOB OBSERVATION

- A. Required as specified in Section 01015.

1.04 CONCRETE TESTING

- A. Testing Laboratory and Contractor shall comply with Section 01410
- B. Testing Laboratory shall take one set of two cylinders for each 50 cubic yards of concrete placed, or portion thereof.
  - 1. Test one cylinder at 7 days, one at 28 days.
- C. If continuous on-site inspection is performed by Testing Laboratory, the following shall be complied with:
  - 1. Materials and installed Work may require testing and retesting at any time during progress of Work. Tests, including retesting of rejected materials for installed Work, shall be done at Contractor's expense.

1.05 REFERENCE STANDARDS

- A. Requirements, abbreviations and acronyms for reference standards are defined in Section 01090.
- B. ACI 318 - Building Code Requirements for Reinforced Concrete.
- C. ASTM A185 - Welded Steel Wire Fabric for Concrete Reinforcement.
- D. ASTM A615 - Deformed and Plain Billet Steel Bars for Concrete Reinforcement.
- E. AWS D12.1 - Welding Reinforcing Steel, Metal Inserts and Connections in Reinforced Concrete Construction.

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- F. ASTM C33 - Concrete Aggregates.
- G. ASTM C94 - Ready-Mixed Concrete.
- H. ASTM C150 - Portland Cement.
- I. ASTM C309 - Liquid Membrane - Forming Compounds for Curing Concrete.

1.06 SUBMITTALS

- A. Submit the following in accordance with Section 01340:
  - 1. Product Data: Submit manufacturer's Technical Product Data, installation instructions, and recommendations for each product. Include data substantiating that materials comply with specified requirements.
    - a. Product data for proprietary materials and items, including reinforcement and forming accessories, admixtures, patching compounds, joint systems, curing compounds, and others as requested by Architect.
  - 2. Shop drawings for reinforcements, prepared by Professional Engineer registered in the State of Texas for fabrication, bending, and placement of concrete reinforcement. Comply with ACI SP-66 (88), "ACI Detailing Manual", showing bar schedules, stirrup spacing, diagrams of bent bars, and arrangement of concrete reinforcement. Include special reinforcement required for openings through concrete structures.
  - 3. Laboratory test reports for concrete materials and mix design test.
  - 4. Materials Certificates in lieu of Material Laboratory Test Reports when permitted by Architect. Materials Certificates shall be signed by Manufacturer and Contractor, certifying that each material item complies with or exceeds specified requirements. Provide certification from admixture manufacturers that chloride content complies with specification requirements.

PART 2-PRODUCTS

2.01 FORM MATERIALS

- A. Forms for Exposed Finish Concrete: Plywood, metal, metal-framed plywood faced, or other acceptable panel-type materials, to provide continuous, straight, smooth, exposed surfaces. Furnish in largest

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practicable sizes to minimize number of joints and to conform to joint system shown on drawings.

1. Use plywood complying with U.S. Product Standard PS-1 "B-B (Concrete Form) Plywood", Class I, Exterior Grade or better, mill-oiled and edge-sealed, with each piece bearing legible inspection trademark.
  2. Form Liner: See drawings
- B. Forms for Unexposed Finish Concrete: Plywood, lumber, metal or other acceptable material. provide lumber dressed on at least 2 edges and one side for tight fit. Stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

#### 2.02 REINFORCING MATERIALS

- A. Reinforcing Bars: ASTM A 615, Grade 40 for No. 3 bars and Grade 60 for all others. All bars shall be deformed.
- B. Welded Wire Fabric: ASTM A 185, welded steel wire fabric.
- C. Supports for Reinforcement: Bolsters, chairs, spacers and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Use wire-bar type supports complying with CRSI specifications.
  1. For exposed-to-view concrete surfaces, where legs of supports are in contact with forms, provide supports with legs that are plastic protected (CRSI, Class 1).
- D. Connecting Devices and Miscellaneous Accessories: Fabricate of steel to permit initial place and final attachment.
  1. Galvanize the items exposed to outside of building.
  2. Paint prime the items concealed within building.

#### 2.03 CONCRETE MATERIALS

- A. Portland Cement: ASTM C 150, Type I.
  1. Use one brand of cement throughout the project, unless otherwise acceptable to the Architect.
- B. Fly Ash: Not allowed.
- C. Normal Weight Aggregates: ASTM C 33 and as herein specified. Provide aggregates from a single source for exposed concrete.
  1. For exterior exposed surfaces, do not use fine or coarse aggregates containing spalling-causing deleterious substances.
- D. Water: Drinkable.
- E. Admixtures, General: Provide admixtures for concrete that contain not more than 0.1 percent chloride ions.

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- F. Air-Entraining Admixture: ASTM C 260, certified by manufacturer to be compatible with other required admixtures.
  - 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to the following:
    - a. "Air-Mix", Euclid Chemical Co.
    - b. "Darex AEA" or "Daravair", W.R. Grace & Co.
    - c. "MB-VR" or "Micro-Air", Master Builders, Inc.
    - d. "Sealtight AEA", W.R. Meadows, Inc.
    - e. "Sika AER", Sika Corp.
- G. Water-Reducing Admixture: ASTM C 494, Type A.
  - 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to the following:
    - a. "Eucon WR-75 or WR-89", Euclid Chemical Co.
    - b. "Pozzolith 200-N", Master Builders, Inc.
    - c. "Plastocrete 160", Sika Corp.
- H. Water Reducing, Retarding Admixture: The admixture shall conform to ASTM C494, Type D and not contain more chloride ions than are present in municipal drinking water.
  - 1. Available Products: Subject to compliance with requirements, products may be incorporated in the Work include, but are not limited to the following:
    - a. "Eucon Retarder-75"; The Euclid Chemical Company
    - b. "Pozzolith 100XR"; Master Builders, Inc.
    - c. "Plastiment"; Sika Chemical Co.
    - d. "WRDA w/Hycol"; W.R. Grace & Co.
- I. High-Range Water-Reducing Admixture (Super Plasticizer): ASTM C94, Type F or G and not contain more chloride ions than are present in municipal drinking water.
  - 1. Available Products: Subject to compliance with requirements, products may be incorporated in the Work include, but are not limited to the following:
    - a. "Eucon 37"; Euclid Chemical Co.
    - b. "Rheobuild 1000"; Master Builders, Inc.
    - c. "Sikament 300", Sika Corp.
- J. Non-Corrosive, Non-Chloride Accelerating Admixture: The admixture shall conform to ASTM C494, Type C or E, and not contain more chloride ions than are present in municipal drinking water. The admixture manufacturer shall have long-term non-corrosive test data from an independent testing laboratory (of at least a year's duration)

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using acceptable accelerated corrosion test method such as that using electrical potential measures.

1. Available Products: Subject to compliance with requirements, products may be incorporated in the Work include, but are not limited to the following:
  - a. "Accelguard 80"; Euclid Chemical Co.
  - b. "Daraset", W.R. Grace & Co.
- K. Prohibited Admixtures: Calcium chloride, thiocyanates, or admixtures containing more than 0.05% chloride ions are NOT permitted. No admixture shall cause an increase in shrinkage when tested in accordance with ASTM C494 and ASTM C157.
- L. Certification: Written conformance to the above mentioned requirements and the chloride ion content of the admixture will be required from the admixture manufacturer prior to mix design review by the Engineer.

#### 2.04 RELATED MATERIALS

- A. Moisture-Retaining Cover: One of the following, complying with ASTM C 171.
  1. Waterproof paper.
  2. Polyethylene film.
  3. Polyethylene-coated burlap.
- B. Underlayment Compound: Free-flowing, self-leveling, pumpable, cement-based compound for applications from one inch thick to feathered edges.
  1. Available Products: Subject to compliance with requirements, products may be incorporated in the Work include, but are not limited to the following:
    - a. "K-15", Ardex, Inc.
    - b. "Thoro Underlayment Self-Leveling", Thoro System Products.
- C. Bonding Compound: Polyvinyl acetate or acrylic base.
  1. Available Products: Subject to compliance with requirements, products may be incorporated in the Work include, but are not limited to the following:
    - a. Polyvinyl Acetate (Interior Only):
      1. "Superior Concrete Bonder", Dayton Superior Corp.
      2. "Euco Weld", Euclid Chemical Co.
      3. "Weld-Crete", Larsen Products Corp.
      4. "Everweld", L&M Construction Chemicals, Inc.

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- b. Acrylic or Styrene Butadiene:
  - 1. "Acrylic Bondcrete"; The Burke Co.
  - 2. "Strongbond"; Conspec Marketing and Mfg. Co.
  - 3. "Day-Chem Ad Bond", Dayton Superior Corp.
  - 4. "SBR Latex"; Euclid Chemical Co.
  - 5. "Daraweld C"; W.R. Grace & Co.
  - 6. "Hornweld"; A.C. Horn, Inc.
  - 7. "Everbond"; L&M Construction Chemicals, Inc.
  - 8. "Acryl-Set"; Master Builders, Inc.
  - 9. "Intralok", W.R. Meadows, Inc.
  - 10. "Sonocrete"; Sonneborn-Rexnord
  - 11. "Stonlock LB2", Stonhard, Inc.
- D. Epoxy Adhesive: ASTM C 881, two-component material suitable for use on dry or damp surfaces. Provide material "Type", "Grade", and "Class" to suit project requirements.
  - 1. Available Products: Subject to compliance with requirements, products may be incorporated in the Work include, but are not limited to the following:
    - a. "Burke Epoxy M.V."; The Burke Co.
    - b. "Spec-Bond 100"; Conspec Marketing and Mfg. Co.
    - c. "Euco Epoxy System #452 or #620"; Euclid Chemical
    - d. "Epoxite Binder 2390"; A.C. Horn, Inc.
    - e. "Epabond", L&M Construction Chemicals, Inc.
    - f. "Concresive 1001"; Master Builders, Inc.
    - g. "Sikadur 32 Hi-Mod"; Sika Corp.

#### 2.05 PROPORTIONING AND DESIGN OF MIXES

- A. Prepare design mixes for each type and strength of concrete by either laboratory trial batch, or field experience methods as specified in ACI 301.
- B. Design mixes to provide normal weight concrete with the following properties, as indicated on drawings and schedules:
  - 1. 3000-psi, 28 day compressive strength; W/C ratio, 0.60, minimum cement content: 470 lbs/cu.yd.

#### 2.06 AD MIXTURES

- A. Use the specified water-reducing admixture or high-range, water-reducing admixture in concrete for placement and Work ability.
- B. Use non-chloride accelerating admixture in concrete slabs placed at ambient temperatures below 50 degrees F (10 degrees C).

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- C. Use high-range water-reducing admixture (HRWR) in synthetic fiber, pumped concrete, concrete for industrial slabs, concrete required to be watertight, and concrete with water/cement ratios below 0.50.
- D. Use air-entraining admixture in exterior exposed concrete unless otherwise indicated. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having total air content with a tolerance of plus or minus 1-1/2 percent within following limits:
  - 1. Concrete structures and slabs exposed to freezing and thawing, deicer chemicals, or hydraulic pressure:
    - a. 4.5 percent (moderate exposure); 5.5 percent (severe exposure) 1-1/2 inch max. aggregate.
    - b. 4.5 percent (moderate exposure); 6.0 percent (severe exposure) 1 inch max. aggregate.
    - c. 5.0 percent (moderate exposure); 6.0 percent (severe exposure) 3/4 inch max. aggregate.
    - d. 5.5 percent (moderate exposure); 7.0 percent (severe exposure) 2 inch max. aggregate.
  - 2. Other concrete (not exposed to freezing, thawing, or hydraulic pressure) air content is optional.
  - 3. Use admixtures for water reduction and set control in strict compliance with manufacturer's directions.
- E. Water-Cement Ratio: Provide concrete for following conditions with maximum water-cement (W/C) ratios as follows:
  - 1. Subjected to freezing and thawing; W/C 0.50.
  - 2. Subjected to deicers/watertight; W/C 0.45.
  - 3. Reinforced concrete subjected to brackish water, salt spray, or deicers: W/C 0.40.
- F. Concrete containing HRWR admixture (Superplasticizer): Not more than 9 inches unless otherwise approved by the Architect. The concrete shall arrive at the job site at a slump of 2" to 3" (3" to 4" for concrete receiving "shake-on hardener"), be verified, the high-range water-reducing admixture added to increase the slump to the approved level.
  - 1. Other concrete: Not more than 4 inches.

### 2.07 CONCRETE MIXING

- A. Ready-Mix Concrete: Comply with requirements of ASTM 94, and as specified.
  - 1. When air temperature is between 85 deg F (30 deg C) and 90 deg F (32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes, and when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

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PART 3-EXECUTION

3.01 GENERAL

- A. Coordinate the installation of joint materials and vapor retarders with placement of forms and reinforcing steel.
- B. Verify building structure, anchors, devices and openings are ready to receive work of this Section.
- C. Beginning of installation means acceptance of existing conditions.

3.02 FORMS

- A. General: Design, erect, support, brace and maintain formwork to support vertical and lateral, static and dynamic loads that might be applied until concrete structure can support such loads. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation, and position. Maintain formwork construction tolerances complying with ACI 347.
  - 1. Construct forms to sizes, shapes, lines and dimensions shown to obtain accurate alignment, location, grades, level, and plumb work in finished structures. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, regulates, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required in Work. Use selected materials to obtain required finishes. Solidly butt joints and provide backup at joints to prevent leakage of cement paste.
  - 2. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the like, for easy removal.
  - 3. Provide temporary openings where interior area of formwork is inaccessible for cleanout, for inspection before concrete placement, and for placement of concrete. Securely brace temporary openings and set tightly to forms to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
  - 4. Chamfer exposed corners and edges as indicated, using wood, metal, PVC, or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.
- B. Provisions for Other Trades: Provide openings in concrete formwork to accommodate Work of other trades. Determine size and location of openings,

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recesses, and chases from trades providing such items. Accurately place and securely support items built into forms.

- C. **Cleaning and Tightening:** Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, or other debris just before concrete is placed. Re-tighten forms and bracing before concrete placement as required to prevent mortar leaks and maintain proper alignment.

#### 3.03 PLACING REINFORCEMENT

- A. **General:** Comply with Concrete Reinforcing Steel Institute's recommended practice for "Placing Reinforcing Bars", for details and methods of reinforcement placement and supports and as herein specified.
1. Avoiding cutting or puncturing vapor retarder during reinforcement placement and concreting operations.
  2. Clean reinforcement of loose rust and mill scale, earth, ice and other materials that reduce or destroy bond with concrete.
  3. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers.
  4. Place reinforcement to obtain at least minimum coverages for concrete protection. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.
  5. Install welded wire fabric in as long lengths as practicable. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

#### 3.04 INSTALLATION OF EMBEDDED ITEMS

- A. **General:** Set and build into Work anchorage devices and other embedded items required for other Work that is attached to, or supported by cast-in-place concrete. Use setting drawings, diagrams, instructions, and directions provided by suppliers of items to be attached thereto.

#### 3.05 PREPARATION OF FORM SURFACES

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- A. General: Coat contact surfaces of forms with an approved, non-residual, low-VOC, form-coating compound before reinforcement is placed.
  - 1. Do not allow excess form-coating material to accumulate in forms or to come into contact with in-place concrete surfaces against which fresh concrete will be placed. Apply in conformance with manufacturer's instructions.

### 3.06 CONCRETE PLACEMENT

- A. Inspection: Before placing concrete, inspect and complete formwork installation, reinforcing steel, and items to be embedded or cast in. Notify other crafts to permit installation of their Work; cooperate with other trades in setting such Work.
- B. General: Comply with ACI 304, "Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete", and as herein specified.
  - 1. Deposit concrete continuously or in layers of such thickness that no concrete will be placed on concrete that has hardened sufficiently to cause the formation of seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as herein specified. Deposit concrete to avoid segregation at its final location.
- C. Placing Concrete in Forms: Deposit concrete in forms in horizontal layers not deeper than 24 inches and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.
  - 1. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures for consolidation of concrete in accordance with ACI 309.
  - 2. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than visible effectiveness of machine. Place vibrators to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing segregation of mix.

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- D. Cold-Weather Placing: Comply with provisions of ACI 306 and as follows. Protect concrete Work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
1. When air temperature has fallen to or is expected to fall below 40 deg F (4 deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F (10 deg C) and not more than 80 deg F (27 deg C) at point of placement.
    - a. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen sub-grade or on subgrade containing frozen materials.
    - b. Use only the specified non-corrosive non-chloride accelerator. Calcium chloride, thiocyanates, or admixtures containing more than 0.05% chloride ions are NOT permitted.
- E. Hot-Weather Placing: When hot weather conditions exist that would seriously impair quality and strength of concrete, place concrete in compliance with ACI 305 and as herein specified.
1. Cool ingredients before mixing to maintain concrete temperature at time of placement below 90 deg F (32 deg C). Mixing water may be chilled, or chopped ice may be used to control temperature provided water equivalent of ice is calculated to total amount of mixing water. Use of liquid nitrogen to cool concrete is Contractor's option.
  2. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedment in concrete.
  3. Fog spray forms, reinforcing steel and subgrade just before concrete is placed.
  4. Use water-reducing retarding admixture when required by high temperatures, low humidity, or other adverse placing conditions, when acceptable to Architect.

#### 3.07 FINISH OF FORMED SURFACES

- A. Rough Form Finish: For formed concrete surfaces not exposed to view in the finish Work or concealed by other construction. This is the concrete surface having texture imparted by form-facing material used, with tie holes and defective areas repaired and patched and fins and other projections exceeding 1/4 inch in height rubbed down or chipped off.

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#### CAST-IN-PLACE CONCRETE - Section 03300

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- B. Smooth Rubbed Finish: Provide smooth rubbed finish to scheduled concrete surfaces, which have received smooth form finish treatment, not later than one day after form removal.
  - 1. Moisten concrete surfaces and rub with carborundum brick or other abrasive until a uniform color and texture is produced. Do not apply cement grout other than that created by the rubbing process.
- C. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces occurring adjacent to formed surfaces, strike-off, smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

#### 3.08 CONCRETE CURING AND PROTECTION

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. In hot, dry, and windy weather, protect concrete from rapid moisture loss before and during finishing operations with an evaporation-control material. Apply in accordance with manufacturer's instructions after screeding and bull floating, but before power floating and troweling.
  - 1. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Weather permitting, keep continuously moist for not less than 7 days.
- B. Curing Methods: Perform curing of concrete by curing and sealing compound, by moist curing, by moisture-retaining cover curing, and by combinations thereof, as herein specified.
  - 1. Provide moisture curing by following methods:
    - a. Keep concrete surface continually wet by covering with water.
    - b. Use continuous water-fog spray.
    - c. Cover concrete surface with specified absorptive cover, thoroughly saturate cover with water, and keep continuously wet. Place absorptive cover to provide coverage of concrete surfaces and edges, with 4-inch lap over adjacent absorptive covers.
  - 2. Provide moisture-cover curing as follows:
    - a. Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width with sides and ends lapped at least 3 inches and sealed by waterproof tape or adhesive. Immediately repair any

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holes or tears during curing period using cover material and waterproof tape.

3.09 REMOVAL OF FORMS

- A. General: Formwork not supporting weight of concrete, may be removed after cumulatively curing at not less than 50 deg F (10 deg C) for 24 hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form-removal operations, and provided curing and protection operations are maintained.
  - 1. Form-facing material may be removed 4 days after placement only if shores and other vertical supports have been arranged to permit removal of form-facing material without loosening or disturbing shores or supports.

3.10 REUSE OF FORMS

- A. Clean and repair surfaces of forms to be re-used in Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-coating compound as specified for new formwork.
- B. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close joints. Align and secure joint to avoid offsets. Do not use "patched" forms for exposed concrete surfaces.

3.11 MISCELLANEOUS CONCRETE ITEMS

- A. Filling In: Fill in holes and openings left in concrete structures for passage of Work by other trades, unless otherwise shown or directed, after Work of other trades is in place. Mix, place, and cure concrete as herein specified, to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete Work.

3.12 CONCRETE SURFACE REPAIRS

- A. Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after removal of forms, when acceptable to Owner's Project manager.

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1. Cut out honeycomb, rock pockets, voids over 1/4 inch in any dimension, and holes left by tie rods and bolts, down to solid concrete, but in no case to a depth of less than 1 inch. Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water, and brush-coat the area to be patched with specified bonding agent. Place patching mortar before bonding compound has dried or while the epoxy adhesive is still tacky.
  2. For exposed-to-view surfaces, blend white Portland cement and standard Portland cement so that, when dry, patching mortar will match color surrounding. Provide test areas at inconspicuous location to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.
- B. Repair of Formed Surfaces: Remove and replace concrete having defective surfaces. Surface defects, as such, include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets, fins and other projections on surface, and stains and other discolorations that cannot be removed by cleaning. Flush out form holes, fill with dry-pack mortar, or pre-cast cement cone plugs secured in place with bonding agent.
1. Repair concealed formed surfaces, where possible, that contain defects that affect the durability of concrete. If defects cannot be repaired, remove and replace concrete.

END OF SECTION

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REINFORCED CONCRETE – Section 03311

PART 1-GENERAL

1.01 WORK INCLUDED

- A. Formwork, reinforcing steel, miscellaneous accessories and cast-in-place concrete for building slab and foundation.
- B. Comply with Structural Engineer's design requirements.
- C. The requirements of this section are in addition to the requirements of the General Conditions, Supplementary Conditions and Division 1.

1.02 JOB OBSERVATION

- A. Is required as specified in Section 01050.

1.03 RELATED CONCRETE WORK

- A. Concrete Sidewalks, Section 02510.

1.04 ACCEPTANCE OF EARTHWORK

- A. Contractor shall hire the geotechnical engineer (See Section 02010) to certify that existing earthwork (Provided by others) satisfies the geotechnical report in Section 02010 of these specifications
- B. Contractor will hire a surveyor registered in the state in which the work is being performed to certify that based on a grid of 25' - 0", the existing earthwork noted is at an elevation that satisfies the finished floor elevation noted on the drawings.
- C. Contractor's bid shall include one investigation each by geotechnical engineer and surveyor to perform noted services. If certification is denied, Owner will require contractor responsible for earthwork and grading to provide earthwork in accordance with geotechnical report (In Section 02010). Subsequent tests and surveys will be provided by others.
- D. Contractor, via U.S. mail, shall notify Owner (See Section 00100) of acceptance or rejection of the earthwork and/or its grades

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1.05 CONCRETE TESTING

- A. Testing Laboratory and Contractor shall comply with Section 01410
- B. Testing Laboratory shall make one set of four test cylinders for each 100 cubic yards of concrete placed, or portion thereof.
  - 1. Test two cylinders at 7 days, two at 28 days.
- C. If continuous on-site inspection is performed by Testing Laboratory, the following shall be complied with:
  - 1. If there is noticeable change in the concrete mix or mixes, four additional test cylinders are required (2 tested at 7 days, 2 tested at 28 days).
- D. Provide Concrete Moisture Testing at interior concrete slabs scheduled to receive adhered finish flooring systems (VCT, epoxy flooring, etc.) and is responsible for any remedies required to bring the moisture content of concrete slabs to within allowable limits established by the product manufacturers for proper installation of flooring materials.

1.06 REFERENCE STANDARDS

- A. Requirements, abbreviations and acronyms for reference standards are defined in Section 01090.
- B. ACI 318 - Building Code Requirements for Reinforced Concrete.
- C. ASTM A185 - Welded Steel Wire Fabric for Concrete Reinforcement.
- D. ASTM A615 - Deformed and Plain Billet Steel Bars for Concrete Reinforcement.
- E. AWS D12.1 - Welding Reinforcing Steel, Metal Inserts and Connections in Reinforced Concrete Construction.
- F. ASTM C33 - Concrete Aggregates.
- G. ASTM C94 - Ready-Mixed Concrete.
- H. ASTM C150 - Portland Cement.
- I. ASTM C309 - Liquid Membrane - Forming Compounds for Curing Concrete.
- J. ASTM C31 - Standard Method of Making and Curing Concrete Test Specimens in Field.
- K. ASTM C39 - Test for Compressive Strength of Cylindrical Concrete Specimens.
- L. ASTM C172 - Practice for Sampling Freshly Mixed Concrete.

1.07 MILL CERTIFICATES

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- A. Make the following available to the Architect upon request:
  - 1. Mill certificates from suppliers of reinforcing steel for concrete work certifying all reinforcing steel conform to Structural Engineer's design requirements and the specifications.

1.08 SHOP DRAWINGS

- A. Submit shop drawings in accordance with Section 01340. Indicate bar sizes, spacing, locations, and quantities of reinforcing steel and wire fabric, bending and cutting schedules, supporting and spacing devices.

1.09 DELIVERY TICKETS

- A. Furnish to Architect copies of delivery tickets for each load of concrete delivered to the site.

PART 2 - PRODUCTS

2.01 REINFORCEMENT

- A. Reinforcing Steel:
  - 1. Type: Deformed billet steel bars, plain finish. Conform to Structural Engineer's design requirements.
  - 2. Where indicated, weld reinforcing bars in accordance with AWS D12.1.
- B. Welded Steel Wire Fabric:
  - 1. Type: Electrically-welded plain finish. Conform to Structural Engineer's design and requirements.

2.02 ACCESSORIES

- A. Provide all required items to be embedded in concrete such as inserts, anchors, sleeves, ties, etc.
- B. Construction Joints: "Vulco Screed Joint Type I", 24 gauge galvanized steel shaped to form a tongue and groove mechanical key joint, complete with steel stakes, manufactured by Vulcan Metal Products Inc., Birmingham Alabama.
  - 1. Screed joints shall be complete with 7/8" diameter knock-out holes at 6" on centers for dowels or re- bars.
  - 2. Size: As required to match slab thickness.

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- C. Tie Wire: Minimum 16 gage annealed type.
- D. Moisture Barrier: Clear polyethylene film, 6 mil thick, complete with tape of type recommended by film manufacturer.
- E. Waterproofing membrane: Bituthene system 4000

2.03 CONCRETE MATERIALS

- A. Cement: Portland, Type I.
- B. Sand: Clean and free from an excess of salt or alkali conforming to requirements of ASTM C33.
- C. Gravel: Hard, conforming to requirements of ASTM C33.
- D. Water: Clean, fresh and free from injurious amounts of oil, acid, alkali, organic and other deleterious substances.

2.04 CONCRETE MIX

- A. Compressive Strength: Comply with Structural Engineer's design requirements. If compressive strength is not shown on drawings, use 3000 psi at 28 days.
  - 1. Slump: 4 inches  $\pm$ 1 inch
- B. Mix concrete in accordance with ASTM C94.
- C. Accelerating Admixtures: Use in cold weather only when accepted by the Architect. If accepted, use of admixtures will not relax cold weather placement requirements.
  - 1. Calcium chloride shall NOT be used.
- D. Set-Retarding Admixtures: Use during hot weather only when accepted by Architect.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Before proceeding with concrete foundation work, structural fill under building slab shall be complete and approved by the approved Testing Laboratory.

3.02 FORMING

- A. Construct the forms to adequately support the weight of concrete without deflection detrimental to tolerances and appearance of concrete.

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- B. Form vertical surfaces to full depth and securely position to required lines and levels.
- C. Arrange and assembly formwork to permit easy dismantling and stripping, and to prevent damage to concrete during formwork removal.

3.03 PLACEMENT OF MOISTURE BARRIER/REINFORCEMENT/  
ACCESSORIES

- A. Lap moisture barrier minimum 6 inches and tape with continuous strips of tape.
- B. Place, support and secure concrete reinforcement and accessories against displacement. Do not deviate from true alignment.

3.04 CONCRETE PLACEMENT

- A. Preparation:
  - 1. Before depositing concrete, remove debris from space to be occupied by concrete.
  - 2. Reinforcement must be in proper locations, clean, free of loose scale, dirt or other foreign coatings which would reduce bond to concrete.
  - 3. Expansion and control joint materials, anchor bolts and other items to be embedded must be properly placed and secured as required.
- B. Construction Joints (Metal Screeds):
  - 1. Provide at locations shown on drawings.
- C. Concrete Pouring:
  - 1. During Hot Weather: Conform to ACI 305.
  - 2. During Cold Weather: When outdoor temperatures fall below 40 degrees F., concrete placement shall cease.
  - 3. Immediately before placement, temperature of concrete batch shall exceed 60 degrees F. Concrete with a batch temperature in excess of 90 degrees F shall NOT be placed.
  - 4. Convey concrete from mixer to final position by method which will prevent separation or loss of material and which will prevent displacement of reinforcement and concrete accessories.
  - 5. Under no circumstances will partially hardened concrete be deposited in the work.
  - 6. Do NOT deposit concrete on concrete which has sufficiently hardened to cause formation of seams or planes of weakness.

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7. Use mechanical vibrating equipment to thoroughly work the concrete around reinforcement, embedded fixtures and into corners of forms.
8. Do NOT place concrete underwater.
- D. Protection and Curing:
  1. Protect concrete from injurious action by the sun, rain, flowing water frost, and mechanical injury at a temperature of not less than 50 degrees F.
  2. Do not allow concrete to dry out from time of placement to end of curing.
  3. Keep wood forms, left in place during curing, damp at all times to prevent opening at the joints and drying of concrete.
  4. No period during which moisture or warmth is lacking shall be counted effective for curing time.
  5. Cure all concrete, for not less than 7 days by the following methods. During this time, do not work or allow traffic on slabs being cured.
  6. Curing shall immediately follow finishing operation by utilizing absorptive mats of fabric kept continuously wet or curing compounds conforming to ASTM C 309. Apply compounds in accordance with recommendations of manufacturer. Do not use on any surfaces against which additional concrete or other cementitious finishing materials are to be bonded, nor on surfaces on which such curing would impair adhesion of floor on wall coverings, or where prohibited elsewhere.
  7. Protect exposed flatwork such as curbs and ledges, with full board or plywood coverings as necessary to protect from damage by impact or from building rubbish.
  8. Control the use of water so that no damage to previously installed work is permitted to occur.

3.05 INTERIOR FLOOR SLAB FINISHES

- A. "Steel-trowel" finish all interior floor slabs to a Class "A" finish which is 1/8" in 10 feet as determined by a 10 foot straightedge placed on slab in any direction.
- B. Dusting floor slab with cement to absorb moisture or to fill dips is NOT allowed.
- C. Defects: Remove defects of sufficient magnitude to show through floor covering by grinding.

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3.06 WATERPROOFING MEMBRANE

- A. Install per manufacturer's published specifications

END OF SECTION

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MORTAR - Section 04100

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PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Mortar for masonry work.
- B. The requirements of this section are in addition to the requirements of the General Conditions, Supplementary Conditions and Division 1.

1.02 RELATED WORK

- A. Concrete Unit Masonry, Section 04220
- B. Thin-Set Stone, Section 04415
- C. Cast Stone, Section 04465

1.03 REFERENCE STANDARDS

- A. Requirements, abbreviations and acronyms for reference standards are defined in Section 01090.
- B. ASTM C91 - Masonry Cement
- C. ASTM C94 - Ready-Mixed Concrete
- D. ASTM C144 - Aggregate for Masonry Mortar
- E. ASTM C150 - Portland Cement
- F. ASTM C207 - Hydrated Lime for Masonry Purposes
- G. ASTM C270 - Mortar for Unit Masonry
- H. ASTM C387 - Packaged, Dry, Combined Materials for Mortar and Concrete
- I. ASTM C476 - Grout for Reinforced and Non-reinforced Masonry
- J. ASTM C780 - Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry.
- K. International Masonry Industry All-Weather Council (IMIAC) - Recommended Practices and Guide Specifications for Cold Weather Masonry Construction
- L. Texas Department of Insurance Windstorm requirements where applicable

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MORTAR - Section 04100

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1.04 ENVIRONMENTAL REQUIREMENTS

- A. Maintain materials and surrounding air temperature to minimum 0 degrees F (10 degrees C) prior to, during, and 48 hours after completion of masonry work.

1.05 SUBMITTALS

- A. Samples: Submit two samples of mortar, illustrating mortar color and color range.
- B. Reports: Submit reports on grout indicating conformance of component grout materials to requirements of ASTM C476.
- C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- D. Contractor shall provide for Owner a mock-up sample panel, using colored mortar as selected for Owner's review/approval prior to work.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Maintain packaged materials clean, dry and protected against dampness, freezing and foreign matter.

PART 2 - PRODUCTS

2.01 PREMIX MORTAR

- A. Amerimix Colored Cement Mortar
- B. Color: See drawings.

2.02 OTHER MORTAR

- A. White Portland Cement: ASTM C150, Type I, except Type III may be used for color weather construction.
- B. White Sand - Mortar Aggregate: ASTM C144, standard masonry type.
- C. Hydrated Lime: ASTM C207, Type S.
- D. Grout Course Aggregate: ASTM C404.
- E. Water: Clean and potable.

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MORTAR - Section 04100

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- F. The specification is for pricing purposes only. Prior to provision of samples verify specification with Owner.

PART 3 - EXECUTION

3.01 MORTAR MIXING

- A. Thoroughly mix mortar ingredients in accordance with ASTM C270 in quantities needed for immediate use.
- B. Maintain sand uniformly damp immediately before the mixing process.
- C. Do not use anti-freeze compounds to lower the freezing point of mortar.
- D. If water is lost by evaporation, re-temper only within two hours of mixing.
- E. Use mortar within two hours after mixing at temperatures of 90 degrees F, or two and one half hours at temperatures under 45 degrees F.

3.02 GROUT MIXES

- A. Bond Beams/Lintels: 2,500 psi strength at 28 days; 8-10 inches slump; mixed in accordance with ASTM C476, fine grout.
- B. Engineered Masonry: 2,500 psi strength at 28 days; 8-10 inches slump; mixed in accordance with ASTM C4767, fine grout.

3.03 GROUT MIXING

- A. Transit mixed grout shall be in accordance with ASTM C94.
- B. Thoroughly mix grout ingredients in quantities needed for immediate use in accordance with ASTM C476, fine grout.
- C. Add admixtures in accordance with manufacturer's instructions; mix uniformly.
- D. Do not use anti-freeze compounds to lower the freezing point of grout.

3.04 INSTALLATION

- A. Work grout into masonry cores and cavities to eliminate voids..

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MORTAR - Section 04100

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- B. Do not install grout in lifts greater than 16 inches without consolidating grout by rodding.
- C. Do not displace reinforcement while placing grout.
- D. Remove excess mortar from grout spaces.

3.05 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed under provisions of Section 01400.
- B. Test and evaluate mortar in accordance with ASTM C780.
- C. Test and evaluate grout in accordance with ASTM C1019.

END OF SECTION

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CONCRETE UNIT MASONRY - Section 04220

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PART 1-GENERAL

1.01 WORK INCLUDED

- A. Concrete masonry wall and column bases, non-load bearing, complete with anchors and accessories.
- B. Build in items supplied by other trades.
- C. Cut and fit for other sections of work
- D. The requirements of this section are in addition to the requirements of the General conditions, Supplementary Conditions and Division 1.

1.02 RELATED WORK

- A. Mortar, Section 04100.

1.03 REFERENCE STANDARDS

- A. Requirements, abbreviations and acronyms for reference standards are defined in Section 01090.
- B. ASTM C150 - Portland Cement.
- C. ANSI A41.1 - Building Code Requirements for Masonry.

1.04 SYSTEM PERFORMANCE REQUIREMENTS

- A. Submittals
  - 1. Submit the following in accordance with Section 01340:
    - a. Product Data: Submit Manufacturer's Technical Product Data, installation instructions, and recommendations for each product. Include data substantiating that materials comply with specified requirements.
    - b. Material Certificates for the following signed by manufacturer and Contractor certifying that each material complies with requirements.
      - i. Each different cement product required for mortar and grout including name of manufacturer, brand, type and weight slips at time of delivery.

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CONCRETE UNIT MASONRY - Section 04220

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- ii. Each type and size of anchors, ties, and metal accessories.

1.05 ENVIRONMENTAL REQUIREMENTS

- A. Maintain materials and surrounding air temperature to minimum 50 deg. F. prior to, during and 48 hours after completion of masonry work.
- B. During freezing or near freezing weather, provide adequate equipment or cover to maintain a minimum temperature of 50 deg. F. and to protect masonry work completed or in progress.

1.06 PROTECTION

- A. Maintain protective boards at exposed external corners which may be damaged by construction activities. Provide such protection without damaging completed work.
- B. Provide temporary bracing during erection of masonry work. Maintain in place until building structure provides permanent bracing.

PART 2 – PRODUCTS

2.01 CONCRETE BLOCKS AND MORTAR

- A. Standard Concrete Masonry Units: Hollow load bearing, Grade “N”, Type 1, ASTM C90, Size and type of texture: As shown on drawings

2.02 ACCESSORIES

- A. Acceptable Manufacturers for products described below
  1. Dur-O-Wall
  2. Heckmann Building Products, Inc.
  3. Hohmann & Barnard, Inc.
  4. Wire-Bond
  5. Williams Products, Inc.
- B. Horizontal Reinforcing: Standard 9 gauge side rods x 9 cross rods truss type for single wythe construction. Provide cavity hook and eyes welded at 16" o.c. at brick veneer construction; hot-dipped

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### CONCRETE UNIT MASONRY - Section 04220

- galvanized after fabrication. Width to be 2" less than wall thickness. Provide prefabricated corners and tees.
- C. Adjustable Veneer Anchors - Drywall type - hot-dipped galvanized.
- D. Control Joints: Standard joint gaskets to be used with sash blocks in PVC or rubber.
- E. Weeps: Round plastic, 3/8" o.d. x appropriate length.
- F. Thru-Wall Flashing: 32 mil self-adhering, self-healing, rubberized asphalt laminated to 8 mil polyethylene sheet.

### PART 3 - EXECUTION

#### 3.01 PREPARATION

- A. Supply metal anchors to other trades for placement. Provide in sufficient quantity, and direct their correct placement.
- B. Ensure items built-in by other trades for this work are properly located and sized.
- C. Establish all lines, levels and coursing. Protect from disturbance.

#### 3.02 WORKMANSHIP AND INSTALLATION

- A. Place concrete block in accordance with lines and levels indicated on drawings.
- B. Mortar Joints
  - 1. Concave Joints: Use for walls which will remain exposed to view.
  - 2. Keep control joints voids clear of mortar.
- C. Fully bond external and internal corners and intersections.
- D. Buttering corners of joints, deep or excessive furrowing of mortar joints is NOT permitted.
- E. Do NOT shift or tap masonry units after mortar has taken initial set. Where adjustment must be made, remove mortar and replace.
- F. Perform jobsite cutting with proper power tools to provide straight and true, unchipped edges. Do NOT use smaller than half-size units.
- G. Where non-bearing masonry extends to underside of floor, roof deck or structural system, stop masonry short 3/8 inch to 1/2 inch to allow for live load deflection. Fill gap with Joint filler. Provide structural anchorage in accordance with ANSI A41.1.

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- H. Ensure masonry courses are of uniform height. Make vertical and horizontal joints equal and of uniform thickness.
- I. Lay concrete block in full bed of mortar, properly jointed with other work.
- J. Remove excess mortar and projections. Take care to prevent breaking block corners.

3.03 TOLERANCES

- A. Maximum variation from masonry unit to adjacent masonry unit to be 1/32 inch.
- B. Lay concrete unit masonry to receive finish material plumb, with flush mortar joints.
- C. Maintain flush face on sight exposed masonry surfaces.

3.04 CONTROL JOINTS

- A. Locations: As shown on Drawings. If not shown on Drawings, space no more than 25 feet o.c.
- B. Do NOT continue horizontal masonry reinforcing across control joints.

3.05 BUILT-IN WORK

- A. As work progresses, build in items supplied by other trades plumb and true.
- B. Do NOT build-in organic materials which will be subjected to rot or deterioration.

3.06 CUTTING AND FITTING

- A. Cut and fit concrete blocks as required for the work of other sections. Cooperate fully with other sections of work to insure correct size, shape and location.

3.07 POINTING AND CLEANING

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- A. Remove excess mortar and smears upon completion of masonry work.
- B. Point or replace defective mortar. Match adjacent work.
- C. Clean soiled surfaces using a non-acidic solution which will not harm masonry or adjacent materials. Consult Masonry manufacturer for acceptable cleaners. Use non-metallic tools in cleaning operations.

END OF SECTION

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PART 1-GENERAL

1.01 WORK INCLUDED

- A. Face brick veneer construction complete with anchors and accessories.
- B. Built in steel angle lintels and shelf angles.
- C. Built in items supplied by other trades.
- D. Cut and fit for other sections of work.
- E. The requirements of this section are in addition to the requirements of General Conditions, Supplementary Conditions and Division 1.

1.02 RELATED WORK

- A. Mortar, Section 04100.

1.03 REFERENCE STANDARDS

- A. ASTM C216 - Facing Brick.
- B. ANSI A41.1 - Building Code Requirements for Masonry.

1.04 ENVIRONMENTAL REQUIREMENTS

- A. Maintain materials and surrounding air temperature to minimum 50 deg. F prior to, during and 48 hours after completion of masonry work.
- B. During freezing or near freezing weather, provide adequate equipment and/or cover to maintain minimum temperature of 50 deg. F and to protect masonry work completed or in progress.

1.05 SAMPLE

- A. Submit for Architect's approval 12" x 12" sample panels showing brick texture and color and mortar color. Submit manufacturer's product data describing brick.

1.06 JOB MOCK-UP

- A. After 12" x 12" sample has been approved, construct approximately 4' long, 4' high mock-up sample for Architect's approval. Show coursing, bond, thickness and tooling of joints, range of color and texture of brick and color of mortar selected.

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- B. Accepted mock-up sample establishes minimum standard of quality and workmanship for brickwork.

PART 2-PRODUCTS

2.01 BRICK

- A. Face Brick:
  - 1. Grade SW (with standard core holes), type FBS in accordance with ASTM C216.
  - 2. Color and size:
    - a. See drawings
  - 3. Face brick without holes are also required.

2.02 MORTAR AND ACCESSORIES

- A. Mortar: As specified in Section 04100.
- B. Brick Ties: **HB #303, 16 gauge, 1” wide, length appropriate for the application -bt, mill galvanized**
- C. Sealant and Backer Rods: Exterior quality in accordance with Section 07920. Color of sealant to match mortar color.
- D. Control Joints: Filler, closed cell neoprene sponge 3/8" thick.
- E. Thru-Wall Flashing: 20 mil PVC. Flashing material must be of type impervious to corrosion and unaffected by caustic chemicals such as alkalis found in concrete and masonry.
  - 1. Acceptable Manufacturers:
    - a. Firestone Building Products, Carmel, IN
    - b. Nervastral, Inc., Greenwich, CT
    - c. York Manufacturers, Sanford, Maine
- F. Weeps: HB #341, 3/8” o.d. x 4” long.
- G. Adjustable Veneer Anchors – Drywall type – hot-dipped galvanized.

PART 3-EXECUTION

3.01 PREPARATION

- A. Ensure items built-in by other trades for this work are properly located and sized.
- B. Establish lines, levels and coursing. Protect from disturbance.
- C. Build-in items supplies by other trades.

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- D. Cut and fit for other sections of work.

3.02 WORKMANSHIP AND INSTALLATION

- A. Place brick units in accordance with lines and levels indicated on drawings.
- B. Mortar Joints:
  - 1. Lay brick in running bond unless otherwise indicated on Drawings.
- C. Fully bond external and internal corners and intersections.
- D. Buttering corners of joints, deep or excessive furrowing or mortar joints is NOT permitted.
- E. Do NOT shift or tap brick after mortar has taken initial set. Where adjustment must be made, remove mortar and replace.
- F. Perform jobsite cutting with proper power tools to provide straight and true, unchipped edges.
- G. Ensure brick courses are of uniform height. Make vertical and horizontal joints equal and of uniform thickness. Lay in full bed of mortar properly jointed with other work.
- H. Keep control joints voids clear of mortar.

3.03 TOLERANCES

- A. Maximum variation from masonry unit to adjacent masonry unit is 1/32 inch.
- B. Maximum variation from vertical and horizontal building lines is 1/4 inch in 10 feet.
- C. Maximum variation from cross sectional thickness of walls is plus or minus 1/4 inch.

3.04 INSTALLATION OF TIES AND ANCHORS

- A. Secure ties for brick veneer vertically and horizontally at spacing indicated on drawings. Place at maximum 3 inches on center each way round perimeter of openings, within 12 inches of openings.
- B. Fully reinforce corners and intersection every sixth mortar joint.

3.05 INSTALLATION OF FLASHING AND CONTROL JOINTS

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- A. Thru-Wall Flashing: Extend flashings through brick veneer, turn up minimum 8 inches and seal over gypsum sheathing. Lap end joints minimum 6 inches and seal watertight. Use flashing manufacturer's recommended adhesive. At concrete masonry back up, extend up to first joint (or a minimum of 4") and extend through concrete masonry.
- B. Control Joints: Provide control joints in brick masonry work where indicated on Drawings. If not shown on Drawings, space no more than 25 feet o.c.

3.07 BUILT-IN WORK

- A. As work progresses, built-in items supplied by other trades plumb and true to lines and levels. Cut and fit for other sections of work.
- B. Do NOT build in organic materials which will be subjected to decomposition or deterioration.

3.08 CUTTING AND FITTING

- A. Obtain Architect's approval before cutting or fitting any area of brick which is not indicated on drawings OR which may impair appearance or strength of brickwork.

3.09 POINTING AND CLEANING

- A. Remove excess mortar and smears upon completion of work.
- B. Point or replace defective mortar to match adjacent work.
- C. Clean soiled surfaces using as non-acidic solution of type recommended by brick manufacturer, which will not harm brick and adjacent construction. Use non-metallic tools in cleaning operations.

END OF SECTION

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THIN-SET MANUFACTURED STONE VENEER - Section 04415

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Thin Set Manufactured Stone work.
- B. Reinforcements, anchorage and accessories
- C. The requirements of this section are in addition to requirements of the General Conditions, Supplementary Conditions, and Division 1.

1.02 RELATED WORK

- A. Mortar, Section, 04100
- B. Stone and Cast Stone Sealer, Section 07700

1.03 QUALITY ASSURANCE

- A. Stone work shall be performed in accordance with recommendations of the Building Stone Institute.

1.04 REFERENCE STANDARDS

- A. Requirements, abbreviations and acronyms for reference standards are defined in Section 01090.
- B. Building Stone Institute (SBI).
- C. Texas Department of Insurance Windstorm Requirements where applicable

1.05 SHOP DRAWINGS AND PROJECT DATA

- A. Submit the following in accordance with Section 01340.
  - 1. Product data clearly indicating the following:
    - a. Cutting and setting drawings shall clearly indicate the following:
      - i. Overall wall elevation showing unit size and thickness, locations and size of grout joints.
      - ii. Type of finish including edge finish.
      - iii. All details relating to back-up wall showing how stone is secured to the back-up wall.
    - b. Sample with specified finish (12" x 12").
    - c. Mock up per drawings.

1.06 QUALITY ASSURANCE

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THIN-SET MANUFACTURED STONE VENEER - Section 04415

- A. Field-Constructed Mock-Ups: Prior to installation of stone, erect minimum 6 square foot sample wall panel of all proposed finishes to further verify selections made under sample submittals and to demonstrate aesthetic effects as well as qualities of materials and execution. Build mock-ups to comply with the following requirements using materials indicated for final unit of Work:
1. Notify Architect/Owner one week in advance of the dates when mock-ups will be erected.
  2. Protect mock-ups from the elements with weather-resistant membrane.
  3. Retain and maintain mock-ups during construction in undisturbed condition as standard for judging completed masonry construction.
  4. When directed, demolish and remove mock-ups from Project site.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to project in undamaged condition.
1. Store and handle off the ground, undercover, and in a dry location to prevent their deterioration or damage due to moisture, temperature changes, contaminants, corrosion, and other causes. If units become wet, do not place until units are in an air-dried condition.
  2. Store accessories including metal items to prevent corrosion and accumulation of dirt and oil.

1.08 PROJECT CONDITIONS

- A. Protection: During erection, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed work when construction is not in progress.
- B. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Remove immediately any grout, mortar, and soil that come in contact with the work.
1. Protect base of walls from rain-splashed mud and mortar splatter by mean of coverings spread on ground and over wall surface.
  2. Protect sills, ledges, and projections from mortar droppings.
- C. Cold-Weather Construction: Comply with manufacturer's specifications for cold weather construction and the following:
1. Do not lay materials that are wet or frozen.
  2. Remove materials damaged by freezing conditions.
- D. Hot-Weather Construction: Comply with manufacturer's specifications for hot-weather construction.

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THIN-SET MANUFACTURED STONE VENEER - Section 04415

PART 2 PRODUCTS

2.01 STONE

- A. Manufacturer – Alamo Stone
- B. Color - See drawings
- C. **This specification is for pricing purposes only. Prior to provision of samples verify specification with Owner**
- D. Contact: 281-240-4600 or 800-501-0803

2.02 WATERPROOFING MEMBRANE

- A. Laticrete Hydro Ban
- B. Install over substrate in all areas to receive manufactured stone veneer over cement board sheathing.
- C. Preparation and pre-treatment of substrate per Laticrete's specifications

2.03 BONDING AGENT (ADHESIVE MORTAR)

- A. Laticrete 254 Platinum
- B. Installation as recommended by stone manufacturer for direct bonding of simulated stone to specified substrate.
- C. Preparation and pre-treatment of substrate per Laticrete's specification

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine areas and conditions under which work will be performed. Correct conditions detrimental to timely and proper completion. Do not proceed until unsatisfactory conditions are corrected.
- B. Verify that masonry and concrete substrate do not have residual coatings present which may affect bonding to substrate.
- C. Coordinate deficiencies with manufacturer in accordance with manufacturer's recommendations.
- D. Coordinate with other trades as needed to assure proper substrate are provided.
- E. Verify that grounds, anchors, plugs, recess frames, bucks, electrical work, mechanical work and similar items in or behind the stone have been installed prior to installation of stone veneer.

3.02 INSTALLATION

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THIN-SET MANUFACTURED STONE VENEER - Section 04415

- A. Install in accordance with approved mock-up.
- B. Lay all stone in pattern shown on drawings
- C. Maintain minimum temperature limits on job site and follow installation practices recommended by materials manufacturer
- D. Apply bonding agent to substrate in accordance with bonding agent manufacturer's recommendations.

3.03 GROUTING MORTAR

- A. Do not begin grouting until stones are firmly set.
- B. Using a grouting bag, force the maximum amount of grout into joints, filling all gaps and skips. Do not permit grout on stone's face.
- C. Provide grout, which is uniform in color, smooth and without voids, pinholes or low spots.
- D. Remove surplus grout from joints by raking and tooling. Brush all joints to remove excessive or loose sand.
- E. Remove mortar and haze from stone's face within 3 hours, leaving the surface of all units clean.

3.04 CLEANING

- A. After setting and grouting are completed, thoroughly clean stone face by brushing and lightly washing with a clean, wet sponge or soft bristle brush.
- B. Clean with non-acidic solution acceptable to stone manufacturer.
- C. Do not use acid or acid cleaners.

END OF SECTION

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CAST STONE - Section 04465

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PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Cast stone.
- B. The requirements of this section are in addition to requirements of the General Conditions, Supplementary Conditions, and Division 1.

A.02 RELATED WORK

- A. Mortar, Section 04100.

1.03 QUALITY ASSURANCE

- A. Cast Stone work shall be performed in accordance with recommendations of the Cast Stone Institute, 10 West Kimball St., Winder, GA 30680, (770) 868-5909.

1.04 REFERENCE STANDARDS

- A. Requirements, abbreviations and acronyms for reference standards are defined in Section 01090.

1.05 SHOP DRAWINGS AND PROJECT DATA

- A. Submit the following in accordance with Section 01340.
  - 1. Shop drawings and product data clearly indicating the following:
    - a. Cutting and setting drawings shall clearly indicate the following:
      - i. Overall wall elevation showing unit size and thickness, locations and size of grout joints.
      - ii. Type of finish including edge finish.
      - iii. Type, size and locations of anchoring devices.
      - iv. All details relating to back-up wall showing how cast stone is secured to the back-up wall.
    - b. Sample with specified finish (12" x 12").
    - c. Full range of colors

PART 2 PRODUCTS

2.01 SUPPLIERS

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#### CAST STONE - Section 04465

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A. Suppliers are limited to the following:

1. See drawings

#### 2.02 ARCHITECTURAL CAST STONE

A. Physical properties: Provide the following:

1. Compressive Strength - ASTM C 1194: 6,500 psi (45Mpa)  
Minimum for products at 28 days.
2. Absorption - ASTM C 1195: 6% maximum by the cold water method, or 10% maximum by the boiling method for products at 28 days.
3. Air Content - ASTM C 173 or C 231, for wet cast product shall be 4-6% for units used in a freeze-thaw environment.

#### 2.03 RAW MATERIALS

- A. Portland Cement – Type I or Type III, white, ASTM C 150.
- B. Course aggregates - Granite, quartz or limestone, ASTM C 33.
- C. Fine aggregates - Manufactured or natural sands, ASTM C 33, except for gradation.
- D. Colors - Inorganic iron oxide pigments, ASTM C 979.
- E. Fiber: Virgin homopolymer polypropylene non-fibrillated fibers
- F. Admixtures: Ingredients necessary to achieve required air entrainment, low permeability, accelerated cure, increased flexural and compressive strength and freeze-thaw resistance.
- G. Admixtures - Comply with the following:
  1. ASTM C260 for air-entraining admixtures.
  2. ASTM C 494 for water reducing, retarding or accelerating admixtures.
  3. Other admixtures: Integral water repellents and other chemicals for which no ASTM Standard exists, shall be previously established as suitable for use in concrete by proven field performance or through laboratory testing.
  4. ASTM C 618 mineral admixtures of dark and variable colors shall not be used in surfaces intended to be exposed to view.
  5. ASTM C 989 granulated blast furnace slag may be used to improve physical properties. Tests are required to verify these features.
  6. Water - Potable

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#### CAST STONE - Section 04465

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- H. All anchors, dowels and other anchoring devices and shims shall be standard building stone anchors commercially available in a non-corrosive material such as zinc plated, galvanized steel, brass, or stainless steel Type 302 or 304.

#### 2.04 COLOR AND FINISH

- A. Color – See drawings
- B. All surfaces intended to be exposed to view shall have a fine-grained texture similar to natural stone, with no air voids in excess of 1/32 in (0.8 mm) and the density of such voids shall be less than 3 occurrences per any 1 in. – (25 mm<sup>2</sup>) and not obvious under direct daylight illumination at a 5ft. (1.5m) distance.
- C. Units shall exhibit a texture approximately equal to the approved sample when viewed under direct daylight illumination at a 10ft (3m) distance.
  - 1. ASTM D 2244 permissible variation in color between units of comparable age subjected to similar weathering exposures.
    - a. Total color difference - not greater than 6 units.
    - b. Total hue difference – not greater than 2 units.
- D. Caulked joints and perimeter shall be caulking sealant type and color recommended by caulking manufacturer and approved by architect. Grouting or pointing mortar shall be composed of one part non-staining cement (ASTM C91), one part hydrate lime (ASTM C207 Type S) and four parts clean, washed sand (ASTM C144). Coloring pigments may be added as required. The architect shall approve color of mortar before proceeding with grouting or pointing.
- E. Minor chipping resulting from shipment and delivery shall not be grounds for rejection. Minor chips shall not be obvious under direct daylight illumination from a 2 ft. (6m) distance.
- F. This specification is for pricing purposes only, prior to provision of samples, verify specification with Owner.

#### 2.05 ACCESSORIES

- A. Mechanical Fasteners (Lugs): ¼” x 20” female stainless steel threaded imbed anchors shall be cast in the rear of each medallion by manufacturer. Manufacturer shall provide ¼” x 20” stainless steel studs to be threaded into anchors at job site. Studs shall project from rear of medallion a minimum of 1” into hole drilled in the structural substrate of the mounting wall.

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- B. Adhesive: Solvent based construction adhesive or cement thinset mortar manufactured specifically for vertical tile or masonry bonding and incorporating bonding agent in cement mix.
- C. Reinforce the units as required by the drawings and for safe handling and structural stress.
- D. Welded wire fabric reinforcing shall not be used in dry cast products.

2.06 DESIGN

- A. See Drawings
  - 1. Designs shown on drawings are custom for this project.
  - 2. If supplier has designs in stock similar to designs shown on drawings, supplier is encouraged to submit their similar designs for owner's selection as a deduct alternate.

2.07 SHIPPING

- A. Cast stone shall be carefully loaded and packed for transportation exercising customary and reasonable precaution against damage while in transit. All products shall be released to freight carrier in a sound, unblemished and unbroken condition.

2.08 MORTAR

- A. As specified in Section 04100.
- B. Color – See drawings

2.08 SEALER

- A. Type: Silicone base impregnator
  - 1. HMK S45
  - 2. Chem-Trete PB
  - 3. ProSoCo Standoff
- B. Prep as recommended by Manufacturer

PART 3 - EXECUTION

3.01 INSPECTION

- A. Install cast stone true, plumb and level in accordance with manufacturer's installation instructions. All pieces shall be set by experienced and qualified stonemasons or tile setters in accordance with the shop drawings.

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#### CAST STONE - Section 04465

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- B. All substrate to receive pieces shall be prepared as indicated per manufacturer's specification. Substrate shall be clean of any oil, paint, dust or debris. Surface shall be smooth, level sound and capable of a successful and permanent adhesion to the setting material.
- C. When setting with mortar all pieces not thoroughly wet shall be drenched with clear potable water and excess water removed, just prior to setting.
- D. Unless otherwise noted, every piece shall be set in a full bed of mortar with all vertical joints flushed full. All anchors shall be firmly in place and all anchor holes and similar holes filled completely with mortar.
- E. After setting, if required, each piece shall be braced with a diagonal support to the face and rest on a previously installed temporary horizontal ledger to be removed after full cure of setting material. The face of each piece shall then be sponged off to remove any splashed mortar or mortar smears.
- F. All pieces shall be protected from splashing mortar or damage by other trades. Any foreign matter splashed or rubbed on the pieces shall be removed immediately.
- G. A foam or wood "plug" ½" larger than the intended piece shall be temporarily installed on the substrate in applications where cast stone is not immediately available or construction conditions prohibit a timely installation. This plug shall be removed and typical installation shall proceed according to this section.
- H. ½" minimum tolerance required in surrounding opening dimensions.

#### 3.03 PATCHING

- A. The repair of chipped or damaged cast stone shall be done only by mechanics skilled in his work with materials furnished by the manufacturer and according to his direction.
- B. Shall show no obvious repairs or imperfections other than the minimal color variations when viewed with the unaided eye under good typical lighting.

#### 3.04 CLEANING

- A. The face of all cast stone shall be cleaned where necessary by scrubbing with a bristle fiber brush, using soap powder and water and shall be rinsed thoroughly with clean running water. No acid or prepared cleaners shall be used without the approval of the manufacturer.

#### 3.05 SEALING

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- A. After cleaning and drying and full cure to any cementitious grouts (approximately 30 days), cast stone ornaments be sealed with a silicone stearate solution. Follow sealer manufacturer's instructions and apply to inconspicuous test area to determine job specific results.

PART 4 - HANDLING AND STORAGE

4.01 HANDLING

- A. Handling: All cast stone ornaments shall be received and unloaded at the project site by competent workmen with the necessary care and handling to avoid damage and soiling.

4.02 STORAGE

- A. The pieces shall be stored on the job site in the same crating and packaging used for shipment. The packages and/or crates shall be stored on a level area clear of the ground and protected from the weather and other trades. If pieces are to be stored after uncrating, they should be placed carefully on edge and secured on non-staining supports. Pieces shall be stacked a maximum of one row high and protected from the weather and damage.

END OF SECTION

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STRUCTURAL STEEL - Section 05120

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PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Structural steel framing, complete with required bracing, welds, washers, nuts, shims and anchor bolts.
- B. Comply with Structural Engineer's design requirements.
- C. See Section 00300, Isolated Prices
- D. The requirements of this section are in addition to the requirements of the General Conditions, Supplementary Conditions and Division 1.

1.02 JOB OBSERVATION

- A. Is required in accordance with Section 01015.

1.03 REFERENCE STANDARDS

- A. Requirements, abbreviations and acronyms for reference standards are defined in Section 01090.
- B. ASTM A36 - Structural Quality Steel.
- C. ASTM A440 - High Strength Steel.
- D. ASTM A325 - High Strength Bolts for Structural Steel Joints, Including Suitable Nuts and Plain Hardened Washers.
- E. ASTM A490 - Quenched and Tempered Alloy Steel Bolts for Structural Steel Joints.
- F. AWS D1.1 - Structural Welding Code.
- G. AISC - Design, Fabrication & Erection of Structural Steel for Buildings.
- H. SSPC - Steel Structural Painting Council's Specifications 7.01-64T.
- I. Texas Department of Insurance Windstorm Requirements where applicable

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## STRUCTURAL STEEL - Section 05120

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### 1.04 WELDER QUALIFICATIONS

- A. Each welder performing work on this project shall be qualified in accordance with American Welding Society Structural Welding Code, AWS D1.1, within six months of the commencement of welding on this project.
  - 1. Make qualification records available to Owner's Project Manager upon request.

### 1.05 SHOP DRAWINGS

- A. Submit shop drawings in accordance with Section 01340. Clearly indicate the following:
  - 1. Profiles, sizes, spacings and locations of structural members, connections, attachments, anchorages, framed openings, size and type of fasteners, cambers, loads.
  - 2. Type of shop coating and number of coats.
  - 3. Welded connections using standard AWS welding symbols.
  - 4. Net weld lengths.

### 1.06 FABRICATION VARIATIONS

- A. Should the Fabricator, Contractor or Erector desire to furnish and install separate sub-assemblies instead of the originally designed one-piece assemblies, he shall request written approval. Also he shall be solely responsible for providing temporary erection, connectors, bolts, etc., which are capable of safely withstanding any construction live load, dead load, wind loads, etc. in conjunction with the separate sub-assemblies.

### 1.07 STORAGE OF MATERIALS

- A. Store structural steel members above ground on skids or other suitable supports. Protect from corrosion. Store other materials in weathertight and dry place.

## PART 2 - PRODUCTS

### 2.01 MATERIALS AND COMPONENTS

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## STRUCTURAL STEEL - Section 05120

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- A. Structural Steel Members: ASTM A36 structural quality steel. Comply with Structural Engineer's design requirements.
  - 1. Finish: As specified in this section.
- B. Bolts, Nuts, Washers: High strength type recommended for structural steel joints, conforming to design requirements of Structural Engineer.
- C. Welding Materials: Type required for materials being welded and conforming to applicable AWS Specifications and Structural Engineer's design requirements.
- D. Grout: Shrinkage-resistant, pre-mixed, factory packaged, "EMBEKO" manufactured by Master Builders Co. Comply with Structural Engineer's design requirements.

### 2.02 FABRICATION

- A. Fabricate structural steel members in accordance with approved shop drawings, approved Structural Engineer's drawings and as recommended by American Institute of Steel Construction.
  - 1. Verify all dimensions prior to fabrication.
- B. Openings in Structural Members:
  - 1. Provide as required for other building components.
  - 2. Reinforce openings with steel plates sized and welded in place to restore members to original strength.
  - 3. Locate holes so as not to cause any appreciable reduction in strength of members.
- C. Holes:
  - 1. Holes in bearing plates for an anchor bolt shall be drilled.
  - 2. Burning of holes or burning to enlarge previous holes, in shop or field work, will NOT be permitted.
- D. Accurately cut and mill column ends and bearing plates to assure full contact or bearing surfaces prior to welding.
- E. Camber horizontal members to accommodate dead load deflection.

### 2.03 SHOP PRIMING

- A. Prior to priming, clean the structural steel of rust, mill scale, slag, flux deposit and foreign matter in accordance with SSPC SP 2 or 3.
- B. Shop-prime the steel with one coat of primer in accordance with SSPC Paint System PS 7.01.
- C. DO NOT prime the surfaces to be welded or to be in contact with concrete.

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STRUCTURAL STEEL - Section 05120

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PART 3 - EXECUTION

3.01 ERECTION

- A. Erect structural steel in accordance with approved shop drawings, approved Structural Engineer's drawings and as recommended by American Institute of Steel Construction.
- B. Do NOT field cut or alter structural members without first notifying the Owner's Project Manager.
  - 1. Cutting, drilling or punching of steel for fastening materials of other work and for passage of pipe, conduit, etc., except to the extent shown on the structural drawings, shall NOT be done without written consent of Owner's Project Manager.
- C. Provide falsework, temporary bracing, and all tools, machinery and appliances, including drift pins and fitting up bolts, necessary for the expeditious handling of the work.
  - 1. Falsework and the temporary bracing shall be properly designed and substantially constructed and maintained for loads which will come upon it.
  - 2. Falsework and temporary bracing shall remain in place until all permanent bracing is in place, all connections bolted and/or welded and all roof decks installed.
- D. Structural system and individual structural members are designed to be self-supporting only after all structural members are connected in place and floor slabs poured and roof decks installed.
- E. Individual pieces of structural steel shall be positioned, plumbed and leveled so as not to have an error exceeding 1/4", and the overall structural shall be within the tolerance allowed by the AISC specifications.
- F. Installed members shall be true to line and free from twists, bends and open joints.
- G. Installation of Base Plates:
  - 1. Set base plates in accordance with details shown on the drawings.
  - 2. Grout in with premixed grout. 3. In no case shall wedges other than steel be used.
- H. Touch-Up:
  - 1. After erection, prime all welds, abrasions and surfaces not shop primed, except surfaces to be in contact with concrete.
  - 2. Use a primer consistent with that used for shop primer.

STRUCTURAL STEEL - Section 05120

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3.02 CLEAN-UP

- A. During the daily progress of the work, the premises shall be kept reasonably free of debris, cutting and waste materials resulting from the work of this section.
  - 1. All debris and rubbish shall be removed from the site.
- B. Upon completion and before final acceptance of the work, all debris rubbish, left-over materials, tools and equipment shall be removed from the site.

END OF SECTION

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STEEL JOISTS - Sections 05210

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PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Open web steel joists, complete with required anchorages, bridging, bearing plates and angles.
- B. Comply with Structural Engineer's design requirements.
- C. See Section 00300, Isolated Prices
- D. The requirements of this section are in addition to the requirements of the General Conditions, Supplementary Conditions and Division 1.

1.02 JOB OBSERVATIONS

- A. Required in accordance with Section 01050

1.03 REFERENCE STANDARDS

- A. Requirements, abbreviations and acronyms for reference standards are defined in Section 01090.
- B. ASTM A325 - High Strength Bolts for Structural Steel Joints, including Suitable Nuts and Plain Hardened Washers.
- C. AISC and SJI Standard Specifications "Standard Specifications for Open Web Steel Joists, K and H Series, LJ and LH Series, and DLJ and DLH Series".
- D. AWS D1.1 - Structural Welding Code.
- E. Texas Department of Insurance Windstorm Requirements where applicable

1.04 WELDER QUALIFICATIONS

- A. Each welder performing work on this project shall be qualified in accordance with American Welding Society Structural Welding Code, AWS D1.1, within six months of the commencement of welding on this project.
  - 1. Make qualification records available to Architect upon request.

1.05 SHOP DRAWINGS AND PRODUCT DATA

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STEEL JOISTS - Sections 05210

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- A. Submit shop drawings and product data in accordance with Section 01340. On shop drawings clearly indicate the following:
  - 1. Joist sizes, spacing and location of joists, connections, bridging, reinforcing, anchorages, cambers, loads.
  - 2. Type of primer and marks.
  - 3. Welded connections using standard AWS welding symbols.
  - 4. Net weld lengths.
- B. Submit one copy of manufacturer's product data for each copy of shop drawings.

1.06 STORAGE

- A. At project site, store open web steel joists above ground on skids or other suitable supports. Protect from corrosion. Store other materials in weathertight and dry place.

PART 2 - PRODUCTS

2.01 STEEL JOIST

- A. Type: Steel joists shall be fabricated in accordance with AISC and SJI Standard Specifications. Verify drawing dimensions and conditions prior to commencing fabrication.
  - 1. Comply with Structural Engineer's design requirements.
- B. Camber joists to accommodate for dead load deflection.
- C. Finish: Two coats corrosion-resistant paint primer required, factory applied.
  - 1. Asphaltic Coating: Not acceptable.

2.02 CONNECTORS

- A. Anchor Bolts and Required Nuts and Washers: Of types required by Structural Engineers design requirements.
- B. Welding Materials: Applicable AWS D1.1 Structural Welding Code, type required for materials being welded, in compliance with Structural Engineer's design requirements.

PART 3 - EXECUTION

3.01 ERECTION

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STEEL JOISTS - Sections 05210

---

- A. Erect steel joist in accordance with approved Shop Drawings and with AISC and SJI Standard Specifications. Comply with Structural Engineer's requirements.
- B. During erection, provide temporary bracing required as a result of induced loads and stresses. Avoid excessive concentrated loads. Distribute loads so that the carrying capacity of any steel joist is not exceeded.
  - 1. Do NOT remove temporary bracing until after the framing has been properly aligned and permanent bracing is in place.
- C. Coordinate proper placement of anchorages in construction as required for the support of bearing plates and angles.
- D. Field weld joist seat to bearing plates and angles after alignment and positioning.
- E. DO NOT permit erection of decking until joists are sufficiently braced.
- F. Field Cutting: Obtain Structural Engineers review prior to field cutting or altering of joists or bridging.
- G. After erection, prime welds, bolts, rust spots, abrasions and surfaces not shop primed. Use primer consistent with shop coat.

END OF SECTION

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METAL ROOF DECK - Section 05300

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PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Steel roof deck, complete with all accessories required to complete this work.
- B. The requirements of this section are in addition to the requirements of the General Conditions, Supplementary Conditions and Division 1.

1.02 JOB OBSERVATIONS

- A. Is required in accordance with Section 01015.

1.03 REFERENCE STANDARDS

- A. Requirements, abbreviations and acronyms for reference standards are defined in Section 01090.
- B. AISI - Specification for the Design of Cold-Formed Steel Structural Members.
- C. ASTM A36 - Structural Steel.
- D. ASTM A446 - Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Structural (Physical) Quality.
- E. ASTM A525 - Steel Sheet, Zinc-Coated, Galvanized by the Hot-Dip Process.
- F. ASTM A611 - Steel, Cold-Rolled Sheet, Carbon, Structural.
- G. AWS D1.1 - Structural Welding Code.
- H. SDI - Design Manual for Composite Decks, Form Decks, Roof Decks.
- I. Texas Department of Insurance Windstorm Requirements where applicable

1.04 WELDER QUALIFICATION

- A. Welders shall be qualified to perform the work on this project in accordance with American Welding Society, Structural Welding Code, AWS D1.1 within six months before starting the work.
  - 1. Make qualification records available to Architect upon request.

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METAL ROOF DECK - Section 05300

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1.05 STORAGE OF MATERIALS

- A. In transit, metal decking sheets shall be protected from corrosive and other destructive elements.
- B. Store decking sheets above ground on skids or other suitable supports. Protect from corrosion. Store other materials in weathertight and dry place.

1.06 SHOP DRAWINGS AND PRODUCT DATA

- A. Submit shop drawings and product data in accordance with Section 01340. On shop drawings clearly indicate the following:
  - 1. Decking plan, erection sequences, procedures and diagrams, deck profile dimensions, anchorage, supports, projections, openings and reinforcement, finishes.
  - 2. Type of finish.
  - 3. Applicable details and accessories.
- B. Submit one copy of manufacturer's product data with each copy of shop drawings.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Bethlehem
- B. U.S. Steel Corp.
- C. Vulcraft Deck Plants, Grapeland, Texas
- D. Wheeling Corrugating Co., Wheeling, West Virginia

2.02 MATERIALS AND COMPONENTS

- A. Steel Decking Sheets: Comply with Structural Engineer's design requirements.
- B. Accessories: Provide all accessories necessary to complete the entire installation including cover plates to cover all gaps where deck units abut or change direction, cover plates around columns and cover plates to cover access holes used for welding.
- C. Welding Materials: Type required for material being welded in compliance with Structural Engineer's design requirements.

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METAL ROOF DECK - Section 05300

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- D. Touch-Up Paint: For Completed welds, use primer paint conforming to requirements of Fed. Spec. TT-P-64LB, Type I.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install and attach metal decking to supporting members in accordance with approved shop drawings and Structural Engineer's approved drawings.
- B. Place sheets with corrugated edges up and with corrugations perpendicular to supports.
- C. Comply with Texas Department of Insurance Windstorm Requirements where applicable

3.02 OPENINGS

- A. Openings shall be provided where shown on the drawings, complete with reinforcing required to strengthen the metal deck.
- B. Other openings and reinforcing not shown on drawings will be made and reinforced by other trades and are subject to Architect approval.
- C. Immediately notify the Owner's Project Manager of any openings where additional framing is required but is not provided.

3.03 HANGING LOADS

- A. Ceilings, mechanical equipment or other loads shall not be supported from metal deck unless shown on Structural Engineer's drawings or approved by Architect. Method of attachment is subject to approval.

END OF SECTION

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STEEL STUDS - Section 05422

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PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Steel stud wall framing, with anchorage and bracing.
- B. The requirements of this section are in addition to the requirements of the General Conditions, Supplementary Conditions and Division 1.

1.02 REFERENCE STANDARDS

- A. Requirements, abbreviations and acronyms for reference standards specified in this section are defined in Section 01090.
- B. ASTM A36 - Structural Steel.
- C. ASTM A446 - Steel Sheet, Zinc-Coated (Galvanized) by Hot Dip Process, Physical (Structural) Quality.
- D. ASTM A90 - Weight of Coating on Zinc-Coated (Galvanized Iron or Steel Articles).
- E. AWS D1.1 - Structural Welding Code.
- F. FS TT-P-645 - Primer, Paint, Zinc-Chromate, Alkyd Type.
- G. Texas Department of Insurance Windstorm Requirements where applicable

1.03 SHOP DRAWINGS AND PRODUCT DATA

- A. Submit shop drawings and product data in accordance with Section 01340. On shop drawings clearly indicate the following:
  - 1. Component details
  - 2. Size, gage and spacing of studs
  - 3. Types and locations of fastenings and welds
  - 4. Types and locations of accessories and other items required for complete installation.
  - 5. Method of attachment will withstand minimum 25 PSF windload.
  - 6. Amount of galvanized coating.
- B. Manufacturer's Product Data: One copy required with each copy of shop drawings.

PART 2 - PRODUCTS

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## STEEL STUDS - Section 05422

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### 2.01 STEEL STUDS

- A. Type: Cee steel stud with 1-5/8" knurled flange and 1/2" return lip, punched web. Un-punched webs are NOT acceptable.
  - 1. Gage & Size: As indicated on drawings.
  - 2. Finish: Hot-dipped galvanized, ASTM A90.
- B. Acceptable Manufacturers:
  - 1. AMICO; Birmingham, Alabama
  - 2. Dale/Incor; Dearborn, Michigan
  - 3. Unimast; Mansfield, Texas
- C. Substitution: Comply with Section 01630.

### 2.02 ACCESSORIES

- A. Bridging, Bracing, Furring: Formed sheet steel; shape, finish and gage.
- B. Tracks: Deep leg type, un-punched, same gage and finish as studs.
- C. Plates, Gussets, Clips: Formed sheet steel, thickness determined for conditions encountered, manufacturer's standard shapes. Finish same as studs.
- D. Self-drilling, Self-tapping Screws, Bolts, Nuts and Washers: Hot-dip galvanized, ASTM A90.
- E. Anchorage Devices: Power driven or power actuated, drilled expansion bolts; or screws with sleeves.
- F. Welding: AWS D1.1 Structural Welding Code.

## PART 3 - EXECUTION

### 3.01 ERECTION

- A. Install studs in accordance with approved shop drawings.
- B. Stud Spacing: As indicated on drawings. Where not indicated on drawings, place studs at 16" on center maximum.
- C. Erect studs one-piece full length. Splicing and wire tying of framing components is NOT acceptable.
- D. Secure stud tracks in place with screws or welding at maximum 24 inches o.c.
- E. Brace and reinforce studs to develop full strength to meet design requirements.

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STEEL STUDS - Section 05422

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- F. Place studs not more than 2 inches from abutting walls and at each side of openings.
- G. Construct corners using minimum three studs. Double the studs at sides of openings. Install intermediate studs above and below openings to match wall stud spacing.
- H. Attach cross studs or furring channels to studs for attachment of items anchored to walls.
- I. Install framing between studs for attachment of electrical boxes and other mechanical and electrical items.
- J. Make provision for erection stresses. Provide temporary alignment and bracing.
- K. Touch-up field welds and scratched or damaged finish to studs.
- L. Comply with windstorm conditions as noted on the drawings

END OF SECTION

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MISCELLANEOUS METAL FABRICATIONS - Section 05500

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PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Refer to Schedule at end of this Section.
- B. See Section 00300, Isolated Prices
- C. The requirements of this section are in addition to the requirements of the General Conditions, Supplementary Conditions and Division 1.

1.02 REFERENCE STANDARDS

- A. Requirements, abbreviations and acronyms for reference standards specified in this section are defined in Section 01090.
- B. AISC - Design, Fabrication and Erection of Structural Steel for Buildings.
- C. ASTM A36 - Structural Steel.
- D. AWS D1.1 - Structural Welding Code.
- E. FS TT-P-645 - Primer, Paint, Zinc Chromate, Alkyd Type.
- F. SSPC - Structural Steel Painting Council - Paint primer.
- G. Texas Department of Insurance Windstorm Requirements where applicable

1.03 SUBMITTALS

- A. Submit shop drawings and product data in accordance with Section 01340. on shop drawings clearly indicate the following:
  - 1. Component details.
  - 2. Dimensions.
  - 3. Types and locations of fastenings and welds.
  - 4. Types and locations of accessories and other items required for complete installation.
  - 5. Method of attachment.
  - 6. Amount of galvanized coating where scheduled.

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MISCELLANEOUS METAL FABRICATIONS - Section 05500

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PART 2 - PRODUCTS

2.01 MATERIALS

- A. Structural Steel Sections: ASTM A36 quality.
- B. Products Fabricated from Rolled, Pressed, Forged Steel Shapes, Plates, Bars, Strips: ASTM A123 quality.
- C. Welding Materials: AWS D1.1 Structural Welding Code. Type required for materials being welded.
- D. Primer: FS TT-P-31, rust-resistant; SSPC quality.
- E. Touch-up Primer for Galvanized Surfaces: FS TT-P-64 quality.
- F. Mechanical Fasteners: Shall be of types equal to "Redhead" mechanical fasteners. The following types of anchors are NOT acceptable:
  - 1. Lead sleeves, fiber plugs, plastic anchors, lead caulking anchors and all other fasteners of this nature.

2.02 FABRICATION

- A. Fabricate structural steel items in accordance with approved shop drawings and recommendations of American Institute of Steel Construction (AISC).
  - 1. For structural steel work, comply with Structural Engineer's design requirements.
- B. Verify dimensions on site prior to shop fabrication.
- C. Fabricate items with joints tightly fitted and secured.
- D. Fit and shop assemble in largest practical sections, for delivery to site.
- E. Grind exposed welds flush and smooth with adjacent finished surface. Ease exposed edges to small uniform radius.
- F. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of structure, except where specifically noted otherwise.
- G. Make exposed joints butt tight, flush, and hairline.
- H. Supply components required for anchorage of metal fabrications. Fabricate anchorage and related components of same material and finish as metal fabrications, except where specifically noted otherwise.

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MISCELLANEOUS METAL FABRICATIONS - Section 05500

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2.03 FINISH

- A. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
- B. Do NOT prime surfaces in direct contact bond with concrete OR where field welding is required.
- C. ALL miscellaneous metal fabrications shall be primed with two coats of primer complying with quality requirements of Structural Steel Painting Council (SSPC).

PART 3 - EXECUTION

3.01 PREPARATION

- A. Obtain Architects approval prior to site cutting or making adjustments not scheduled.
- B. Clean and strip site-primed steel items to bare metal where site welding is scheduled.

3.02 INSTALLATION

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Perform field welding in accordance with AWS D1.1 and Structural Engineer's design requirements.
- C. After installation, touch-up field welds, scratched and damaged prime painted surfaces. Use a primer consistent with shop coat.

3.03 SCHEDULE

- A. Provide and install items listed in this Schedule and shown on Drawings with anchorage and attachments necessary for installation.
- B. This Schedule is a list of principal items only. Refer to Drawings for items not specifically scheduled.
  - 1. Pipe Bollards: Paint primed, size and type as indicated on drawings.
  - 2. Items for steel joist work.
  - 3. Items for structural steel framing work.
  - 4. Handicapped signs

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MISCELLANEOUS METAL FABRICATIONS - Section 05500

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5. Ladder
6. Dumpster enclosure gates
7. Downspout boots
8. Miscellaneous steel fabrications as required to complete the work of this Project.

END OF SECTION

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CARPENTRY - Section 06000

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PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Miscellaneous rough carpentry work as required to complete the work of this project.
- B. The requirements of this section are in addition to the requirements of the General Conditions, Supplementary Conditions and Division 1.

1.02 REFERENCE STANDARDS

- A. Requirements, abbreviations and acronyms for reference standards are defined in Section 01090.
- B. FS TT-W-570 - Wood Preservative, Pentachlorophenol.
- C. FS TT-W-571 - Wood Preservation: Treating Practices.
- D. FS TT-W-572 - Wood Preservation: Water Repellent.
- E. NFPA - National Design Specification for Stress Grade Lumber and its Fastening.
- F. PS 1 - Construction and Industrial Plywood.
- G. PS 20 - American Softwood Lumber Standard.
- H. AWPA - C208: Fire Retardant.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Lumber: (Typically)
  - 1. Grade: No. 2
  - 2. Size: As indicated in the drawings.
  - 3. Lumber shall be sound, thoroughly seasoned and well manufactured in compliance with NFPA "National Design Specifications for Stress Grade Lumber and its Fastenings.
- B. Pressure-Treated Decay and Insect Resistant Lumber (Where indicated on drawings.)
  - 1. Pressure-treated lumber treated in accordance with American Wood Preservatives Association Standards C1-68, C2-68 and C7-69, protected against decay-producing fungi and insects.
    - a. Each piece of lumber MUST be stamped for identification, and a certificate provided prior to

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CARPENTRY - Section 06000

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- installation verifying compliance with above standards.
- b. Lumber in contact with soil, concrete, masonry and lumber in exterior construction and embedded in roofing MUST be decay and insect resistant lumber.
2. Acceptable Products/Manufacturers:
    - a. "Wolmanized" by Koppers Company
    - b. "Woodlife" by Protection Products Manufacturing Co., Kalamazoo, Mich.
    - c. "Woodtox" by Wood Preservers Inc., St. Louis, MO
- C. Fire Retardant Lumber (Where indicated on drawings.)
1. Type: Pressure-impregnated to provide a flame-spread, fuel-contributed and smoke-developed classification of 25 or less when tested by Underwriters' Laboratories.
    - a. Thickness: As indicated on drawings.
    - b. Each piece of lumber shall bear identification of the accredited testing agency.
    - c. Moisture Content: Kiln-dried to maximum of 19% in accordance with drying requirements of AWPA Standards C-20 and C-27.
- D. Plywood: AC-Ext-APA exterior grade at fascia; CD-Ext-APA Exposure 1 Struc 1, fire-retardant (where scheduled), thickness as indicated on drawings.
- E. Nails, Spikes and Staples: Steel; size and type to suit application.
1. Hot-dipped galvanized finish for exterior location, high humidity locations and treated wood.
  2. Plain finish for other interior locations.
- F. Bolts, Nuts, Washers, Lags and Screws: Steel; size and type to suit application.
1. Galvanized finish for exterior locations, high humidity locations, and treated wood.
  2. Plain finish for other interior locations.
- G. Expansion Shield and Lag Bolt: Type for anchorage to solid masonry or concrete.
- H. Timber Connectors:
1. Gage to suit application
  2. Galvanized steel sheet: ASTM A526, G90 (ASTM A 526M, Z275) commercial quality, or ASTM A527, G90 (ASTM A 527M, Z275), lock-forming quality, hot dipped galvanized steel sheet with 0.20 percent copper, mill phosphatized where indicated for painting; not less than 0.0396" (1.0mm) thick unless otherwise indicated.

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CARPENTRY - Section 06000

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- I. Water resistant barrier: Spun bonded ended Olefin, non-perforated, Tyvek Commercial Wrap manufactured by DuPont Company

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Framing: Erect wood framing members true to lines and levels. Construct members of continuous pieces of longest possible lengths.
- B. Install and secure plywood to framing members with end joints staggered over firm bearing.
- C. Install lumber true to lines and levels. Secure rigidly in place.

END OF SECTION

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INTERIOR INSULATION - Section 07210

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PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Wall insulation
- B. The requirements of this section are in addition to the requirements of the General Conditions, Supplementary Conditions and Division 1.

1.02 RELATED WORK

- A. Gypsum Board Assemblies, Section 09255

1.03 SUBMITTALS

- A. Before starting the work, submit the following submittals in accordance with Section 01340.
  - 1. Product Data: Submit Manufacturer's Technical Product Data installation instructions and recommendations for each product. Include data substantiating that materials comply with specified requirements.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Protect insulation materials from physical damage and from deterioration by moisture, soiling and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing and protecting during installation.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. CertainTeed Insulations
- B. Owens-Corning Fiberglas Corp.
- C. Partek Insulations, Inc.
- D. Johns Manville

2.02 MATERIALS

- A. Wall Insulation: ASTM C665; preformed glass or mineral fiber batt; friction fit, conforming to the following:
  - 1. Thermal Resistance: See drawings

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INTERIOR INSULATION - Section 07210

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2. Facing: Type III, Class B, faced on one side with reflective vapor retarder membrane
3. Flame/Smoke Properties: 75/150 in accordance with ASTM E84.
- B. Tape: Bright aluminum self-adhering type, mesh reinforced, 2 inch wide.
  1. Thermal Resistance: R of 19
  2. Facing: Type III, Class B, faced on one side with reflective vapor retarder membrane
  3. Flame/Smoke Properties: 75/150 in accordance with ASTM E84.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify site conditions.
- B. Verify that substrate, adjacent materials and insulation are dry and ready to receive insulation.
- C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.
- D. Fit insulation tight in spaces and tight to exterior side of mechanical and electrical services within the plane of insulation.
- E. Install with factory applied vapor retarder membrane facing warm side of building spaces. Lap ends and side flanges of membrane over framing members.
- F. Tape seal butt ends, lapped flanges and tears or cuts in membrane.

END OF SECTION

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WATER-DRAINAGE EXTERIOR INSULATED FINISH SYSTEM (E.I.F.S.) –  
Section 07240  
PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Exterior Insulated Finish System (E.I.F.S.) including coating, mesh, polystyrene board. Water drainage Class PB System
- B. The requirements of this section are in addition to the requirements of the General Conditions, Supplementary Conditions, and Division 1.

1.02 RELATED WORK

- A. Steel Studs, Section 05422.
- B. Carpentry, Section 06000.
- C. Sealant, Section 07920.
- D. Gypsum Board Sheathing, Section 09270.

1.03 REFERENCE STANDARDS

- A. Requirements, abbreviations and acronyms for reference standards are defined in Section 01090.
- B. ASTM C578 - Molded Polystyrene Board Insulation
- C. ASTM D1682 - Reinforcing Fabric
- D. ASTM C150 - Portland Cement
- E. Texas Department of Insurance Windstorm requirements

1.04 SUBMITTALS

- A. Before starting the work, submit the following submittals in accordance with Section 01340.
  - 1. Product Data: Submit Manufacturer's Technical Product Data, installation instructions, and recommendations for each product. Include data substantiating that materials comply with specified requirements.
  - 2. Samples:
    - a. Manufacturer's full range of colors for selection.
    - b. 8" x 8" submitted to Architect's office for approval of coating finish/color.
    - c. 6 square foot field constructed mockup of all proposed finishes for Architect/Owner review. Notify Owner/Architect one week in advance of date mockup will be ready.

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3. Test reports for system from a qualified independent testing laboratory certifying and interpreting test results relative to system's compliance with requirements for fire performance characteristics, bond integrity, and material properties.
4. Guarantee: Submit a 3-year written guarantee certifying that all materials are installed in compliance with textured coating manufacturer's published instructions.
5. Shop drawings clearly indicating dimensions and configurations at full scale of all molded (other than flat) polystyrene insulation.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Firm regularly engaged in manufacturing products for system indicated and with at least 5 years successful experience in application similar to that required for this Project.
- B. Installer Qualifications: Engage an Installer that is certified in writing by system manufacturer as qualified for installation of systems indicated.
- C. Single Source Responsibility: Obtain materials for system from either a single manufacturer or from manufacturers approved by the system manufacturer as compatible with other system components.
- D. Delivery, Storage, and Handling: Deliver products in original, unopened packages with manufacturer's labels identifying products legible and intact.
  1. Store materials inside and under cover; keep them dry, protected from the weather, direct sunlight, surface contamination, aging, corrosion, damaging temperatures, damage from construction traffic and other causes. Stack insulation board flat and off the ground.

1.06 PROJECT CONDITIONS

- A. Environmental Conditions: Do not install system when ambient outdoor temperatures are 40 deg F (4 deg C) and falling unless temporary protection and heat is provided to maintain ambient temperatures above 40 deg F (4 deg C) during installation of wet materials and for 24 hours after installation or longer to allow them to become thoroughly dry and weather resistant.

1.07 SEQUENCING AND SCHEDULING

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- A. Sequence installation of system with related work specified in other sections to ensure that wall assemblies, including flashing, trim, and joint sealers, are protected against damage from weather, aging, corrosion, or other causes.

1.08 WARRANTY

- A. Ten year limited warranty

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering Class PB Type A systems which may be incorporated in the work include the following:
  - 1. Master Builder Solutions Finestone
  - 2. Master Builder Solutions Senergy

2.02 SYSTEMS

- A. Finestone Pebbletex CI-DCA
- B. Senerflex Channeled Adhesive CI Design

2.03 MATERIALS

- A. Finestop RA roller spray or brush applied liquid air/water resistive barrier us packaged in 27.2 kg. 19 liter (60 pound – 5 gallon) pails. Approximate coverage rate per pail at 10 mils (wet) thickness varies depending upon substrate; ASTM C1177 exterior sheathing [35-37m<sup>2</sup>] (380-400 ft<sup>2</sup>) (1 coat), cement board [37-46 m<sup>2</sup>] (400-500 ft<sup>2</sup>) (1 coat) exterior gypsum [46-54 m<sup>2</sup>] 500-600 ft<sup>2</sup> (1 coat) OSB [23-32 m<sup>2</sup>] (250-350 ft<sup>2</sup>) (2 coats), plywood [23-32 m<sup>2</sup>] 250-350 ft<sup>2</sup> (2 coats)
- B. 4' sheathing fabric for use with Finestop RA is packaged in 10.2 cm x 54.8m (4" x 180') rolls
- C. 9" sheathing fabric for use with Finestop RA is packaged in 22.9 cm x 54.8 m (9" x 150') rolls
- D. Self adhering mesh tape (4") for use with Finestop is packaged in 10.2 cm x 45.7 m (4" x 150') rolls
- E. Self adhering mesh tape (9") for use with Finestop is packaged in 22.9 cm x 45.7 m (9" x 150') rolls

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- F. WS Flash is available in 10.2 cm x 30.5 m (4" x 100') rolls and in 22.9 cm x 30.5 m (9" x 100') rolls
- G. Flashing primer is packaged in 19 liter (5 gallon) pails and 3.8 liter (1 gallon) bottles. Coverage varies depending on substrate
- H. Standard standard weight reinforcing mesh at approximately 152 g/m<sup>2</sup> (4.5oz/yd<sup>2</sup>) is available in 96.5 cm x 45.7 m (38" x 150') rolls. For wall system areas not expected to receive abnormal traffic or abuse
- I. Intermediate: 6, standard weight reinforcing mesh at approximately 190 g/m<sup>2</sup> (5.6 oz/yd<sup>2</sup>) is available in 96.5 cm x 45.7 m (38" x 150') rolls. For wall system areas not expected to receive abnormal traffic or abuse
- J. Intermediate: 12, intermediate weight reinforcing mesh at approximately 373 g/m<sup>2</sup> (11oz/yd<sup>2</sup>) is available in 96.5 cm x 22.8 m (38" x 75') rolls. For use either alone or with standard or intermediate 6 to provide added impact resistance at specific areas such as around doors and walkways
- K. Strong: 15, medium heavy weight reinforcing mesh at approximately 373 g/m<sup>2</sup> (15 oz/yd<sup>2</sup>) is available in 96.5 cm x 22.8m (38" x 75') rolls. For wall system areas expected to receive traffic and abuse
- L. High Impact: 20, heavy weight reinforcing mesh at approximately 678 g/m<sup>2</sup> (20 oz/yd<sup>2</sup>) is available in 99.0 cm x 22.8m (39" x 75') rolls. For wall system areas expected to receive high degree of traffic and abuse
- M. Corner mesh: intermediate weight mesh at approximately 308 g/m<sup>2</sup> (9.1 oz/yd<sup>2</sup>) for use at exterior corners, is available in 22.9 cm x 45.7m (9" x 150') rolls
- N. Approximate coverage rate for adhesive base coat, Finequard and Finebuild to adhere EPS insulation board to substrate and to embed standard mesh is 11.1 m<sup>2</sup> (120 ft.), 19 liter (5 gallon) pail
- O. Approximate coverage rate for A/BC 1 step to adhere EPS insulation board to substrate and embed Standard Mesh is 4.6 m<sup>2</sup> (50 ft) per 22.6 kg (50 pound bag)
- P. Approximate coverage rate for tinted primer is 69.6 – 116.1 m<sup>2</sup> (750 – 1,250 ft<sup>2</sup>) per 24.9 kg, 19 liter (55 pound, 5 gallon) pail
- Q. Pebbletex Aggrelastic, Maximum A/S and Aggrelastic Maximum A/S Finishes are packaged in 19 liter (5 gallon) pails. Approximate coverages per pail for various textures are: Natural Swirl [12.0-12.6 m<sup>2</sup>] 130-140 ft<sup>2</sup>) Limestone [13.0-13.5 m<sup>2</sup> (140-150 ft<sup>2</sup>), CLS 1.5 [8.7-9.5 m<sup>2</sup>] (95-105 ft<sup>2</sup>), Mojave [9.3 – 11.1 m<sup>2</sup> (100 – 200 ft<sup>2</sup>), Finetex (coverage varies depending upon application)
- R. Specialty Finishes are packed in 31.7 kg, 19 liter (70 pound, 5 gallon) pails. Approximate coverages per pail for various textures are: TC-100 [6.5 – 9.2 m<sup>2</sup> (70-100 ft<sup>2</sup>), Aurora Stone [6.5 m<sup>2</sup> (70 ft<sup>2</sup>), Borealis [6.5-9.2 m<sup>2</sup> (70-100 ft<sup>2</sup>) , Alumina [8.4 – 9.2 m<sup>2</sup> (90-100 ft<sup>2</sup>)

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- S. Anticoglaze is packaged in 18.14 kg, 19 liter (40 pound, 5 gallon) pails and in 7.25 kg, 7.6 liter (16 pound, 2 gallon) pails. Coverage varies according to application technique. For estimation guidelines, consider using a coverage rate of 2500 ft<sup>2</sup> per 5 gallon pail of 1000 ft<sup>2</sup> per 2 gallon pail

2.03 MIXING

- A. General: Comply with system Manufacturer's requirements for combining and mixing materials. Do not introduce admixtures, water, or other materials except as approved by system manufacturer. Mix materials in clean containers. Use materials within time period specified by system manufacturer or discard.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrates, with installer present, to determine if they are in satisfactory condition for installation of system. Do not proceed with installation of system until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Protect contiguous work from moisture deterioration and soiling resulting from application of systems. Provide temporary covering and other protection needed to prevent spattering of exterior finish coatings on other work.
- B. Protect system, substrates, and wall construction behind them from inclement weather during installation. Prevent infiltration of moisture behind system and deterioration of substrates.
  - 1. Substrate Preparation: Prepare and clean substrates to comply with system manufacturer's requirements to obtain optimum bond between substrate and adhesive for insulation.

3.03 INSTALLATION

- A. General: Comply with system manufacturer's current published instructions for installation of system as applicable to each type of substrate indicated.
- B. All flashing should be installed per codes prior to installation of Pebbletex CI-DCA System

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- C. A mock-up of Pebbletex CI-DCA System showing all components should be prepared using the same tool and skills that will be used in actual construction and the sample should be kept at the jobsite during construction
- D. Do not use below grade; system must terminate a minimum 8” above grade
- E. Pail components must be kept at a minimum of 4° C (40° F) (10°C/50° F) for Aurora TC-100, Aurora Stone, Alumina and Borealis Finishes) during shipping and storage. A minimum temperature of 4° C (40°F) (10°C/50°F for Aurora TC-100, Aurora Stone, Alumina and Borealis Finishes) is required during application of all components and until completely dried
- F. Protect dry (bagged) products from moisture. EPS insulation boards should be stored flat, out of direct sunlight
- G. No additives are permitted to any components
- H. Follow the application instructions for each component
- I. Expansion joints are required; where Pebbletex CI-DCA System meets other materials; where substrate materials change; at floor lines in wood frame construction; where movement or cross grain shrinkage are anticipated; and anywhere else that movement is anticipated. Expansion joint size and location should be determined by a design professional
- J. All substrates must be clean, dry and sound without planar irregularities greater than 6 mm in 3 m (1/45” in 10’)
- K. Insulation Boards
  - 1. All system terminations and penetrations must be back wrapped with mesh and base coat
  - 2. EPS board size is limited to 0.6 m x 1.22 m (2’ x 4’). The minimum thickness of EPS at any point on the wall can not be less than 19 mm (3/4”). Consider this when installing reveals
  - 3. Do not break reinforcing mesh in the reveal; offset 100 mm – 150 mm (4-6” minimum)
  - 4. Offset insulation board joints from sheathing joints by a minimum of 406 mm (16”). Offset from corners of doors, windows and other penetrations by a minimum of 100 mm (4”)
  - 5. Insulation boards must be single piece around corners of penetrations
  - 6. Stagger joints in a running bond pattern offset a minimum of 152 mm (6”)
  - 7. Interlock corners

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8. Prior to installation of base coat, entire EPS covered wall must be completely rasped to remove high and low spots and to remove dust from surface of the EPS
  9. Channels in insulation boards and/or channels of adhesive on back of insulation boards must run in vertical patterns
  10. Use a 13 mm x 13 mm x 50 mm (1/2" x 1/2" x 2") notched trowel to apply adhesive to back of insulation boards
  11. If using mechanical fasteners, use only those specified by Finestone Wall Systems and install according to specifications. Do not overdrive mechanical fasteners. They should recess on 1.6 mm (1/16") from surface
  12. Always fill voids in insulation layer greater than 1.6 mm (1/16") with slivers of insulation and not with base coat or other materials
- L. Reinforced Base Coat
1. If mechanical fasteners were used to attach insulation, pre-spot each washer head with base coat
  2. Standard mesh/Intermediate 6/Intermediate 12 must overlap a minimum of 64 mm (2 1/2")
  3. Strong 15/Hi-Impact 20 mesh must not overlap; butt edges together after Strong 15/Hi-Impact 20 mesh are imbedded in base coat, a second layer of Standard Mesh/Intermediate 6/Intermediate 12 and base coat must cover that layer
  4. Install "butterflies" of standard mesh at corners of all windows, doors and other penetrations
  5. Install a second layer of reinforcing mesh a minimum of 100 mm (4") on both sides of inside and outside corners
  6. Mesh color should never be visible through the base coat
  7. Special shapes must also be reinforced with base coat and reinforcing mesh
  8. This system is not designed for horizontal applications. Always maintain a minimum slope of 1:2 up to a maximum width of 305 mm (12")
  9. Protect work from precipitation for a minimum of 24 hours
- M. Finish
1. Use only stainless steel trowels
  2. Avoid working in direct sunlight
  3. Finishes should be applied with adequate man power, tools and staging to keep wet edge
  4. A primer tinted to the color of the finish is recommended prior to application of rilled finishes
  5. Do not run finish into joints

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6. Do not quit in the middle of a wall; run to natural breaks
  7. Do not use different batches of finish on the same elevation
  8. Protect from precipitation for a minimum of 24 hours
  9. Use only sealants that are acceptable for use with this system. Acceptable sealants and backer rods or bond breakers must be installed at all transitions between this system and other wall assembly elements such as windows, doors, vents, transitions to dissimilar materials, A/C cases and other penetrations
  10. Do not apply finish over sealants
- N. Limitations
1. Use only for above grade vertical walls
- O. Key Upgrades Available
1. System upgrades can include the addition of high impact resistant reinforcing mesh, specialty finishes, silicone enhanced textured finishes to improve dirt pickup and mildew resistance and tinted primers to enhance final aesthetics

3.04 CLEANING AND PROTECTION

- A. Remove temporary covering and protection of other work. Promptly remove protective coatings from window and door frames, and any other surfaces outside areas indicated to receive protective coating.
- B. Provide final protection and maintain conditions, acceptable to Installer and system manufacturer, which protects system from damage or deterioration through time of Substantial Completion.

END OF SECTION

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FLUID-APPLIED MEMBRANE WEATHER BARRIERS - Section 07272

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PART - GENERAL

1.01 SUMMARY

- A. Section includes fluid-applied, vapor-retarding membrane weather barriers.
- B. Use this section where weather barrier not described elsewhere in this specification.

1.02 ACTION SUBMITTALS

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

1.03 INFORMATION SUBMITTALS

- A. Product certificates
- B. Product test reports

1.04 QUALITY ASSURANCE

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

PART 2 - PRODUCTS

2.01 MATERIALS GENERAL

- A. VOC Content: 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24) and complying with VOC content limits of authorities having jurisdiction

2.02 PERFORMANCE REQUIREMENTS

- A. General: Weather barrier shall be capable of performing as a continuous vapor-retarding weather barrier and as a liquid-water drainage plane flashed to discharge to the exterior incidental

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condensation or water penetration where noted on drawings. Weather-barrier assemblies shall be capable of accommodating substrate movement and of sealing substrate expansion and control joints, construction material changes, penetrations, and transitions at perimeter conditions without deterioration and air leakage exceeding specified limits.

### 2.03 VAPOR-RETARDING MEMBRANE WEATHER BARRIER

#### A. Fluid-Applied, Vapor-Retarding Membrane Weather Barrier: Elastomeric, modified bituminous membrane

##### 1. Elastomeric, Modified Bituminous Membrane:

- a. AIR-SHIELD by WR Meadows, Inc., PO Box 338, Hampshire, IL 60140, 800-342-5976, [www.wrmeadows.com](http://www.wrmeadows.com)
- b. Or equal

##### 2. Physical and Performance Properties:

- a. Air Permeance: Maximum 0.004 cfm/sq. ft. of surface area at 1.57-lbf/sq. ft. (0.02 L/s x sq. m of surface area at 75-Pa) pressure difference; ASTM E2178
- b. Vapor Permeance: Maximum 0.1 perm (5.8 ng/Pa x s x sq. m) ASTM E 96/E 96M.
- c. Ultimate Elongation: Minimum 1500 percent; ASTM D 412. Die C.
- d. Tensile Strength: 15 psi; ASTM D412

### 2.04 ACCESSORY MATERIALS

#### A. General: Accessory materials recommended by weather-barrier manufacturer to produce a complete weather-barrier assembly and compatible with primary weather-barrier material.

1. Flashing and Transition Membrane
2. Liquid Flashing and Joint Sealant
3. Joint Tops
4. Membrane Adhesive
5. Pointing Mastic
6. Detailing Membrane

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### PART 3 - EXECUTION

#### 3.01 SURFACE PREPARATION

- A. Mask off adjoining surfaces not covered by weather-barrier to prevent spillage and overspray affecting other construction.
- B. Remove fins, ridges, mortar, and other projections and fill honeycomb, aggregate pockets, holes, and other voids in concrete with substrate-patching membrane.
- C. Remove excess mortar from masonry ties, shelf angles, and other obstructions.
- D. At changes in substrate plane, apply sealant or termination mastic beads at sharp corners and edges to form a smooth transition from one plane to another.

#### 3.02 INSTALLATION

- A. General: Install fluid-applied membrane weather-barrier and accessory materials according to weather-barrier manufacturer's written instructions to form a seal with adjacent construction and maintain a continuous weather-barrier.
- B. Apply primer to substrates at required rate and allow it to dry. Limit priming to areas that will be covered by fluid weather-barrier material on same day. Reprime areas exposed for more than 24 hours.
  - 1. Prime glass -fiber-surfaced gypsum sheathing with number of prime coats needed to achieve required bond, with adequate drying time between coats.
- C. Connect and seal exterior wall weather-barrier material continuously to roofing-membrane weather-barrier, concrete below-grade structures, floor-to-floor construction, exterior glazing, and window systems, glazed curtain-wall systems, storefront systems, exterior louvers, exterior door framing, and other construction used in exterior wall openings, using accessory materials.
- D. At end of each working day, seal top edge of weather-barrier to substrate with termination mastic.
- E. Wall Openings: Prime concealed, perimeter frame surfaces of windows, curtain walls, storefronts, and doors. Apply transitions

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- and flashing so that a minimum of 3 inches (75 mm) of coverage is achieved over each substrate. Maintain 3 inches (75 mm) of full contact over firm bearing to perimeter frames with not less than 1 inch (25 mm) of full contact.
- F. Fill gaps in perimeter frame surfaces of windows, curtain walls, storefronts, and doors, and miscellaneous penetrations of weather-barrier material with barrier manufacturer's sealant.
  - G. Seal weather-barrier assembly around masonry reinforcing or ties and penetrations with termination mastic.
  - H. Seal top of through-wall flashings to weather-barrier.
  - I. Seal exposed edges of strips at seams, cuts, penetrations, and terminations not concealed by metal counter flashings or ending in reglets with termination mastic.
  - J. Repair punctures, voids, and deficient lapped seams. Slit and flatten fishmouths and blisters. Extend patches 6 inches (150 mm) beyond repaired areas.
  - K. Fluid-Applied Membrane Material: Apply a continuous unbroken weather-barrier membrane to substrates according to the following thickness. Apply weather-barrier membrane in full contact around protrusions such as masonry ties.
    - 1. Vapor-Retarding Membrane Weather-Barrier: Total dry film thickness as recommended in writing by manufacturer to meet performance requirements, but not less than 45 mil (1.1 mm) dry film thickness applied in one or more equal coats.
  - L. Correct deficiencies in or remove weather barrier that does not comply with requirements; repair substrates and reapply weather-barrier components.

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3.03 FIELD QUALITY CONTROL

- A. Protect weather-barrier system from damage during application and remainder of construction period, according to manufacturer's written instructions.
  - 1. Protect weather-barrier from exposure to UV light and harmful weather exposure as required by manufacturer. If exposed to these conditions for more than 30 days, remove and replace weather-barrier or install additional, full-thickness, weather-barrier application after repairing and preparing the overexposed membrane according to weather-barrier manufacturer's written instructions.
  - 2. Protect weather-barrier from contact with incompatible materials and sealants not approved by weather-barrier manufacturer.
- B. Remove masking materials after installation.

END OF SECTION

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PRE-FINISHED T-PANEL ROOF - Section 07411

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Pre-finished T-Panel Roof and related trim and accessories.
- B. The requirements of this section are in addition to the requirement of General Conditions, Supplementary Conditions and Division 1.

1.02 RELATED WORK

- A. Miscellaneous Metals, Section 05500

1.03 REFERENCES

- A. ASTM A 446/A 446M-93 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Structural (Physical) Quality; 1993.
- B. ASTM D 226-89 - Standard Specification for Asphalt-Saturated Organic Felt used in roofing and Waterproofing; 1989.
- C. ASTM D 4601-91 - Standard Specification for Asphalt-Coated Glass Fiber Base Sheet used in roofing; 1991.
- D. Roofing Materials and Systems Directory; Underwriters Laboratories, Inc.; 1994.
- E. UL 580 - Tests for Uplift Resistance of Roof Assemblies; Underwriters Laboratories, Inc.; 1994.
- F. Texas Department of Insurance Windstorm Requirements where applicable

1.04 SYSTEM DESCRIPTION

- A. Structural Requirements: Design roof system to safely withstand dead load and live loads prescribed by the governing building code.
- B. Wind Uplift: Provide metal roof panel systems which have been tested in accordance with UL 580 and listed in the UL "Roofing Materials and Systems Directory" for the following rating"
  - 1. Class 90.

1.05 SUBMITTALS

- A. Product Data: manufacturer's written technical information, including performance data, details and installation recommendations, which demonstrate that metal panel assembly components comply with contract documents.
- B. Shop Drawings: Drawings which show arrangement and orientation of panels and details of panel joints, corners, custom profiles, supporting devices and closure trim and flashing. Show panel system in relation to adjacent construction.
- C. Structural Calculations: Prepared, stamped and signed by an engineer licensed in

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the state in which the project is located.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A company with a minimum of 5 years successful experience in the design, fabrication and installation of metal panel systems comparable in size and nature to those required for this project.
- B. Field Measurements: Measure in-place construction on which panel system will be installed if possible, before fabrication of panels. If not feasible, fabricate material to allow in-field trimming of panels to assure proper fit.
  - 1. Coordinate field measurements and shop drawings with shop fabrication to minimize field adjustments, splicing and mechanical joints.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Galvanized Steel Sheet: ASTM A 446, with minimum G90 zinc coating.

2.02 ROOF SYSTEM

- A. System Type: Uninsulated system consisting of standing seam roof panels with concealed attachment clips in panel; clips secured directly to rigid substrate.
  - 1. Tee panel standing seam by Berridge (no substitutions)
  - 2. 1”high exposure nap-on seam cap over Vinyl Weatherseal
  - 3. Fabricate panels from galvanized sheet steel, minimum 24 gage
  - 4. Exterior Finish: Kynar 500 finish, standard manufacturer’s color top – see drawings for color
  - 5. Interior (underside) Finish: Pre-finished, standard color
  - 6. Panel Width (nominal coverage): 12 ¾”
- B. Concealed Panel Clips
  - 1. Fabricate from galvanized steel.
  - 2. Provide roof system manufacturer’s standard type clips to suit project requirements, including but not limited to the following:
    - a. Live loads.
    - b. Thermal movement; accommodate expansion and contraction without introducing stress into roof system.
    - c. Slope of roof.
    - d. Special conditions at transitions, penetrations and terminations.

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- C. Fasteners
  - 1. Threaded fasteners - general: Provide manufacturer's standard corrosion-resistant fasteners of size and type required for intended application.
    - a. Use of cadmium-plated fasteners is not allowed.
  - 2. Rivets: Non-corrosive metal, compatible with metals to be fastened.
- D. Accessories
  - 1. Sheet metal closures ridge vents, flashing and trim: Fabricate from same type of sheet metal and with same finish, as adjacent roof panel.
  - 2. Concealed sealants and gaskets: Manufacturer's standard.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that substrate or structural system to receive work of this section is complete, properly sized and is laid out correctly in plan and elevations.
- B. Correct unacceptable substrate installations before start of metal panel erection.
- C. Coordinate work with other adjacent elements of building envelope to ensure watertight construction.

3.02 INSTALLATION

- A. General: Install manufactured metal panels in accordance with panel manufacturer's recommended practices.
  - 1. Fasten panels to structure as necessary to comply with performance criteria, allowing for expansion and contraction due to temperature variations and building movement.
  - 2. Install gaskets, sealants, closures and trim as the work progresses to ensure airtight and watertight performance of the completed installation.
  - 3. Provide metal trim at sight exposed end of standing seam
- B. Roof System Installation
  - 1. Install roof panels in single, continuous piece
  - 2. Roof panel installation: Install roof panels using concealed clips in panel joints through tubular steel structure
    - a. Use of sight exposed fasteners is not permitted unless specifically approved by the Owner.

3.03 CLEANING AND PROTECTION

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- A. Remove protective coverings from pre-finished metal surfaces after each panel is installed.
- B. Touch up or refinish marred or abraded surfaces. Replace damaged units and units which cannot be refinished to the architect's satisfaction.
- C. Clean finished surfaces using techniques and materials recommended by panel manufacturer. Protect cleaned surfaces until project completion.

END OF SECTION

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TPO ROOFING-Section 07500

PART 1 – GENERAL

1.01 WORK INCLUDED

- A. Thermoplastic Polyolefin Mechanically Fastened Roofing Membrane with flashings and all other incidental and accessory items to comprise a roofing system. **ALTERNATE BID No. 10** Refer to Section 07522 – SBS – Modified Bituminous Membrane Roofing for **BASE BID** building roofing system.
- B. The requirements of this section are in addition to the requirements of the General Conditions, Supplementary Conditions and Division 1.
- C. See Section 00300 for Isolated Prices and alternate bids.

1.02 RELATED SECTIONS

- A. Carpentry, Section 06000
- B. Flashing and Sheet Metal, Section 07600

1.03 SUBMITTALS

- A. Submit shop drawings and product data in accordance with Section 01340. With submittals include the following:
  - 1. Copies of specification
  - 2. Samples of major components (i.e., membrane, insulation and flashing) of the roofing system
  - 3. The TPO roofing systems printed product data

1.04 DELIVERY, STORAGE AND HANDLING

- A. Deliver all materials to the jobsite in their original, tightly sealed containers or unopened packages
- B. All materials shall be clearly labeled with the name of the manufacturer and product identification
- C. All materials must be protected from damage during transit, handling, storage and installation. Place all materials on pallets and fully protect from moisture
- D. All materials shall be stored in a dry area and protected from the elements. Membrane rolls shall be stored flat on pallets
- E. Adhesive shall be stored at temperatures between 50° F and 80° F (10° C and 27° C)

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- F. All flammable materials shall be stored in a cool, dry area away from sparks and open flames. Follow precautions outlined by material manufacturer/supplier
- G. All materials determined to have been damaged shall be replaced with new materials

1.05 REFERENCE STANDARDS

- A. ASTM D6878
- B. ASTM E1980

1.06 JOB CONDITIONS

- A. Only as much new roof as can be made weathertight each day shall be installed each day. This includes all flashing work
- B. Any substrate to receive new insulation, membrane or flashing shall be thoroughly dry. Should surface moisture occur, the contractor shall provide adequate equipment to dry substrate
- C. Prior to and during application, the contractor shall ensure that all dirt, debris and dust be removed from surfaces to be roofed for both new and reroofing substrates
- D. Precautions shall be taken to prevent wind blow-off or wind damage during the course of the roofing application. This may necessitate additional securement of temporary construction
- E. Temporary waterstops shall be installed at the end of each work day or if inclement weather conditions dictate. These temporary waterstops shall be removed at the start of the next work day and disposed of properly
- F. Do not install the TPO roofing membrane in direct contact with any product containing coal tar pitch, creosote or other harmful materials
- G. Do not allow waste products containing petroleum, grease, acid, solvents, vegetable or mineral oil, animal oil, animal fat etc. or direct steam venting to come in direct contact with the TPO roofing membrane
- H. The contractor shall follow all safety regulations as recommended by OSHA
- I. All work shall be scheduled and executed without exposing interior building areas to the effects of the inclement weather. The existing building and its components shall be protected against all risks. Arrange work sequences to avoid use of newly constructed roofing storage,

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walking surfaces and equipment movement. Contractor shall provide all necessary protection and barriers to segregate work areas and prevent damage to adjacent areas. If excessive foot traffic over newly installed membrane is necessary, contractor shall provide plywood or polyester felt protection to prevent damage

- J. All existing roofing materials to be removed for construction shall be immediately removed from the construction site to a dumping area authorized to receive such debris.
- K. Any unusual or concealed conditions discovered during the course of work is to be reported to the owner or his representative immediately in writing and work shall be halted until the owner or his representative has responded with a solution to the problem
- L. All local building codes and requirements must be followed where applicable. It is the sole responsibility of the roofing contractor to determine any and all local building code requirements and to ensure that the roofing system selected complies with such requirements

1.07 GUARANTIES AND WARRANTIES

- A. NDL (No dollar limit): Guarantee assures the owner that the manufacturer under the Roof Guarantee Agreement, is responsible for maintaining the roof in a watertight condition if leaks occur solely as a result of deterioration of or improper workmanship in applying the specified materials or products
- B. 10 years
- C. Warranty will be transferable

PART – PRODUCTS

2.01 GENERAL

- A. The TPO Mechanically Fastened Roofing System components shall be produced or supplied by the following manufacturer:
  - 1. Johns Manville
  - 2. Firestone
  - 3. Carlisle
- B. Products equal to Johns Manville specified materials are acceptable

2.02 INSULATION BOARD

- A. 2 Layers 2.2” ENRGY 3 (R=12.6 each)

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- B. 1 layer ½” DensDeck roof board (R=0.56)

2.03 ROOFING MEMBRANE

- A. Johns Manville TPO FB115 - 60 mil. mechanically fastened internally reinforced roofing membrane

2.04 ACCESSORIES

- A. Flashing Membrane: Johns Manville TPO – 45 FR
- B. Flashing Metal: Johns Manville TPO – Coated metal
- C. Membrane Fasteners and Plates: Per manufacturer’s specifications
- D. Adhesive: Per manufacturer’s specifications
- E. Sealing Mastic: Per manufacturer’s specifications
- F. Edge Sealant: Per manufacturer’s specifications
- G. Membrane Cleaner: Per manufacturer’s specifications
- H. Prefabricated Details: Per manufacturer’s specifications
- I. Detail Membrane: Per manufacturer’s specifications
- J. TPO Membrane Primer: Per manufacturer’s specifications
- K. Penetration Pocket Filler: Per manufacturer’s specifications
- L. TPO Walkpad as located on drawings.

2.05 OTHER MATERIALS

- A. Base sheet and base sheet fasteners
  - 1. Per manufacturer’s specifications
- B. Wood nailers
  - 1. Nailers shall be #2 or better lumber and conform to the current Johns Manville and NRCA recommendations on wood nailers. Creosote and asphaltic preservatives are not acceptable
  - 2. Wood nailers shall conform to the FM Global Loss Prevention Data Sheet 1-49 recommendations

2.06 PRECAUTIONS

- A. Do not use Johns Manville TPO roofing systems near fire or flame
- B. Avoid breathing vapors of solvent, sealant and adhesives. Use with adequate ventilation. Avoid prolonged contact of solvents, sealants and adhesives with skin
- C. Do not use open flames to expedite drying of surfaces, sealants or adhesives

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- D. Consult Material Safety Data Sheets and container labels for specific safety instructions. MSDS sheets are available by calling the Johns Manville Product Information Center at 1-800-654-3103 or through the Johns Manville website at [www.jm.com](http://www.jm.com)
- E. Do not paint Johns Manville TPO Coated Metal or membrane with oil based paint. Consult the Johns Manville technical services department for recommendations
- F. Do not allow muriatic acid used to clean masonry to come in direct contact with Johns Manville TPO roofing membrane

PART 3- EXECUTION

3.01 GENERAL

- A. When installing Johns Manville TPO roofing membrane in cooler weather, it is recommended that liquids such as solvents, sealants etc. be stored at warmer temperatures (50° F (10° C) to 80° F (27° C) until just prior to use in order to facilitate the installation

3.02 SUBSTRATE CONDITIONS

The following general conditions apply to the substrate that will receive an Johns Manville TPO roofing system for both reroof and new construction

- A. The roof deck must be structurally sound to provide proper securement for mechanical fasteners. Areas showing a loss of integrity because of corrosion, rotting, warping, etc. must be repaired or replaced prior to installing the roofing system
- B. It is imperative that the roofing contractor make test cuts at each roof area prior to reroofing. Wet insulation must be removed and replaced. See Single Ply Roofing Industry (SPRI) guidelines for determining wet insulation
- C. Contact the Johns Manville Technical Services Department when substrate is exposed to excessively high humidity and/or a corrosive environment. Special fasteners or details may be required

3.03 PREPARATION OF EXISTING SUBSTRATE

- A. General
  - 1. To prevent delays or interruptions, coordinate work with other trades or suppliers to ensure that components to be incorporated into the

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Johns Manville TPO roofing system are available as the work progresses. Examine substrates to which the roofing materials are to be applied to ensure that their condition is satisfactory for the application of the Johns Manville TPO roofing systems. Do not permit voids greater than 1/4" (8mm) wide in the substrate. Concrete substrates shall be cured and free of laitance and curing compounds. Substrates and roofing materials shall be dry and free of oil, asphalt, dirt, grease, sharp edges and debris. Inspect substrates and correct defects before application of roofing membrane

2. Blisters, buckles and ridges shall be cut and patched to provide a reasonably level substrate surface
3. Gravel over existing nailers must be totally removed prior to installing new nailers and flashings. Verify that the existing nailers are securely anchored to the roof decks
4. When additional thickness of insulation is being added, new nailers must be added to match the height of the new insulation. Nailers must be securely anchored to the roof deck per Section 3.04
5. All roof surfaces shall be free of ponding water, ice and snow
6. Specifier and/or roofing contractor shall determine the condition of the existing roof deck and roofing. Areas with deteriorated decking or wet insulation or other materials shall have those affected materials removed and replaced
7. When removing an existing roof during reroofing, remove only the amount of roof and flashing that can be made watertight with new Johns Manville TPO roofing systems material in a one-day period or prior to the onset of inclement weather

### 3.04 WOOD NAILERS

- A. Install nailers at the perimeter of the roof and around all roof penetrations and projections
- B. Nailers shall be firmly anchored to the decks and shall resist all a pullout force of 200 lbs./lineal foot (2.9 kN/m) in any direction. A 1/2" (15 mm) vent space shall be provided between adjacent lengths of nailers. Fasteners shall be within 6" (150 mm) of each end. Spacing and fastener embedment shall conform to FM Global Loss Prevention Data Sheet 1-49 recommendations
- C. Height of nailers shall match the surface level of the insulation and roof membrane
- D. All woodwork to be reused shall resist a minimum force off 200 lbs./lineal foot (2.9 kN/m) in any direction and shall be free of rot. If any existing

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woodwork is questionable, it should be removed and replaced with suitable new materials .

3.05 INSULATION INSTALLATION

- A. General
1. Insulation shall be installed in accordance with the current Johns Manville published specifications and recommendations for use with adhered roofing systems
  2. Insulation shall be secured to the roof deck in accordance with the Johns Manville requirements. As a minimum requirement, it shall be secured at a rate of 5 fasteners per 4' x 8' (1.22 m x 2.44 m) board, 4 fasteners per 4' x 4' (1.22 x 1.22 m) board or 3' x 4' (0.92m x 1.22 m) board and two fasteners per 2' x 4' (0.61 m x 1.22m) board, and with tight joint in parallel courses with end joints staggered. When more that one layer of insulation, is to be used, succeeding layers shall be laid staggered in relation to the previous layer of insulation and all joints shall be staggered
  3. Insulation shall be neatly cut to fit around all penetrations and projections with a maximum allowable gap of ¼" (8 mm)
  4. Open joints shall be repaired with like insulation material
  5. When insulation is installed on new construction, edges shall be checked so that no edges are left unsupported along the flutes
  6. Insulation shall be feathered or tapered to provide a sump area a minimum of 36" x 36" (0.92 m x 0.92 m) at all drains
  7. Install no more insulation in one day that can be covered with Johns Manville TPO membrane before the end of the day or before the onset of inclement weather
  8. Install tapered insulation in accordance with the Johns Manville tapered design group shop drawings
- B. Mechanical Attachment
1. All insulation boards must be mechanically attached to "standard" decks unless specifically accepted for hot asphalt securement for the particular application by Johns Manville TPO roofing systems
  2. "Standard" decks shall be defined as 22 gauge (0.76 mm) or heavier steel decks, poured structural concrete 3000 psi (20,685 k Pa) or greater, 15/32" (12mm) or greater plywood, 7/16" (11mm) or greater OSB and 1" (25mm) minimum wood plank. Other deck types may be accepted by Johns Manville for mechanical

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attachment of insulation in certain cases Contact JM, services department in these cases

3. All insulation must be secured to the structural deck using Johns Manville fasteners at rates published by the insulation manufacturer and recommendations published by FM Global for adhered applications as a minimum standard. Additional fastening may be required to provide an acceptable substrate depending upon actual project conditions

#### C. High Humidity Applications

1. Certain high humidity applications will require the use of a vapor retarder. It is the sole responsibility of the design professional to determine the type and location of the vapor retarder in the flooring system.
2. In certain, specific applications, a first layer of a suitable insulation may be attached to the structural deck. A base sheet vapor retarder shall be adhered to the insulation with asphalt at a rate of 30 lbs. (nominal) per 100 sq. ft. (1.46 kgs. Per sq. meter).

The base sheet vapor retarder shall be installed in accordance with JM guidelines. The second layer of insulation shall be adhered to the base sheet vapor retarder in a full mopping of asphalt and shall be laid in a manner to ensure that all insulation joints are staggered from the first layer. The dew point should be calculated to fall within the second layer of insulation.

### 3.06 SLIPSHEET INSTALLATION

When a slipsheet is desired, slipsheet installation shall be in accordance with the following method:

- A. Overlap 9 oz. per sq. yd. (0.31 kgs. Per sq. meter) polyester fleece a minimum of 4” (100 mm) at each edge. Leave joints untapped. If installing in windy conditions, install fastener and plate in lap area of slipsheet every 3’ (0.92 m) o.c. to prevent displacement.
- B. The installation of the slipsheet shall be immediately followed by the installation of the roof membrane and fasteners to prevent displacement of the slipsheet.

### 3.07 MEMBRANE INSTALLATION

The surface of the substrate/insulation must be inspected prior to the installation of the JM TPO membrane. Verify that the surface to receive the JM TPO membrane is clean

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and smooth, free of contaminants or delaminated insulation facers, and that all fasteners are properly seated and flush.

#### A. General

Unroll the JM TPO membrane and position. Allow the membrane to relax at least 15 minutes when the temperature is above 60 degrees F (16 degrees C), or 30 minutes when the temperature is below 60 degrees F (16 degrees C), prior to installation. Inspect for any damaged membrane. Remove sections of membrane that are creased or damaged. Lap sheets a minimum of 2" (50 mm) to allow for a minimum 1 ½" (40mm) continuous weld area. Membrane sheets must be positioned in a manner to facilitate the flow of water over the field seams. The JM TPO membrane must be mechanically secured at all peaks, valleys and slope intersections where the net change in slope exceeds 1 ½:12. Contact the JM Technical Services Department for specific recommendations.

#### B. JM TPO Membrane Securement

Install high load fasteners and plates in the 5" (127mm) lap at a minimum rate of one fastener every 12" on center. Position plates so that the back edge of the plate is no closer than 1/2" (13mm) from the edge of the membrane. Fasteners must pierce the top flute of the deck a minimum of 1" (25mm).

### 3.08 WELDING OF LAP AREAS

#### A. General

1. JM TPO roofing systems are welded by hot air welding.
2. All surfaces to be welded shall be clean and dry. No adhesive shall be present in the lap areas.

#### B. Hot Air Welding

1. Machines for hot air welding are available from several different sources. Each set of manufacturer's operating instructions shall be followed, as well as all local codes regarding electric grounding, supply and other related functions. Since most automatic welding machines require 218 to 230 volts, the use of a portable generator on the roof is recommended for greater flexibility.
2. Hand-held welding machines are also available to weld membrane. After the preheated nozzle tip is inserted in the overlap area and the material starts to flow, immediately follow with a hand roller to press the heated membrane surfaces together with slow, even movements. Keep the roller within 1" (25mm) of the nozzle tip. Angle the hot air tool so that the flowing air faces the roller. The

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temperature of the hot air tool shall be adjusted so that the material from the bottom of the sheet begins to soften and flow from the seam. Seam strength may be tested when cool.

#### C. Quality Control of Seams

After either seaming method, the seams shall be checked for integrity with a blunt-ended probe. Any openings or “fishmouths” shall be repaired with a hand-held hot air tool fitted with a narrow nozzle tip and with a roller. Each day, several sections of seams shall be pulled apart by the roofing contractor to test the quality of the welds. Should the welds be deficient, a more thorough examination of the work performed must be carried out and necessary repairs made. JM TPO Edge Sealant is used to seal the membrane edges where reinforcing fabric is cut and exposed, and should be applied by the end of the each working day. Edge sealant should be used on all end laps, T-joints, and field cut edges.

### 3.09 FLASHING INSTALLATION

#### A. Metal Flashing

1. JM TPO-Coated Metal flashing shall be installed in accordance with JM TPO roofing systems Detail Drawings.
2. Complete all metalwork concurrently with roofing and flashings so that a watertight condition exists daily.
3. Metal shall be installed to provide adequate resistance to bending and to allow for normal thermal expansion and contraction.
4. All metal joints shall be watertight and staggered over nailer joints to prevent joints in nailers and joints in metal from aligning.
5. Base flashings shall extend a minimum of 8” (200mm) above roofing level.
6. All metal flashings and terminations shall be securely fastened in the plane of the roof deck with fasteners recommended by JM.
7. Fasteners and roofing nails used to secure flashings to wood nailers shall be stainless steel, galvanized metal or other corrosion-resisted material, with a head diameter of not less than 3/8” (10mm), and with fastener penetration into the wood nailer of at least 1 ½” (40mm).
8. Scuppers and metal overflows shall be assembled using JM TPO-Coated Metal.
9. All JM TPO-Coated Metal shall be fabricated to form hemmed edges to prevent sharp metal edges from cutting the membrane, except when used in conjunction with wood nailers.

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#### B. Membrane Flashings

1. All membrane flashings shall be installed concurrently with the roof membrane as the job progresses. Temporary flashings are not allowed without prior written approval from the JM Technical Services Department. Should any water penetrate the new roofing because of incomplete flashings, the affected area shall be removed and replaced at the expense of the contractor.
2. Membrane flashings shall be fully adhered using JM TPO Membrane Adhesive (solvent-based only).
  - i) If the membrane flashings are to be fully adhered using JM TPO Membrane Adhesive, the following conditions must be met:
    - (1) All surfaces to be fully adhered should be compatible, dry and smooth with no excessive surface roughness. (If an existing asphalt surface is present, an acceptable asphalt barrier should be installed over the existing flashings to fully divorce the JM TPO flashing membrane from any incompatible materials to avoid membrane discoloration.)
    - (2) After the proper surface has been prepared, JM TPO Membrane Adhesive shall be applied using a minimum ½” (15mm) nap paint roller as per the applicable data sheet. Apply adhesive in a smooth, even coating.

JM TPO Membrane used as a flashing shall be cut to a workable length and shall have an even coating of JM TPO Membrane Adhesive applied to it at a rate of approximately 60 sq. ft. per gallon (1.5 sq. meters per liter) per side per side of application. Carefully roll onto the previously coated substrate, after the adhesive coating the membrane and substrate has dried sufficiently (after approximately 15-30 minutes). Coverage rates will vary depending on substrate and environmental conditions such as ambient temperature and humidity.

Avoid wrinkling the membrane when applying to substrate. After mating membrane to the substrate, carefully roll the membrane with a hand roller to promote maximum positive contact between the membrane and the substrate. Overlap all adjacent flashing sheets a minimum of 2” (50mm). The JM TPO Flashings shall extend a minimum of 6” (150mm) onto the field sheet can be adhered securely, or a minimum of 3” (80mm) in front of the fastener plates with a minimum 1 ½” (40mm) weld width. All side

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laps shall overlap a minimum of 2” (50mm) with a minimum 1 1/2” (40mm) weld width.

3. Areas of the flashing membrane to be welded are not to have JM TPO Membrane Adhesive applied to them.
  - i) All flashings shall extend a minimum of 8” (200mm) above roofing level.
  - ii) All flashing shall be hot air welded at their connections with the roofing membrane.
  - iii) JM TPO membrane flashing shall be terminated according to JM TPO roofing systems Detail Drawings.
4. Outside corners on curbs, etc. must use JM TPO Reinforced Outside Corners. Field wrapping is not acceptable.

3.09 WATERSTOPS

- A. Install temporary cutoffs around incomplete edges of the roofing assembly at the end of each work day and when work must be postponed because of inclement weather. Straighten the insulation line using pieces of insulation loosely laid, and seal the JM TPO roofing systems sheet membrane to the deck or existing membrane. Use a heavy application of roof cement or hot asphalt at least 6” (150 mm) in width overlaid with an embedded reinforcement. Remove the temporary seals completely when work resumes, cutting out the contaminated membrane. Remove all sealant, contaminated membrane, insulation fillers, etc. from the work area and properly dispose off-site.

END OF SECTION

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SBS-MODIFIED BITUMINOUS MEMBRANE ROOFING - Section 07522

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PART 1 - GENERAL

1.01 WORK INCLUDED

- A. SBS-Modified Bituminous Membrane Roofing and Roof Panel over metal decking, complete with roof accessories and all flashing required for watertight installations. **BASE BID**
- B. Sealant work required to make counter-flashing work watertight is the work of this section.
- C. See Section 00300 for Isolated Prices and alternate bids.
- D. The requirements of this section are in addition to the requirements of the General Conditions, Supplementary Conditions and Division 1.

1.02 RELATED SECTIONS

- A. Flashing and Sheet Metal, Section 07600.

1.03 REFERENCE STANDARDS

- A. Requirements, abbreviations and acronyms for reference standards are in Section 01090
- B. ASTM D1079 - For definitions of terms related to roofing work not otherwise defined in this section.

1.04 WARRANTY

- A. Manufacturer's Warranty: No certificate required.
  - 1. Warranty period: 12 years, no dollar limit
- B. Special Project Warranty: Submit roofing Installer's warranty, on warranty form at end of this Section, signed by Installer, covering work of this Section, including membrane roofing, base flashing, roof panel, tapered roof board, insulation (where specified), flashing, expansion joint, fasteners, and vapor retarders, if any, for the following warranty period:
  - 1. Warranty Period: 2 years from date of Substantial Completion.
  - 2. This two-year certificate shall also guarantee that all roofing materials are installed in strict compliance with the roofing manufacturer's published installation specifications.

1.05 PERFORMANCE REQUIREMENTS

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SBS-MODIFIED BITUMINOUS MEMBRANE ROOFING - Section 07522

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- A. General: Install a watertight, modified bituminous membrane roofing and base flashing system with compatible components that will not permit the passage of liquid water and will withstand wind loads, thermally induced movement and exposure to weather without failure.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Store roofing materials in a dry, well-ventilated, weathertight location to ensure no significant moisture pickup and maintain at a temperature exceeding roofing system manufacturer's written instructions. Store rolls of felt and other sheet materials on end on pallets or other raised surfaces. Do not double-stack rolls.
  - 1. Handle and store roofing materials and place equipment in a manner to avoid significant or permanent damage to deck or structural supporting members.
- B. Do not leave unused felts and other sheet materials on the roof overnight or when roofing work is not in progress unless protected from weather and moisture and unless maintained at a temperature exceeding 50 deg F (10 deg C).
- C. Deliver all roofing materials to the job site in their original unopened, labeled packaging and store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer.
- D. Protect roofing insulation materials from physical damage and from deterioration by sunlight, moisture, soiling and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing and protecting during installation.

1.07 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with roofing work only when existing and forecasted weather conditions permit roofing to be installed according to manufacturers' written instructions and warranty requirements.

1.08 SUBSTITUTIONS

- A. Comply with Section 01630.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work are limited to the following:
  - i. Johns Manville
  - ii. CertainTeed

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## SBS-MODIFIED BITUMINOUS MEMBRANE ROOFING - Section 07522

iii. Firestone

### 2.02 PRODUCTS OVER METAL DECK

- A. SBS-Modified Bituminous Sheet per Johns Manville 3FID – HW-CR
  - i. Johns Manville DynaWeld Cap FR CR
  - ii. Johns Manville DynaWeld Base
- B. Roof Panel:
  - i. Johns Manville 1” DuraBoard (R=2.3)
- C. Insulation Board
  - i. Johns Manville 3.9” ENRGY 3 (R=23.0)
  - ii. Apply only on areas at interior where future air conditioning is anticipated

### 2.03 SBS-MODIFIED BITUMINOUS SHEETS

- A. Surfacing Cap Sheet Physical Properties: Provide SBS-modified bituminous fiberglass reinforced sheet, factory coated on both sides with an SBS elastomeric asphaltic blend, surfaced with ceramic coated granules, suitable for application method specified: DynaWeld Cap FR CR
  1. Thickness: 165 mils (4.2 mm)
  2. Tensile Strength: 105 lb.f./in at 0 deg F ( -18 deg C ) machine direction and 90 lbs.f./in cross direction.
  3. Elongation at Maximum load: 5% at 0 deg F ( -18 deg C ) each direction.
  4. Low Temperature Flexibility: Pass at -10 deg F ( -23 deg C ).
  5. Complying with ASTM D 6163, Type I, Grade G
  6. Material shall be tested in accordance with ASTM D 5147 Standard Test Methods.
  7. Highly reflective granular surface with minimum reflectivity (per ASTM C1549): 0.72.
- B. Base Sheet Physical Properties: Provide SBS-modified bituminous smooth surfaced fiberglass reinforced sheet; suitable for application method specified: Johns Manville DynaWeld B950.
  1. Thickness: 90 mils ( 2.2 mm )
  2. Tensile Strength: 70 lb.f./in machine direction and 61 lbs.f./in cross direction at 73.4 deg F (min).
  3. Complying with ASTM D 6163, Type I, Grade S
  4. Material shall be tested in accordance with ASTM D 146 Standard Test Methods.

### 2.04 FLASHING SHEET MATERIALS

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### SBS-MODIFIED BITUMINOUS MEMBRANE ROOFING - Section 07522

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- A. Backer Sheet: ASTM D 4601, Type II, asphalt-impregnated and coated, glass-fiber sheet, dusted with fine mineral surfacing on both sides. Basis of Design: PermaPly 28
- B. Backer Sheet: ASTM D 6164, Grade S, Type I, polyester-reinforced ASTM D 6163, Grade S, Type I, glass-fiber reinforced, SBS-modified asphalt sheet, smooth surfaced; suitable for application method specified. Basis of Design: DynaWeld Base
- C. Flashing Sheet: ASTM D 6163, Grade G, Type I, glass-fiber-reinforced, SBS-modified asphalt sheet; granular surfaced; suitable for application method specified. Basis of Design: DynaWeld Cap FR CR
  - 1. Highly reflective granular surface with minimum reflectivity (per ASTM C 1549): 0.72
- D. Liquid Applied Flashing: A liquid and fabric reinforced flashing system created with a stitch bonded polyester scrim and a two0-components, moisture cured, elastomeric, liquid applied flashing material, consisting of an asphalt extended urethane base material and an activator. Basis of Design: PermaFlash System
- E. High Wall Sheet Flashing Membrane (Self-Adhered): 60 mil (1.5 mm) thick, manufacturer's internally reinforced or scrim reinforced with weldable selvage edges on each side of roll, one encapsulated edge and self-adhering capabilities in a wide installation temperature range. Basis of Design: JM TPO SA-Flashing Membrane.

### 2.05 AUXILIARY ROOFING MATERIALS

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with built-up roofing.
- B. Roofing Asphalt: ASTM D 312-15, Type IV
- C. Asphalt Primer: ASTM D 41. Basis of Design: Asphalt Primer
- D. Asphalt Roofing Cement: ASTM D 4586, type I, asbestos free, of consistency required by roofing system manufacturer for application. Basis of Design: Bestile Industrial Roof Cement
- E. Cold-Applied Adhesive: ASTM D3019, Type III, Grade 2. asphalt-based, asbestos-free, cold-applied adhesive specially formulated for compatibility and use with membrane applications. Basis of Design: MBR Cold Application Adhesive
- F. Cold-Applied Adhesive: Roofing system manufacturer's asphalt-based, two-component, asbestos-free, cold-applied adhesive specially formulated for

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- compatibility and use with membrane applications. Basis of Design: MBR Bonding Adhesive
- G. Cold-Applied Adhesive: One-part, elastomeric cold-application adhesive specially formulated for compatibility and use with membrane applications. Basis of Design: Premium Cold Application Adhesive
- H. Cold-Applied Flashing Adhesive: Roofing system manufacturer's asphalt-based, two-component, asbestos-free, trowel-grade, cold-applied adhesive specially formulated for compatibility and use with flashing applications. Basis of Design: MBR Flashing Cement
- I. Cold-Applied Flashing Adhesive: Roofing system manufacturer's asphalt-based, two-component, asbestos-free, trowel-grade, cold-applied adhesive specially formulated for compatibility and use with flashing applications. Basis of Design: MBR Utility Cement
- J. Mastic Sealant: As required by Johns Manville.
- K. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening roofing membrane components to substrate, tested by manufacturer for required pullout strength, and provided by the roofing system manufacturer. Basis of Design: All Purpose Fasteners and Plates
- L. Metal Termination Bars: Manufacturer's standard predrilled stainless-steel or aluminum bars, with anchors. Basis of Design: JM Termination Systems
- M. Roofing Granules: Ceramic-coated roofing granules matching specified cap sheet, provided by roofing system manufacturer. CR Roofing Granules
- N. Coating: Acrylic elastomeric coating with unique bleed-blocking properties particularly well suited for coating over asphalt surfaces. Basis of Design: JM CR Seam Coating
- O. Self-Adhered Primer: One-part penetrating primer solution to enhance the adhesion of self-adhering membranes. SA Primer
- P. DynaTred Roof Walkway – White /white
- Q. Miscellaneous Accessories: Provide miscellaneous accessories recommended by roofing system manufacturer.

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### 2.06 COVER BOARD

- A. Perlite Board: ASTM C 728, Type 2; Composed of expanded perlite, cellulosic fibers, binders and water proofing agents with top surface seal coated. Basis of Design: 1" DuraBoard

### 2.07 ROOFING INSULATION

- A. General: Provide performed roof insulation boards that comply with requirements and referenced standards, selected from manufacturer's standard sizes and of thicknesses indicated.
- B. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class 1, Grade 3 (25 psi), Basis of Design: ENRGY 3
  - 1. Provide insulation package with minimum R Value: R-23
  - 2. Provide insulation package with minimum thickness: 3.9"
  - 3. Provide insulation package in multiple layers
  - 4. Minimum Long-Term Thermal Resistance (LTTR): 5.7 per inch
    - a. Determined in accordance with CAN/ULC S770 at 75 degrees F (24 degrees C).

### 2.08 TAPERED INSULATION

- A. Tapered Insulation: ASTM C 1289, Type II, Class 1, Grade 3 (25 psi), provide factory-tapered insulation boards fabricated to slope of ¼ inch per 12 inches (1:48) unless otherwise indicated. Basis of Design: Tapered ENRGY 3

## PART 3 - EXECUTION

### 3.01 EXAMINATION

- A. Examine substrates, areas, and conditions under which roofing will be applied, with Installer present, for compliance with requirements.
- B. Verify that roof openings and penetrations are in place and set and braced and that roof drains are properly clamped into position.
- C. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at roof penetrations and terminations and match the thickness of insulation required.
- D. Verify that flatness and fastening of metal roof decks comply with installation tolerances specified in Section 05300 "Metal Roof Deck."
- E. Do not proceed with installation until unsatisfactory conditions have been corrected.

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- F. The base sheet vapor retarder shall be installed in accordance with JM guidelines. The second layer of insulation shall be adhered to the base sheet vapor retarder in a full mopping of asphalt and shall be laid in a manner to ensure that all insulation joints are staggered from the first layer. The dew point should be calculated to fall within the second layer of insulation.

#### 3.02 PREPARATION

- A. Clean substrate of dust, debris, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

#### 3.03 INSULATION INSTALLATION

- A. Coordinate installation of roof system components so insulation and cover board is not exposed to precipitation or left exposed at the end of the workday.
- B. Comply with roofing system manufacturer's written instructions for installation of roof insulation and cover board.
- C. Install tapered insulation under area of roofing to conform to slopes indicated.
- D. Install insulation boards with long joints in a continuous straight line. Joints should be staggered between rows, abutting edges and ends per manufacturer's written instructions. Fill gaps exceeding 1/4 inch (6 mm) with like material.
- E. Install 2 or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches (150 mm) in each direction.
- F. Trim surface of insulation boards where necessary at roof drains so completed surface is flush and does not restrict flow of water.
- G. Install tapered edge strips at perimeter edges of roof that do not terminate at vertical surfaces.

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H. Preliminarily Fastened Insulation: Install insulation with fasteners at rate required by roofing system manufacturer or applicable authority, whichever is more stringent.

1. Fasten top layer to resist uplift pressure at corners, perimeter, and field of roof.

I. Adhered Insulation: Adhere each layer of insulation to substrate as follows:

1. Install each layer in a solid mopping of hot roofing asphalt according to roofing system manufacturer's instruction.
2. Install using a cold fluid-applied adhesive according to roofing system manufacturer's instruction.
3. Install each layer in a two-part urethane adhesive according to roofing system manufacturer's instruction.
4. Install each layer to resist uplift pressure at corners, perimeter, and field of roof.

J. Loose Laid Insulation with Top Insulation Layer Mechanically Fastened: Loose lay insulation with staggered joints and secure top layer of insulation to deck using mechanical fasteners designed and sized for fastening specified board-type to deck type.

1. Fasten top layer to resist uplift pressure at corners, perimeter, and field of roof.

K. Mechanically Fastened with Subsequent Layers Adhered Insulation: Secure first layer of insulation to deck using mechanical fasteners designed and sized for fastening specified board-type to deck type.

1. Fasten first layer to resist uplift pressure at corners, perimeter, and field of roof.
2. Install subsequent layers in a two-part urethane adhesive according to roofing system manufacturer's instruction.
3. Install each layer to resist uplift pressure at corners, perimeter, and field of roof.

L. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.04 COVER BOARD INSTALLATION

A. Coordinate installing membrane roofing system components so cover board is not exposed to precipitation or left exposed at the end of the workday.

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- B. Comply with membrane roofing system manufacturer's written instructions for installing roof cover board.
- C. Install cover board with long joints in a continuous straight line. Joints should be staggered between rows, abutting edges and ends per manufacturer's written instructions. Fill gaps exceeding 1/4 inch (6 mm) with cover board.
  - 1. Cut and fit cover board within 1/4 inch (6 mm) of nailers, projections, and penetrations.
- D. Trim surface of cover board where necessary at roof drains so completed surface is flush and does not restrict flow of water.
  - 1. Install tapered edge strips at perimeter edges of roof that do not terminate at vertical surfaces.
- E. Preliminarily Fastened Insulation for Mechanically Fastened Systems: Install cover board with fasteners at rate required by roofing system manufacturer or applicable authority, whichever is more stringent.
- F. Adhered Cover Board: Adhere cover board to substrate as follows:
  - 1. Install in a solid mopping of hot roofing asphalt according to roofing system manufacturer's instruction.
  - 2. Install using a cold fluid-applied adhesive according to roofing system manufacturer's instruction.
  - 3. Install in a two-part urethane adhesive according to roofing system manufacturer's instruction.
  - 4. Install to resist uplift pressure at corners, perimeter, and field of roof.
- G. Mechanically Fastened Cover Board: Install each layer of cover board and secure to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof cover board to deck type.
  - 1. Fasten to resist uplift pressure at corners, perimeter, and field of roof.
- H. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.05 ROOFING MEMBRANE INSTALLATION, GENERAL

- A. Install roofing membrane in accordance with roofing system manufacturer's written instructions, applicable recommendations of the roofing manufacturer and requirements in this Section.

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- B. Cooperate with testing and inspecting agencies engaged or required to perform services for installing roofing system.
- C. Where roof slope exceeds 1/2 inch per 12 inches (1:24), contact the membrane manufacturer for installation instructions regarding installation direction and backnailing
- D. Coordinate installing roofing system so insulation and other components of the roofing membrane system not permanently exposed are not subjected to precipitation or left uncovered at the end of the workday or when rain is imminent.
  - 1. Provide tie-offs at end of each day's work to cover exposed roofing membrane sheets and insulation.
  - 2. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system.
  - 3. Remove and discard temporary seals before beginning work on adjoining roofing.
- E. Asphalt Heating: Heat roofing asphalt to temperature recommended by roofing manufacturer to flux modified membrane. Do not exceed roofing asphalt manufacturer's recommended temperature limits during roofing asphalt heating. Discard roofing asphalt maintained at a temperature exceeding finished blowing temperature for more than 4 hours.
- F. Substrate-Joint Penetrations: Prevent roofing asphalt from penetrating substrate joints, entering building, or damaging roofing system components or adjacent building construction.
- G. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.06 SBS-MODIFIED BITUMINOUS MEMBRANE INSTALLATION

- A. Install **two** modified bituminous roofing membrane sheet and cap sheet according to roofing manufacturer's written instructions, starting at low point of roofing system. Extend roofing membrane sheets over and terminate beyond cants, with the following installation method:
  - 1. Unroll roofing membrane sheets and allow them to relax for minimum time period required by manufacturer.
  - 2. Install one lapped base sheet course and mechanically fasten to substrate according to roofing system manufacturer's written instructions.

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- a. Enhance fastening rate in perimeter and corner zones according to code or manufacturer, whichever is more stringent.
  - b. Side and end laps must be installed using heat welding techniques.
  - c. Fasteners in field of sheets must be stripped in per manufacturer's requirements prior to installing cap sheet.
3. Heat weld to substrate according to roofing system manufacturer's instruction.
- B. Laps: Accurately align roofing membrane sheets, without stretching, and maintain uniform side and end laps. Stagger end laps. Completely bond and seal laps, leaving no voids.
1. Repair tears and voids in laps and lapped seams not completely sealed.
  2. Apply roofing granules to cover exuded bead at laps while bead is hot.
- C. Install roofing membrane sheets so side and end laps shed water.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.07 FLASHING AND STRIPPING INSTALLATION

- A. Install base flashing over cant strips and other sloping and vertical surfaces, at roof edges, and at penetrations through roof, and secure to substrates according to roofing system manufacturer's written instructions and as follows:
1. Prime substrates with asphalt primer if required by roofing system manufacturer.
  2. Backer Sheet Application: Mechanically fasten backer sheet to walls or parapets.
  3. Backer Sheet Application: Install backer sheet and heat weld to substrate as required by roofing system manufacturer.
  4. Flashing Sheet Application: Heat weld flashing sheet to substrate as required by roofing system manufacturer.
- B. Extend base flashing up walls or parapets a minimum of 8 inches (200 mm) above roofing membrane and 4 inches (100 mm) onto field of roofing membrane.
- C. For high wall locations, install 60 mil TPO Self-Adhered membrane to smooth approved substrates, when substrate temperatures are 40°F (4.5°C) and rising, with termination bar per manufacturer's approved details.
1. The use of SA Primer or SA LVOC Primer is required for flashing applications on curbs and parapet walls for temperatures between 40°F (4.5°C) and 20°F (-7°C).

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2. The use of SA Primer or SA LVOC Primer is required for flashing applications over approved substrates with a porous or rough surface, including: Dens Deck Prime, Dens Deck, DEXcell, concrete and smooth faces CMU.
  3. Run SBS flashing a minimum 24 inches up wall prior to using termination bar transition detail.
- D. Mechanically fasten top of base flashing securely at terminations and perimeter of roofing.
1. Seal top termination of base flashing with a strip of glass-fiber fabric set in MBR Flashing cement.
- E. Roof Drains: Flash drain using liquid applied flashing (PermaFlash) system. Clamp roofing membrane, flashing, and stripping into roof-drain clamping ring.
1. Install stripping according to roofing system manufacturer's written instructions.
- F. Flash all penetrations using liquid applied flashing (PermaFlash) system.
- G. Proceed with installation only after unsatisfactory conditions have been corrected.

3.08 COATING INSTALLATION

- A. Ensure that all surfaces are clean, dry and free of any dirt, grease, oil or other debris that may interfere with proper adhesion.
- B. Apply coating to roofing membrane and base flashings as recommended by the manufacturer using approved spray apparatus. Apply in two coats allowing the first coat to completely dry before applying the second coat.

3.09 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform roof tests and inspections and to prepare test reports.
- B. Final Roof Inspection: Arrange for roofing system manufacturer's Registered Roof Observer (RRO) to inspect roofing installation on completion and submit report to Architect.
  1. Notify Architect or Owner 48 hours in advance of date and time of inspection.

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- C. Repair or remove and replace components of roofing system where test results or inspections indicate that they do not comply with specified requirements.
- D. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.10 PROTECTING AND CLEANING

- A. Protect modified bituminous membrane roofing from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.
- B. Correct deficiencies in or remove modified bituminous roofing that does not comply with requirements, repair substrates, reinstall roofing, and repair base flashings to a condition free of damage and deterioration at the time of Substantial Completion and according to warranty requirements.
- C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

3.11 ROOFING INSTALLER'S WARRANTY

- A. WHEREAS <NAME> of <ADDRESS>, herein called the "Roofing Installer," has performed roofing and associated work ("work") on the following project:
  - 1. Owner:
  - 2. Address:
  - 3. Building Name/Type:
  - 4. Address:
  - 5. Area of Work:
  - 6. Acceptance Date:
  - 7. Warranty Period:
  - 8. Expiration Date:
- B. AND WHEREAS Roofing Installer has contracted (with Owner indirectly as a subcontractor) to warrant said work against leaks and faulty or defective materials and workmanship for designated Warranty Period,
- C. NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period he will, at his own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work and as are necessary to maintain said work in a watertight condition.
- D. This Warranty is made subject to the following terms and conditions:
  - 1. Specifically excluded from this Warranty are damages to work and other parts of the building, and to building contents, caused by:

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- a. lightning;
  - b. peak gust wind speed exceeding <INSERT WIND SPEED> mph (m/sec);
  - c. fire;
  - d. failure of roofing system substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition;
  - e. faulty construction of parapet walls, copings, chimneys, skylights, vents, equipment supports, and other edge conditions and penetrations of the work;
  - f. vapor condensation on bottom of roofing; and
  - g. activity on roofing by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner.
2. When work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof has been paid by Owner or by another responsible party so designated.
  3. The Roofing Installer is responsible for damage to work covered by this Warranty but is not liable for consequential damages to building or building contents, resulting from leaks or faults or defects of work.
  4. During Warranty Period, if Owner allows alteration of work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, this Warranty shall become null and void on date of said alterations, but only to the extent said alterations affect work covered by this Warranty. If Owner engages Roofing Installer to perform said alterations, Warranty shall not become null and void, unless Roofing Installer, before starting said work, shall have notified Owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate work, thereby reasonably justifying a limitation or termination of this Warranty.
  5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray-cooled surface, flooded basin, or other use or service more severe than originally specified, this Warranty shall become null and void on date of said change, but only to the extent said change affects work covered by this Warranty.
  6. The Owner shall promptly notify Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and shall afford reasonable opportunity for Roofing Installer to inspect work and to examine evidence of such leaks, defects, or deterioration.
  7. This Warranty is recognized to be the only warranty of Roofing Installer on said work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of roofing failure. Specifically, this Warranty shall not operate to relieve Roofing

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Installer of responsibility for performance of original work according to requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

- E. IN WITNESS THEREOF, this instrument has been duly executed this <DAY> day of <MONTH>, 12<YEAR>.
1. Authorized Signature:
  2. Name:
  3. Title:

END OF SECTION

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FLASHING AND SHEET METAL - Section 07600

PART 1-GENERAL

1.01 WORK INCLUDED

- A. Metal counter flashing, gutters and downspouts (rain drainage) and other miscellaneous sheet metal accessories as required to complete the work of this project.
- B. Pre-finished metal
- C. The requirements of this section are in addition to the requirements of the General Conditions, Supplementary Conditions and Division 1.

1.02 REFERENCE STANDARDS

- A. Requirements, abbreviations and acronyms for reference standards are defined in Section 01090.
- B. SMACNA - Architectural Sheet Metal Specifications and Details.
- C. ASTM A527 - Steel Sheet, Zinc Coated (Galvanized) by the Hot Dip Process, Lock-Forming Quality.
- D. ASTM B209 - Aluminum Alloy Sheet and Plate.
- E. ASTM A526 - Steel Sheet, Zinc Coated (Galvanized) by the Hot Dip Process, Commercial Quality.
- F. FS TT-S-00230C - Sealing Compound: Elastomeric Type, Single Component.
- G. FS SS-C-00134a - Cement, Bituminous, Plastic - Type I.
- H. ASTM A176 - Stainless and Heat-Resisting Chromium Steel Plate, Sheet and Strip.
- I. ASTM B370 - Copper

PART 2 - PRODUCTS

2.01 METALS

- A. Copper: ASTM B370; temper H00, cold rolled except where temper 060 is required for forming; not less than 16 oz/sq.ft. (0.55 mm thick), unless otherwise indicated.
- B. Lead-Coated Copper: ASTM B101, cold-rolled copper sheet, not less than 20oz./sq.ft. (0.7 mm thick), both side coated with lead weighting not less than 12 nor more than 15 lb/100 sq.ft. (5.4 nor more than 6.8kg/9.3 sq.m), unless otherwise indicated.
- C. Aluminum: Alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated and with not less than the strength and durability of alloy and temper designated below:

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1. Mill Finish Alclad Aluminum Sheet: ASTM B209 (ASTM B209M), Alclad 3003-H14 with a minimum thickness of 0.040 inch (1.0 mm), unless otherwise indicated.
  2. Mill-Finish Aluminum Sheet: Aluminum Sheet: ASTM B 209 (ASTM B209M), 3003-H14, with a minimum thickness of 0.040 inch (1.0mm), unless otherwise indicated.
  3. Anodized Aluminum Sheet: ASTM B 209 (ASTM B209M), 5005-H14, with a minimum thickness of 0.50 inch (1.2 mm).
  4. Factory-Painted Aluminum Sheet: ASTM B 209 (ASTM B 209M), 3003-H14, with a minimum thickness o 0.40 inch (1.0mm), unless otherwise indicated.
  5. Extruded Aluminum: ASTM B 221 (ASTM B221M), alloy 6063-T52, with a minimum thickness of 0.80 inch (2.0mm) for primary legs of extrusion that are anodized, unless otherwise indicated.
- D. Stainless-Steel Sheet: ASTM A 167, Type 304, soft annealed, with No. 2D finish, except where harder temper is required for forming or performance; minimum 0.0187 inch (0.5mm) thick, unless otherwise indicated.
- E. Terne-Coated Stainless-Steel Sheet: ASTM A 167, Type 304 sheet, both side coated with a minimum terne alloy (80 percent lead, 20 percent tin) total coating weight of 0.092 lb./sq/ft/(0.45 kg/sq.m); minimum 0.0187 inch (0.5mm) thick, unless otherwise indicated.
- F. Galvanized Steel Sheet: ASTM A526, G90 (ASTM A 526M, Z275) commercial quality, or ASTM A 527, G90 (ASTM A 527M, Z275), lock-forming quality, hot dip galvanized steel sheet with 0.20 percent copper, mill phosphatized where indicated for painting; not less that 0.0396 inch (1.0mm) thick, unless otherwise indicated.
- G. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A792, Class AZ-50 coating, Grade 40 (ASTM A792M, Class AZ-150 coating, Grade 275) or to suite project conditions, with 55 percent aluminum, not less than 0.0396 inch (1.0mm) thick, unless otherwise indicated.
- H. Coil-Coated Galvanized Steel Sheet: Zinc-coated, commercial-quality steel sheet conforming to ASTM A 755, G90 (ASTM A 755M, Z 275) coating designation, coil coated with high-performance fluoropolymer coating as specified in “Coil-Coast Galvanized Steel Sheet Finish” Article; not less than 0.0336 inch (0.85mm) thick, unless otherwise indicated.
- I. Lead Sheet: ASTM B749, Type L51121, copper-bearing lead sheet, with a minimum thickness of 0.0625 inch (1.6mm) except not less than 0.0937 inch (2.4mm) thick for applications where burning (welding) is involved.
- J. Prefinished: Galvanized sheet steel with factory applied fluoropolymer coating of Kynar 500 in standard colors.

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## FLASHING AND SHEET METAL - Section 07600

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### 2.02 FABRICATION, GENERAL

- A. Sheet Metal Fabrication Standard: Fabricate sheet metal flashing and trim to comply with recommendations of SMACNA's Architectural Sheet Metal Manual that apply to the design, dimensions, metal and other characteristics of the item indicated.
- B. Comply with details shown to fabricate sheet metal flashing and trim that fit substrates and result in waterproof and weather-resistant performance once installed. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
- C. Form exposed sheet metal Work that is without excessive oil canning, buckling and tool marks and that is true to line levels indicated, with exposed edges folded back to form hems.
- D. Seams: Fabricate non-moving seams in sheet metal with flat-lock seams. Tin edges to be seamed, form seams and solder.
- E. Seams: Fabricate non-moving seams in aluminum with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
- F. Expansion Provisions: Space movement joints at maximum of 10 feet (3 m) with no joints allowed within 24 inches (610 mm) of corner or intersection. Where lapped or bayonet-type expansion provisions in Work cannot be used or would not be sufficiently weatherproof and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with mastic sealant (concealed within joints).
- G. Sealed Joints: Form non-expansion, but movable, joints in metal to accommodate elastomeric sealant to comply with SMACNA standards.
- H. Separate metal from non-compatible metal or corrosive substrates by coating concealed surfaces at locations of contact with asphalt mastic or other permanent separation as recommended by manufacturer.
- I. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of sheet metal exposed to public view.
- J. Fabricate cleats and attachment devices from same material as sheet metal component being anchored or from compatible, non-corrosive metal recommended by sheet metal manufacturer.
  - 1. Size: As recommended by SMACNA manual or sheet metal manufacturer for application but never less than thickness of metal being secured.

### 2.03 R PANELS

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#### FLASHING AND SHEET METAL - Section 07600

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- A. Coverage width: 36"
- B. Rib spacing: 12" on center
- C. Rib height: 1 ¼"
- D. Panel attachment: Exposed fastening system
- E. Gauge: 26
- F. Coatings: Signature 300

#### 2.04 PREFABRICATED COUNTER FLASHING

- A. Fry springlock type aluminum with gray epoxy finish, complete with fasteners and neoprene/steel washers, manufactured by Fry Reglet Corp., Alhambra, CA.
  - 1. At structural steel: Type "SM" surface mounted.
  - 2. At concrete masonry: Type "MA-4" reglet type system with a 4" flange.
- B. Substitution: Comply with Section 01630.

#### 2.05 ACCESSORY MATERIALS AND COMPONENTS

- A. Burning Rod for Lead: Same composition as lead sheet.
- B. Solder: ASTM B 32, Grade Sn50, used with rosin flux.
- C. Solder for Stainless Steel: ASTM B 32, Grade Sn60, used with an acid flux of type recommended by stainless-steel sheet manufacturer; use a non-corrosive rosin flux over tinned surfaces.
- D. Stainless-Steel Welding Rods: Type recommended by stainless-steel sheet manufacturer for type of metal sheets furnished.
- E. Fasteners: Same metal as sheet metal flashing or other non-corrosive metal as recommended by sheet metal manufacturer. Match finish of exposed heads with material being fastened.
- F. Asphalt Mastic: SSPC-Paint, solvent-type asphalt mastic, nominally free of sulfur and containing no asbestos fibers, compounded for 15-mil (0.4mm) dry film thickness per coat.
- G. Mastic Sealant: Polyisobutylene: non-hardening, non-skinning, non-drying, non-migrating sealant.
- H. Elastomeric Sealant: Generic type recommended by sheet metal manufacturer and fabricator of components being sealed and complying with requirements for joint sealants as specified in Division 7, Section "Building Sealants".
- I. Epoxy Seam Sealer: 2-part, non-corrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior and interior non-moving joints, including riveted joints.

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#### FLASHING AND SHEET METAL - Section 07600

- J. Adhesives: Type recommended by flashing sheet metal manufacturer for waterproof and weather-resistant seaming and adhesive application of flashing sheet metal.
- K. Paper Slip Sheet: 5-lb/square (0.244kg/sq.m) red rosin, sized building paper conforming to FS UU-B-790, Type I, Style 1b.
- L. Polyethylene Underlayment: ASTM D 4397, minimum 6-mil-(0.15 -mm-) thick black polyethylene film, resistant to decay when tested according to ASTM E 154.
- M. 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 thickness required for performance.
- N. Roofing Cement: ASTM D4586, Type I, asbestos free, asphalt based.
- O. Fasteners: Of same material as flashings, type and size to suit application.
- P. Neoprene Washers: Are required for all fasteners which will remain exposed to the weather.
- Q. Hold-Down Clips: Continuous type is required for gravel guards. Individual clips are NOT acceptable.

#### 2.06 FLASHING MEMBRANE

- A. Type and Manufacturer: "Sure-Seal Neoprene Membrane" .063 mil thick manufactured by Carlisle Tire and Rubber Company, Carlisle Pa; resistant to ultra-violet, ozone and chemical deterioration; bonds to wood, metal, concrete and masonry; remains workable from -30 degrees F to + 200 degrees F, in compliance with the following:
  1. Hardness, durometer A: ASTM D2240
  2. Tensile Strength: ASTM D412
  3. Elongation at Break: ASTM D412
  4. Brittleness Temperature: ASTM D746
  5. Tear Resistance: ASTM D624 (Die C)
  6. Flame Resistance: ASTM C542
  7. Resistance to Heat Aging: ASTM D573
  8. Resistance to Oil Changing: ASTM D471
  9. Resistance to Ozone: ASTM D1149
  10. Resistance to Permanence: ASTM 395
  11. Resistance to Water: ASTM D471

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- 12. Water Vapor Permeability: ASTM E96
- 13. Specific Gravity: ASTM D297
- B. Adhesive: Of type recommended by membrane manufacturer.
- C. Other Acceptable Product: "Trocal SMA" membrane (.48" thick) manufactured by Dynamit Nobel of America.
- D. Substitution: Comply with Section 01630.

2.07 COLORS

- A. Metal for canopy decking, gutters and downspouts: Sierra by Berridge Roofing or Surrey Beige by ABC. Metal cap flashing over E.I.F.S. cornice: Shasta White by Berridge Roofing or Regal White by ABC
- B. This specification is for pricing only, verify specification with Owner prior to provision of sample

PART 3 - EXECUTION

3.01 GENERAL

- A. Except as otherwise indicated, comply with manufacturer's installation instructions and recommendations and with SMACNA "Architectural Sheet Metal Manual". Anchor units of work securely in place by methods indicated, providing for thermal expansion of metal units; conceal fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weatherproof.
- B. Bed flanges of work in a thick coat of bituminous roofing cement where required for waterproof performance.
- C. Install reglets to receive counterflashing in manner and by methods indicated. Where shown concrete, furnish reglets to trades of concrete work for installation as work of Division 3 sections. Where shown in masonry, furnish reglets to trades of masonry work, for installation as work of Division 4 sections.
- D. Install counterflashing in reglets, either by snap-in seal arrangement or by welding in place for anchorage and filling reglet with mastic or elastomeric sealant, as indicated and depending on degree of sealant exposure.
- E. Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.

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Comply with requirements of Sheet Metal and Air Conditioning Contractor's National Association.

- F. Form sections in maximum 10 foot lengths. Make allowances for expansion at joints.
- G. Seams are to be flat lock type except corners. Fabricate corners minimum 18 inches x 18 inches mitered, soldered or welded, and sealed as one piece.
- H. Wipe and wash clean, soldered joints, to remove traces of flux immediately after soldering.
- I. Hem exposed edges of flashings on underside 1/2 inch.
- J. Fabricate flashings to allow toe to extend minimum 2 inches horizontally over roofing gravel, and return brake edge.
- K. Backpaint flashings with bituminous paint where expected to be in contact with cementitious materials or dissimilar metals.
- L. Secure flashings in place using specified type fasteners. Use exposed fasteners in locations approved by Architect. When using exposed fasteners, they are to be of same finish as flashings.
- M. Apply sealing compound at junction of metal flashings and membrane flashings.
- N. Lock seams and end joints. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.
- O. Counter-flash mechanical and electrical items projecting through membrane roofing.

#### 3.02 FLASHING MEMBRANE INSTALLATION

- A. Apply adhesive and install membrane in accordance with manufacturer's published instruction and procedures.
- B. Surfaces on which membrane is to be applied must be clean, smooth, dry and free of fins, sharp edges, loose materials, foreign materials, oil and grease.
- C. Install membrane in solid coating of adhesive. Both mating surfaces must be coated with a solid coating of adhesive.
- D. Place each sheet of membrane in its final position without stretching and allow membrane to relax before making splices or bonding to substrate.
- E. Avoid and remove trapped air bubbles.
- F. Joints are to be overlapped and sealed in a solid application of adhesive. Butt joints not acceptable.

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FLASHING AND SHEET METAL - Section 07600

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3.03 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces, removing substances that might cause corrosion of metal or deterioration of finishes.
- B. Protection: Advise Contractor of required procedures for surveillance and protection of flashings and sheet metal work during construction to ensure that work will be without damage or deterioration other than natural weathering at time of Substantial Completion.

END OF SECTION

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STONE AND CAST STONE SEALER - Section 07700

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PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Exterior quality sealer work for stone and cast stone.
- B. Requirements of this section are in addition to the requirements of General Conditions, Supplementary Conditions and Division 1.

1.02 RELATED WORK

- A. Stone Veneer, Section 04415
- B. Cast Stone, Section 04465

1.03 REFERENCE STANDARDS

- A. ASTM C 97-90 (Re-approved 1994): Test Methods for Absorption and Bulk Specific Gravity of Dimension stone.
- B. ASTM E 96-95: Test Methods for Water Vapor Transmission of Materials.
- C. ASTM E 514-90: Test Method for Water Penetration and Leakage through Masonry.
- D. ASTM E 548-93: Guide for General Criteria Used for Evaluating Laboratory Competence.
- E. FS SS-W110 C: Water-Repellent, Colorless, Silicone Resin Base 1972.

1.04 QUALITY ASSURANCE

- A. Applicator shall be experienced and trained in the techniques of sealer applications and shall be thoroughly familiar with recommendations of the manufacturer for the specified sealer materials.
- B. Selection of the proper sealer for particular surfaces shall be in accordance with current recommendations published by the sealer manufacturer and the stone veneer and cast stone fabricators.

1.05 SUBMITTALS

- A. Submit the following submittals in accordance with Section 01340.
- B. Product Data:
  - 1. Four copies of product manufacturers specifications, recommendations and applications instructions for exterior sealer and associated materials.
  - 2. Manufacturers published data, letter of certification, or certified test laboratory report that each material complies with requirements and is

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intended for required applications.

1.06 DELIVERY AND STORAGE

- A. Deliver materials to job in original, unopened containers, with manufacturers brand name clearly marked on all containers. Handle and store materials in original packages out of weather as recommended by manufacturer.

1.07 GUARANTEE

- A. Upon completion and acceptance of the project, furnish to the Owner a written guarantee. Guarantee all items and work included in this section for a period of two years from date of acceptance, against defective workmanship and materials.
- B. Defects resulting from faulty materials and/or workmanship during the guarantee period shall be repaired or replaced by the Contractor at his expense.

PART 2 - PRODUCTS

2.01 SEALER

- A. Type: Silicone base impregnator
  - 1. HMK S45
  - 2. Chem-Trete PB
  - 3. ProSoCo Standoff

2.02 PREPARATORY MATERIALS

- A. As recommended by manufacturer.

PART 3 - EXECUTION

3.01 PREPARATION/INSTALLATION

- A. Perform all sealer work in accordance with sealer manufacturers published instructions.
- B. Clean and prepare surfaces in accordance with sealer manufacturers recommendations. Remove any loose materials and other foreign matter which might impair performance of sealer.
- C. Ensure that surfaces scheduled to be sealed are compatible with sealer and will not change color or texture due to application of sealer
- D. Perform testing on a stone veneer and cast stone sample to determine the

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following:

1. Number of coats necessary to protect particular stone veneer and cast stone
  2. Visual appearance of stone veneer and cast stone after using sealer
  3. Stain protection against water dirt and oil infiltration
- E. Apply sealer within recommended temperature ranges. Consult manufacturer when sealer cannot be applied within recommended temperature ranges.

3.02 CLEANING

- A. Leave finished work in neat, clean condition with no evidence of spillovers onto adjacent surfaces.

END OF SECTION

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BUILDING SEALANTS - Section 07920

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PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Sealant work for all building sealants.
- B. The requirements of this section are in addition to the requirements of General Conditions, Supplementary Conditions and Division 1.

1.02 REFERENCE STANDARDS

- A. Requirements, abbreviations and acronyms for reference standards are defined in Section 01090.
- B. ASTM C804 - Recommended Practices for use of Solvent - Release Type Sealants.
- C. FS TT-S-00230C - Sealing Compound, Elastomeric Type, Single Component.

1.03 QUALITY ASSURANCE

- A. Applicator shall be experienced and trained in the techniques of sealant applications and shall be thoroughly familiar with recommendations of the manufacturer for the specified sealants materials.
- B. Selection of the proper sealant for particular joints shall be in accordance with current recommendations published by the sealant manufacturer.

1.04 DELIVERY AND STORAGE

- A. Deliver materials to job in original, unopened containers, with manufacturer's brand name clearly marked on all containers. Handle and store materials in original packages out of weather as recommended by manufacturer.

1.05 GUARANTEE

- A. Upon completion and acceptance of the project, furnish to the Owner a written guarantee. Guarantee all items and work included in this section for a period of two years from date of acceptance, against defective workmanship and materials.

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### BUILDING SEALANTS - Section 07920

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- B. Defects resulting from faulty materials and/or workmanship during the guarantee period shall be repaired or replaced by the Contractor at his expense.

## PART 2 - PRODUCTS

### 2.01 SEALANTS

- A. Type: One-component, non-sagging, non-staining, non-hardening
- B. VOC content of interior sealants
  - 1. Architectural sealants: 250g/L or less
  - 2. Sealants/Sealant Primers for non-porous substrates: 250 g/L or less
  - 3. Sealants/Sealant Primers for porous substrates: 775g/L or less
- C. Testing
  - 1. Adhesion Test: ASTM C94
  - 2. Compatibility Test: ASTM C1087
  - 3. Stain Test: ASTM C1248
  - 4. Field Adhesion Testing:
    - a. Method A, Field Applied Sealant Joint Hand Pull-Tab Appendix X11, ASTM C1193
    - b. Method A, Tail Procedure, ASTM C1521
- D. Acceptable Manufacturers and Products:
  - 1. GE "Silpruf", one-component silicone
  - 2. GE "Ultraglaze" one component silicone
  - 3. Dow Corning "790 Building Sealant", one-component silicone
  - 4. Tremco Spectrum 1" and "Spectrum 2" one component silicone
  - 5. Tremco "Proglaze SSF6G" one component silicone

### 2.02 PREPARATORY MATERIALS

- A. Primer: Non-staining type recommended by sealant manufacturer to suit application.
- B. Joint Cleaner: Non-corrosive type recommended by sealant manufacturer; compatible with joint forming materials.
- C. Backer Rod for Exterior Sealant: Compressible rod stock of polyethylene foam, polyethylene jacketed polyurethane foam, butyl

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BUILDING SEALANTS - Section 07920

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rubber foam, neoprene foam or other flexible, permanent, durable non-absorptive material as recommended for compatibility with sealant by sealant manufacturer.

- D. Backer Rod for Expansion Joints: Extruded foamed polyurethane strip saturated with polybutylene material. "Poly-Tite" as manufactured by Sandell Mfg. Co., or approved equal.
- E. Bond Breaker: Pressure sensitive type recommended by sealant manufacturer to suit application.

PART 3 - EXECUTION

3.01 PREPARATION/INSTALLATION

- A. Perform all sealant work in accordance with sealant manufacturer's published instructions.
- B. Clean and prepare joints in accordance with sealant manufacturer's recommendations. Remove any loose materials and other foreign matter which might impair adhesion of sealant.
- C. Ensure that joint forming materials are compatible with sealant.
- D. Examine joint dimensions and size materials to achieve required width/depth ratios. Use approved joint backer rod to achieve required joint depths, to allow sealants to perform properly.
  - 1. Use bond breaker where required.
- E. Apply sealant within recommended temperature ranges. Consult manufacturer when sealant cannot be applied within recommended temperature ranges.
- F. Form joints slightly concave and straight edges. Sealant must be free of air pockets, embedded matter, ridges and sags.

3.02 CLEANING

- A. As work progresses, remove excess materials adjacent to joints. Leave finished work in neat, clean condition with no evidence of spillovers onto adjacent surfaces.

END OF SECTION

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HOLLOW METAL DOORS AND FRAMES - Section 08100

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PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Steel hollow metal doors and frames.
- B. The requirements of this section are in addition to the requirements of the General Conditions, Supplementary Conditions and Division 1.

1.02 RELATED WORK

- A. Door Hardware and Weatherstripping, Section 08710

1.03 REFERENCED STANDARDS

- A. Requirements, abbreviations and acronyms for reference standards are defined in Section 01090.
- B. SDI-100- Recommended Specifications-Standard Steel Doors and Frames of Steel Door Institute.
- C. ASTM A525 – General Requirements for Steel Sheet, Zinc Coated (Galvanized) by the Hot Dip Process.
- D. ASTM A569 – Steel, Carbon, Hot-Rolled Sheet and Strip, Commercial Quality.
- E. ASTM A591 – Steel Sheet, Cold-Rolled, Electrolytic Zinc Coated.
- F. ASTM A366 – Steel, Carbon, Cold-Rolled Sheet, Commercial Quality.
- G. Underwriters’ Laboratories, Inc. (UL) and Factory Mutual (FM), as applicable to fire rated hollow metal doors and frames.

1.04 DELIVERY, STORAGE, PROTECTION

- A. Deliver, handle and store so as not to damage or deform. Clean and paint abraded, scarred or rusty areas immediately upon detection.
- B. Frames of welded-unit construction shall have temporary steel spreaders welded at bottoms of frames or bucks strapped together in pairs with heads inverted for bracing during shipment.
- C. Stack doors and frames at site on platforms or pallets in weather-tight building.

PART 2 - PRODUCTS

2.01 HOLLOW METAL FRAMES

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## HOLLOW METAL DOORS AND FRAMES - Section 08100

- A. Type:
  - 1. Welded-unit construction of cold-rolled furniture stock steel free of defects, warp and buckle.
  - 2. Molded members to be clean-cut, straight and true.
  - 3. Cope or miter corner joints in true alignment; weld continuously on inside of frame.
  - 4. Conceal fasteners where practical.
  - 5. Finish welds on exposed surfaces flush and smooth.
- B. Gage/Finish:
  - 1. Exterior Frames: 16 gage hot-dipped galvanized steel coated with rust-inhibitive primer.
- C. Provisions In Frames for Hardware: Prepare frames at factory for installation of hardware.
  - 1. Mortise, reinforce, drill and tap frames to templates to receive mortised template hinges, lock strikes, flush bolts.
  - 2. Reinforcing Plates: 11 gage for mortised hardware and lock strikes, 14 gage for surface-applied hardware.
  - 3. Cover Boxes: Provide in back of hardware cutouts.
  - 4. Silencers: Provide three rubber silencers on lock side of single doors and one silencer for each leaf in heads of double-door frames.
- D. Anchors: Not less than three adjustable anchors, spaced not over 24" apart, on each jamb (galvanized for exterior frames).
  - 1. Galvanized metal clip angle to be welded to bottom of each jamb member for anchoring to floor construction.

### 2.02 HOLLOW METAL DOORS

- A. Type: Flush type, seamless, heavy duty, 1-3/4" thick constructed of two No. 18 gage Voss roller leveled prime quality cold-rolled steel sheets. Vertical stiffeners to be of channel-shaped steel on nominal 6" spaces, welded to both face sheets.
  - 1. Close top and bottom of doors with 16 gage steel channels. Exterior doors to have flush tops.
  - 2. Continuously vertical edge joint between face sheets to vertical edge channels, grind smooth, free of exposed seams.
  - 3. Insulate doors with spun mineral wool insulation.
  - 4. Butts: Stanley FBB168, 4-1/2" x 4-1/2", non-removable pins, bonderized and prime coated, 1-1/2 pairs each door.
- B. Provisions in Doors for Hardware:

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HOLLOW METAL DOORS AND FRAMES - Section 08100

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1. Mortise, reinforce, drill and tap to receive template hinges, cylindrical or mortise locks as required, flush bolts and closers.
2. Provide special reinforcing for bored-type locks and latches.
3. Reinforcing plates, kick and mop plates, and armor plates.

PART 3 - EXECUTION

3.01 GENERAL

- A. Comply with approved shop drawings. Install frames plumb, level and rigidly secured in place.
- B. Provide space around perimeter of both sides of frames to receive sealant.
- C. Install temporary spreaders until frames are set and anchored.
- D. Install bottom wall anchor on door frames approximately 24” above floor.
- E. Doors shall fit squarely with frames and operate properly. Except as otherwise indicated, door clearances shall be not more than 3/32” at jambs and heads and 3/16” at bottom.
- F. Install hardware without forcing, with proper clearances and alignment, so that operation is smooth and easy, free of binding and/or twisting. Adjust doors and hardware for required operation.
- G. Clean up hardware and adjacent surfaces upon completion. Do not use abrasives or liquid cleaners that shall harm finishes.

END OF SECTION

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STOREFRONT SYSTEMS - Section 08411

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PART - GENERAL

1.01 WORK INCLUDED

- A. Aluminum framing, swing doors, frames and trim for exterior installation, complete with glass and glazing.
- B. All sealant work required to make storefront assembly watertight.
- C. The requirements of this section are in addition to the requirements of the General Conditions, Supplementary Conditions and Division 1.

1.02 RELATED WORK

- A. Glass and Glazing, Section 08800.
- B. Door Hardware and Weatherstripping, Section 08710

1.03 REFERENCE STANDARDS

- A. Requirements, abbreviations and acronyms for reference standards are defined in Section 01090.
- B. ASTM B221-Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes.
- C. FS TT-C-494-Coating Compound, Bituminous, Solvent Type, Acid Resistant.
- D. FS TT-S-00230-Sealing Compound: Elastomeric Type, Single Component (for Caulking, Sealing and Glazing in Buildings and Other Structures.)
- E. Latest edition of Texas Accessibility Standards
- F. Texas Department of Insurance Windstorm requirements where applicable

1.04 SHOP DRAWINGS AND PRODUCT DATA

- A. Submit the following in accordance with Section 01340:
  - 1. Shop drawings and product data clearly indicating the following:
    - a. Elevations of aluminum frames/door systems
    - b. Sash systems, details and method of anchorage to openings
    - c. Details of construction. Method of assembling frames
    - d. Locations and installations of hardware

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- e. Size, shape and thickness of doors and framing materials
  - f. Joints and connections, and details of joining with other work
  - g. Hardware types, styles and hardware finishes
  - h. Aluminum finish for doors and frames. Clearly describe the mil thickness of anodized finish as specified
- B. Certification: Submit with each shop drawing a copy of manufacturers certificate indicating the mil thickness of anodized aluminum.

1.05 DELIVERY OF MATERIALS

- A. Deliver material in manufacturer's packaging complete with installation instructions.

PART 2 - PRODUCTS

2.01 MANUFACTURER

- A. Available manufacturers: Subject to compliance with requirements manufacturers offerings products that may be incorporated in the work include, but are not limited to the following:
- 1. Kawneer
  - 2. Vistawall
  - 3. AdamsRite

2.02 STOREFRONT SYSTEM

- A. Finish and Color
- 1. Clear anodized aluminum finish: architectural class II coating conforming to Aluminum Association Standard AA-M12C22A31, 0.4 mil. minimum, electrolytically to deposited anodic coating.
  - 2. This specification is for pricing only. Verify finish with Owner prior to development of shop drawings
- B. Framing System
- 1. Kawneer
  - 2. Aluminum construction
  - 3. Typical storefront: TRIFAB VersaGlaze 451
  - 4. 2" x 4 ½" center glazed

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5. This specification is for pricing purposes only. Verify specifications with Owner prior to furnishing submittals

2.03 STOREFRONT SYSTEMS

- A. Doors
  1. Kawneer 350 Medium Stile
  2. Glazing Gaskets: E P D M elastomeric extrusions.
  3. Pivots/Hinges: Offset type (top, intermediate and bottom) required. Pivots shall be tamper-proof when doors are locked. Finish shall match door finish
  4. Push/Pull – Finish to match door
  5. Keyed cylinder with thumb turn
  6. Closers: LCN 4040 Super Smoothe, surface mounted, barrier free. Finish to match door.
  7. Threshold: Extruded aluminum mill finished, barrier free
  8. Sweep strip: EPDM blade
  9. Three point locking system at pair of doors
  10. 10” Bottom rail
  11. Glass: 1” insulated glass of type scheduled on drawings and specified in Section 08800.
  12. Refer to drawings for additional information

2.04 MATERIALS AND COMPONENTS

- A. Extrusions: 6063-T5 alloy and temper (ASTM B221 alloy G.S. 10A-T5).
- B. Exposed Fasteners: Stainless steel in accordance with ASTM A164.
- C. Perimeter Anchors: Aluminum or steel, providing The steel is properly isolated from the aluminum.
- D. Glazing Gaskets: E P D M elastomeric extrusions.

2.05 FABRICATION

- A. General:
  1. Aluminum Doors and Frames: Shall be fabricated to allow for clearances and shim spacing around perimeter of

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STOREFRONT SYSTEMS - Section 08411

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- assemblies to enable installation. Provide for thermal movement.
2. Anchorage Devices: Required to securely and rigidly fit door and frame assemblies in place.
  3. Joints and Corners: Shall be flush, hair line, weatherstrip and accurately fitted together.
  4. Condensation Drains: Required within frame construction to drain moisture to exterior.
  5. Provision for hardware is required, complete with internal reinforcing.
  6. Bituminous Paint: One coat is required on concealed aluminum surfaces in contact with cementitious or dissimilar materials.
- B. Fabrication of Doors:
1. Basic Door Sections: 1-3/4" in depth, door size to meet design requirements. Major portions of door stile and rail extrusions shall be .125" nominal thickness.
  2. Door Glazing Moldings: .050" thick snap-in type with neoprene bulb-type glazing gaskets. Exposed screws shall not be used to secure glazing stops in place. Exterior stops shall be set with tamper-resistant clips.
  3. Door Corner Construction: Shall consist of both sigma deep penetration welds and mechanical fastening.
  4. Entrance Doors: Shall be weather-stripped at jambs, top rail and meeting stiles.

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- C. Performance Requirements for Framing system:
  - 1. Air Infiltration: Shall be tested in accordance with ASTM E283. Infiltration shall not exceed .06 CFM per square foot of fixed area.
  - 2. Water Infiltration: Shall be tested in accordance with ASTM E331. Water shall not penetrate at a test pressure of 6.24 P.S.F. (300 Pa).
  - 3. Structural Performance: Shall be based on maximum deflection of 1/175 of the span and allowable stress with a safety factor 1.65.
  - 4. Storefront system and glass shall perform to these criteria under a windload in accordance with applicable codes and ordinances. Miscellaneous structural steel items required to meet design requirements is the work of this section.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install aluminum doors, frames and hardware in accordance with manufacturer's recommendations and approved shop drawings. Assemblies shall be installed plumb, level and free of warp or twist. Maintain dimensional tolerances and alignment with adjacent work.
- B. Use sufficient anchorage devices to securely and rigidly fasten storefront assemblies to building.
- C. Coordinate glass and glazing work with Section 08800.
- D. Install perimeter sealant and related backing materials in accordance with workmanship and installation requirements indicated in Section 07920.
- E. Set thresholds in solid bed of mastic.

END OF SECTION

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DOOR HARDWARE & WEATHERSTRIPPING - Section 08710

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PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Hardware and wetherstripping
- B. The requirements of this section are in addition to the requirements of the General Conditions, Supplementary Conditions and Division 1.

1.02 RELATED WORK

- A. Coordinate the work of this Section with the following:
  - 1. Hollow Metal Doors and Frames, Section 08100

1.03 QUALITY ASSURANCE

- A. Supplier Qualifications: A recognized architectural door hardware and wetherstripping supplier, with warehousing facilities in the Project's vicinity, that has a record of successful in-service performance for supplying door hardware similar in quantity, type and quality to that indicated for this Project and that employs an experienced architectural hardware consultant (AHC) who is available to Owner, architect and contractor at reasonable times during the course of the Work, for consultation.

1.04 REFERENCE STANDARDS

- A. Requirements, abbreviations and acronyms for reference standards are defined in Section 01090.

1.05 AMERICANS WITH DISABILITIES ACT

- A. All hardware, including its installation shall satisfy the requirements of the Americans with Disabilities Act or the accessibility code having jurisdiction.

1.06 SUBMITTALS

- A. Before starting the work, submit the following submittals in accordance with Section 01340.
  - 1. Product data: Submit Manufacturers' Technical Product Data, installation instructions, and recommendations for each product.

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## DOOR HARDWARE & WEATHERSTRIPPING - Section 08710

Include data substantiating that materials comply with specified requirements.

- B. Product data including manufacturers' technical product data for each items of door hardware, installation instructions, maintenance of operating parts and finish and other information necessary to show compliance with requirements.
- C. Final hardware schedule coordinated with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
  - 1. Final Hardware Schedule Content: Based on hardware indicated, organize schedule into "hardware sets" indicating complete designations of every item required for each door or opening. Include the following information:
    - a. Type, style, function, size, and finish of each hardware item.
    - b. Name and manufacturer of each item.
    - c. Fastenings and other pertinent information.
    - d. Location of each hardware set cross-referenced to indications on Drawings both on floor plans and in door and frame schedule.
    - e. Explanation of all abbreviations, symbols, and codes contained in schedule.
    - f. Mounting locations for hardware.
    - g. Door and frame sizes and materials.
    - h. Keying information.

### 1.07 PRODUCT HANDLING

- A. Tag each item or package separately with identification related to final hardware schedule, and include basic installation instructions with each item or package.
- B. Packaging of door hardware is responsibility of supplier. As material is received by hardware supplier from various manufacturers, sort and repackage in containers clearly marked with appropriate hardware set number to match set numbers of approved hardware schedule. Two or more identical sets may be packed in same container.
- C. Inventory door hardware jointly with representatives of hardware supplier and hardware installer until each is satisfied that count is correct.
- D. Deliver individually packaged door hardware items promptly to place of installation (shop or Project site).

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- E. Provide secure lock-up for door hardware delivered to the Project, but not yet installed. Control handling and installation of hardware items that are not immediately replaceable so that completion of the Work will not be delayed by hardware losses both before and after installation.

1.08 MAINTENANCE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for tenant's continued adjustment, maintenance and removal and replacement of door hardware.

PART 2 - PRODUCTS

2.01 HARDWARE DESCRIPTION: **REFER TO DRAWINGS**

2.02 HARDWARE FINISH

- A. Selected by Owner
  - i. Unless hardware item is available in only one finish

2.03 WEATHERSTRIPPING

- A. Exterior
  - i. DKB (or equal unless noted)
    - a. Silicone
    - b. Threshold: 896
    - c. Sweepstrip: C627
    - d. Weatherstripping (head and jamb) I275 DKB silicone
  - ii. Pemko (or equal)
    - a. Raindrip: P210 AV36
    - b. Astragal: 3572 SP
  - iii. 612 Unless hardware item is available in only one finish

2.04 LOCK CYLINDERS AND KEYING

- A. Standard System: Except as otherwise indicated, provide new masterkey system for Project.

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- B. Review the keying system with the Owner and provide the type required (master, grandmaster or great-grandmaster), either new or integrated with tenant's existing system.
- C. Equip locks with cylinders for interchangeable-core pin tumbler inserts. Furnish only temporary inserts for the construction period, and remove these when directed.
  - 1. Furnish final cores and keys for installation by tenant.
- D. Comply with Owner instructions for masterkeying and, except as otherwise indicated, provide individual change key for each lock that is not designated to be dyed alike with a group of related locks.
  - 1. Permanently inscribe each key with number of lock that identifies cylinder manufacturer's key symbol and notation, "DO NOT DUPLICATE"
- E. Key Quantity: Furnish 3 change keys for each lock, 5 master keys for each master system and 5 grandmaster keys for each grandmaster system.
  - 1. Furnish one extra blank for each lock.
  - 2. Deliver keys to key control system manufacturer.
  - 3. Deliver keys to Tenant.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Mount hardware units at heights indicated in following applicable publications, except as specifically indicated or required to comply with governing regulations and except as otherwise directed by Owner.
  - 1. "Recommended Locations for Builders Hardware for Standard Steel Doors and Frames" by the Door and Hardware Institute.
- B. Install each hardware item in compliance with the manufacturer's instructions and recommendations. Where cutting and fitting is required to install hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation or application of surface protection with finishing work specified in the Division 9 Sections. Do not install surface-mounted items until finishes have been completed on the substrates involved.
- C. Set units level, plumb, and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.

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- D. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.
- E. Set thresholds for exterior doors in full bed of butyl-rubber or polyisobutylene mastic sealant complying with requirements specified in Division 7 Section "Building Sealants."
- F. Weatherstripping and Seals: Comply with manufacturer's instructions and recommendations to the extent installation requirements are not otherwise indicated.

3.02 ADJUSTING, CLEANING, AND DEMONSTRATING

- A. Adjust and check each operating item of hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate freely and smoothly or as intended for the application made.
  - 1. Where door hardware is installed more than one month prior to acceptance or occupancy of a space or area, return to the installation during the week prior to acceptance or occupancy and make final check and adjustment of all hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of hardware and doors. Adjust door control devices to compensate for final operation of heating and ventilating equipment.
- A. Clean adjacent surfaces soiled by hardware installation.
- B. Instruct Owner's personnel in the proper adjustment and maintenance of door hardware and hardware finishes.
- C. Six-Month Adjustment: Approximately six months after the date of Substantial Completion, the Installer, accompanied by representatives of the manufacturers of latchsets and locksets and of door control devices, and of other major hardware supplies, shall return to the Project to perform the following work:
  - 1. Examine and re-adjust each item of door hardware as necessary to restore function of doors and hardware to comply with specified requirements.
  - 2. Consult with and instruct Owner's personnel in recommended additions to the maintenance procedures.

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3. Replace hardware items that have deteriorated or failed due to faulty design, materials or installation of hardware units.

END OF SECTION

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GLASS AND GLAZING - Section 08800

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PART 1 - GENERAL

1.01 WORK INCLUDED

- A. The work of this section includes all exterior glass and glazing work, including doors
- B. Window film
- C. Spandrel
- D. The requirements of this section are in addition to the requirements of the General Conditions, Supplementary Conditions and Division 1.

1.02 RELATED WORK

- A. Storefront Systems, Section 08411.

1.03 QUALITY ASSURANCE

- A. Glass must be of American manufacture.
- B. Labels: Each piece of glass shall bear manufacturer's label showing strength, grade thickness, type and quality. Labels shall remain until glass has been set and inspected.
- C. When glass is not cut to size by manufacturer and is furnished unlabeled from local stock, submit affidavit stating quality, thickness, type and manufacturer of glass furnished.

1.04 SAMPLES AND PRODUCT DATA

- A. Submit the following in accordance with Section 01340:
  - 1. One 8" x 8" sample for each type of glass required.
  - 2. Manufacturer's product data describing each type of glass.

1.05 REFERENCE STANDARDS

- A. Requirements, abbreviations and acronyms for reference standards are defined in Section 01090.
- B. FS DD-G-451C - Glass, Plate, Sheet, Figured
- C. FS TT-G-410E - Glazing Compound, Sash (Metal) for Back Bedding and Face Glazing (Not for Channel or Stop Glazing).

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- D. FS TT-S-230A - Sealing Compound, Synthetic Rubber Base, Single Component, Chemical Curing for Caulking, Sealing and Glazing in Building Construction.
- E. FS TT-S001543 - Sealing Compound, Silicone Base (For Caulking and Glazing in Buildings and Other Structures).
- F. Glass Association of North America (GANA) "Glazing Manual".
- G. NAAMM #SS-1B-68 – Non-skinning Resilient Preformed Compounds - Tapes, Ribbons, Beads with Release Paper.

1.06 WARRANTIES/CLOSEOUT DOCUMENTS

- A. Manufacturer's Warranty: The Contractor shall include the Glazing Manufacturer's Two (2) year Warranty against defects on all glass products.

1.07 MAINTENANCE

- A. The Contractor shall include the Solar Window Film manufacturer's written cleaning recommendations.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Vitro Architectural Glass

2.02 SAFETY GLAZING: Where safety glazing is required, provide glazing that complies with 16 CFR 1201, Category II.

2.03 GLASS TYPES

- A. Typical storefront glass, unless noted otherwise
  - 1. PPG Solarban 70
  - 2. U factor of 0.28
  - 3. SHGC of 0.27
  - 4. Clear
  - 5. Insulated

2.04 GLAZING MATERIALS

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- A. Glazing Compounds: Modified oil type, FS TT-G-410E of consistency to remain in perfect condition for minimum of two years. Shall contain no ingredients injurious to metal setting. Color to match adjacent material.
- B. Glazing Tape: Preformed butyl type; NAAMM #SS-1B-68, 10-15 durometer hardness; paper release; color to match adjacent materials.
- C. Setting Blocks: Neoprene; 70-90 durometer hardness; dimensions appropriate to glass thickness
- D. Spacer Shims: Neoprene 50 durometer hardness; dimensions appropriate to glass thickness

PART 3 – EXECUTION

3.01 GLASS INSTALLATION

- A. In general, glazing work shall be in accordance with procedures in FGJA "Glazing Manual". Glaze in temperature above 40 degrees. Sash shall be clean and dry. Setting blocks shall be at one-third points.
- B. Glass shall be cleanly cut, free of edge chips or irregular cleavages, to prevent "built-in" fatigue or stress patterns.
- C. Allow edge clearance for expansion, deflection and racking. Install without binding, warping or straining.
- D. Where glazing beads are provided, carefully remove and reset to avoid defacing sash, beads, setting screws or doors.

3.02 IDENTIFICATION OF INSTALLED GLASS

- A. Mark and identify glass after installation and during construction phase to indicate that opening has been glazed in order to prevent injury to persons who might mistake such areas as unglazed opening.

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- B. Use markers to identify glazed openings such as tapes or flags. If soap or cleaning powders are used, such materials shall be guaranteed not to "photograph" to etch glass in such manner as to leave permanent impressions in glass.

3.03 CLEANING

- A. Immediately remove drippings from finished surfaces. Remove labels after work is completed.
- B. At completion of work, leave glass in clean and unmarked condition.

END OF SECTION

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METAL LATHING - Section 09205  
PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Metal lathing for Portland cement plaster work.
- B. The requirements of this section are in addition to the requirements of the General Conditions, Supplementary Conditions and Division 1.

1.02 RELATED WORK

- A. Stone Veneer, Section 04415
- B. Portland Cement Plaster, Section 09028
- C. Gypsum Board Sheathing, Section 09270

1.03 REFERENCE STANDARDS

- A. Requirements, abbreviations and acronyms for reference standards are defined in Section 01090.
- B. MLSFA - Specifications for Metal Lath and Furring.
- C. MLSFA - Technical Spec. No. 12, Metal Lath Suspended Ceiling.

PART 2 –PRODUCTS

2.01 LATH

- A. 3.4 # Diamond mesh, copper-bearing steel with galvanized coating.
- B. Rust-resistant paint NOT acceptable for exterior installations.
- C. Paper back

2.02 LATHING ACCESSORIES

- A. Provide corner beads, bullnose beads, casing heads, control joints, expansion joints provide all accessories required for complete installation.
  - 1. Finish for Exterior Installations: Zinc required. Galvanized steel NOT acceptable for exterior installations.
- B. Anchorages: Tie wire, nails, screws and other approved metal supports, of type and size to suite application and to rigidly secure lathing accessories in place.
  - 1. Finish for Exterior Installations: Zinc or galvanized steel.

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METAL LATHING - Section 09205  
PART 3 - EXECUTION

3.01 GENERAL INSTALLATION REQUIREMENTS

- A. Erect metal furring and lath as required for cement plaster in accordance with Metal Lath/Steel Framing Association.
- B. Install members true to lines and levels and to provide surface flatness with maximum variation of 1/8 inch in 10 feet in any direction.

3.02 INSTALLATION OF LATHING MATERIALS

- A. Attachment of Lath:
  - 1. Tightly stretch metal lath with long dimension perpendicular to supports.
  - 2. Lap all sides minimum 1-1/2 inches. Stagger joints.
  - 3. Adequately secure all sides with tie wire where they occur between supports.
  - 4. Securely attach lath to metal supports using tie wire at maximum 6 inches on centers.
- B. At Internal Angles:
  - 1. Continuously reinforce all internal angles with Cornerite, except where the metal lath forms the angle reinforcement.
  - 2. Fasten Cornerite at extreme edges only.
- C. At Corners:
  - 1. Place 4 inch wide x 12 inch long strips of metal lath diagonally at corners of all openings.
  - 2. Secure rigidly in place.
- D. At Junctions of Dissimilar Materials:
  - 1. Place 4 inch wide strips of metal lath at all junctions of dissimilar materials.
  - 2. Place parallel with dissimilar materials.
  - 3. Secure rigidly in place.

3.03 INSTALLATION OF MOLDINGS

- A. Install in as long as possible to reduce joints. Miter all corners. Attach in place 24" o.c. maximum.

END OF SECTION

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PORTLAND CEMENT PLASTER - Section 09220

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PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Cement plaster applied to metal lath.
- B. The requirements of this section are in addition to the requirements of General Conditions, Supplementary Conditions and Division 1.

1.02 RELATED WORK

- A. Mortar, section 04100
- B. Metal Lathing, Section 09205
- C. Carpentry, Section 06000

1.03 REFERENCE STANDARDS

- A. Requirements, abbreviations and acronyms for reference standards are defined in Section 01090.
- B. ASTM C150 - Portland Cement.
- C. ASTM C6 - Normal Finishing Hydrated Lime.
- D. ASTM C206 - Special Finishing Hydrated Lime

PART 2 - PRODUCTS

2.01 BASECOAT MATERIALS

- A. Cement: Type 1 Portland Cement, ASTM C150; grey.
- B. Hydrated Lime: Normal finishing type, ASTM C6.
- C. Aggregate: Natural sand, ASTM C35.
- D. Water: Clean, potable, fresh and free from injurious amounts of oil, acid, alkali, organic or other deleterious substances.

2.02 FINISHING PLASTER MATERIALS

- A. Cement: Type 1 Portland Cement, ASTM C150, grey.
- B. Hydrated Lime: Normal finishing type, ASTM C6.
- C. Aggregate: Sand.
- D. Water: Clean, potable, fresh and free from injurious amounts of oil, acid, alkali, organic or other deleterious substances.

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PORTLAND CEMENT PLASTER - Section 09220

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2.03 CEMENT PLASTER MIXES

- A. Basecoat (Scratch):
  - 1. Portland Cement: 1 sack
  - 2. Masonry Cement: 2 sacks
  - 3. Sand: 9 cubic feet
  - 4. Fiberglass Strands: Alkali resistant type, 1-1/2 lbs. Add strands after scratch coat is thoroughly dry-mixed.
- B. Finish Coat:
  - 1. Portland Cement: 1 part (by volume)
  - 2. Hydrated Lime: 1-1/2 parts
  - 3. Sand: 3 parts

PART 3 - EXECUTION

3.01 PREPARATION

- A. Prior to application ensure mechanical and electrical services behind surfaces to receive cement plaster have been tested and approved.
- B. Install No. 30 asphalt saturated building paper over sheathing prior to installing metal lath
- C. Ensure metal lath has been properly installed and rigidly secured.

3.02 PLASTER THICKNESS

- A. Plaster on Masonry:
  - 1. Two Basecoats: 1/4" thick minimum
  - 2. Finish Coat: 1/4" thick minimum

3.03 PLASTERING

- A. Plaster Mixing:
  - 1. Mix only as much plaster as can be used in one hour.
  - 2. Mix materials dry, to uniform color and consistency, before adding water.
  - 3. Protect mixes from frost, dust and evaporation.
  - 4. Do not re-temper mixes after initial set has occurred.
- B. Expansion and Control Joints:
  - 1. Place at locations indicated on drawings.

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2. Place at locations to divide areas into panels not exceeding 125 sq. ft. in area.
- C. Basecoat Application
1. Apply scratch and brown coats to specified thickness.
  2. Maintain surface flatness, with maximum variation of 1/8 inch in 10 feet.
  3. Moist cure and allow basecoats to slowly dry for minimum period of 48 hours.
  4. Allow basecoats to cure for minimum 7 days prior to application of finish coat.
- D. Finish Coat Application:
1. Provide surfaces with a finish to match the sample panel approved.
  2. Evenly dampen basecoats, to ensure uniform suction. Apply finish coat to specified thickness.
  3. Moist cure finish coat for minimum period of 48 hours.

END OF SECTION

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GYP SUM BOARD ASSEMBLIES - Section 09255

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PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Gypsum board.
- B. The requirements of the General Conditions, Supplementary Conditions and Division 1.

1.02 RELATED WORK

- A. Coordinate the requirements of this section with the following:
  - 1. Carpentry, Section 06000

1.03 REFERENCE STANDARDS

- A. Requirements, abbreviations and acronyms for referenced standards are defined in Section 01090.
- B. Gypsum Board Construction Terminology: ASTM C11 and GA-505 for definitions of terms for gypsum board assemblies not defined in this Section or in other referenced standards.

1.04 SUBMITTALS

- A. Submit the following in accordance with Section 01304:
  - 1. Product Data for each type of product specified.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original packages, containers, or bundles bearing brand name and identification of manufacturer or supplier.
- B. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes. Neatly stack gypsum panels flat to prevent sagging.

1.06 PROJECT CONDITIONS

- A. Environmental Conditions, General: Establish and maintain environmental conditions for applying and finishing gypsum board to comply with ASTM C 840 requirements or gypsum board manufacturer's

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recommendations, whichever are more stringent.

### 1.07 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: Where fire-resistance-rated gypsum board assemblies are indicated, provide gypsum board assemblies that comply with the following requirements.
  - 1. Fire-Resistance Ratings: As indicated by GA File Numbers in GA-600 Fire Resistance Design Manual or design designations in UL Fire Resistance Directory or in the listing of another testing and inspecting agency acceptable to authorities having jurisdiction.
  - 2. Gypsum board assemblies indicated are identical to assemblies tested for fire resistance according to ASTM E 119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.

## PART 2 - PRODUCTS

### 2.01 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Gypsum Board and Related Products:
    - a. Domtar Gypsum.
    - b. Georgia-Pacific Corp.
    - c. National Gypsum Co.; Gold Bond Building Products Division.
    - d. United States Gypsum Co.

### 2.02 GYPSUM BOARD PRODUCTS

- A. General: Provide gypsum board of types indicated in maximum lengths available that will minimize end-to-end butt joints in each area indicated to receive gypsum board application.
  - 1. Widths: Provide gypsum board in widths of 48 inches (1219 mm).
- B. Gypsum Wallboard: ASTM C 36 and as follows:
  - 1. Type: Regular for vertical surfaces, unless otherwise indicated.
  - 2. Type: Type X where required for fire-resistance-rated assemblies.
  - 3. Type: Weather resistant where indicated.
  - 4. Type: Sag-resistant type for ceiling surfaces.

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5. Type: Proprietary type as required for specific fire-resistance-rated assemblies.
6. Edges: Tapered.
7. Thickness: As indicated.

2.03 TRIM ACCESSORIES

- A. Accessories for Interior Installation: Cornerbead, edge trim, and control joints complying with ASTM C 1047 and requirements indicated below:
  1. Material: Formed metal or plastic, with metal complying with the following requirement:
    - a. Steel sheet zinc coated by hot-dip or electrolytic process, or steel sheet coated with aluminum or rolled zinc.
  2. Shapes indicated below by reference to Fig. 1 designations in ASTM C 1047:
    - a. Cornerbead on outside corners, unless otherwise indicated.
    - b. LC-bead with both face and back flanges; face flange formed to receive joint compound. Use LC-beads for edge trim, unless otherwise indicated.
    - c. One-piece control joint formed with V-shaped slot and removable strip covering slot opening.

2.04 JOINT TREATMENT MATERIALS

- A. General: Provide joint treatment materials complying with ASTM C 475 and the recommendations of both the manufacturers of sheet products and of joint treatment materials for each application indicated.
- B. Joint Tape for Gypsum Board: Paper reinforcing tape, unless otherwise indicated.
  1. Use pressure-sensitive or staple-attached, open-weave, glass-fiber reinforcing tape with compatible joint compound where recommended by manufacturer of gypsum board and joint treatment materials for application indicated.
- C. Drying-Type Joint Compounds for Gypsum Board: Factory-packaged

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vinyl-based products complying with the following requirements for formulation and intended use.

1. Ready-Mixed Formulation: Factory-mixed product.
  - a. Taping compound formulated for embedding tape and for first coat over fasteners and face flanges of trim accessories.
  - b. Topping compound formulated for fill (second) and finish (third) coats.
  - c. All-purpose compound formulated for both taping and topping compounds.
2. Job-Mixed Formulation: Powder product for mixing with water at Project site.
  - a. Taping compound formulated for embedding tape and for first coat over fasteners and face flanges of trim accessories.
  - b. Topping compound formulated for fill (second) and finish (third) coats.
  - c. All-purpose compound formulated for both taping and topping compounds.

### 2.05 MISCELLANEOUS MATERIALS

- A. General: Provide auxiliary materials for gypsum board construction that comply with referenced standards and recommendations of gypsum board manufacturer.
- B. Laminating Adhesive: Special adhesive or joint compound recommended for laminating gypsum panels.
- C. Spot Grout: ASTM C 475, setting-type joint compound recommended for spot-grouting hollow metal door frames.
- D. Fastening Adhesive for Wood: ASTM C 557.
- E. Fastening Adhesive for Metal: Special adhesive recommended for laminating gypsum panels to steel framing.
- F. Gypsum Board Nails: ASTM C 514

## PART 3 - EXECUTION

### 3.01 EXAMINATION

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GYPSUM BOARD ASSEMBLIES - Section 09255

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- A. Examine substrates to which gypsum board assemblies attach or abut, installed hollow metal frames, cast-in-anchors, and structural framing, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of assemblies specified in this Section. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 APPLYING AND FINISHING GYPSUM BOARD, GENERAL

- A. Gypsum Board Application and Finishing Standards: Install and finish gypsum panels to comply with ASTM C 840 and GA-216.
- B. Install gypsum panels with face side out. Do not install imperfect, damaged, or damp panels. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.
- C. Locate both edge or end joints over supports, where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Avoid joints other than control joints at corners of framed openings where possible.
- D. Attach gypsum panels to steel studs so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.
- E. Attach gypsum panels to framing provided at openings and cutouts.
- F. Form control and expansion joints at locations indicated and as detailed, with space between edges of adjoining gypsum panels, as well as supporting framing behind gypsum panels.
- G. Isolate perimeter of nonload-bearing gypsum board partitions at structural abutments, except floors, as detailed. Provide 1/4- to 1/2-inch wide spaces at these locations and trim edges with U-bead edge trim where edges of gypsum panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- H. Space fasteners in gypsum panels according to referenced gypsum board application and finishing standard and manufacturer's recommendations.
- I. Space screws a maximum of 12 inches o.c. for vertical applications.

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- J. Space fasteners in panels that are tile substrates a maximum of 8 inches o.c.

3.03 GYP SUM BOARD APPLICATION METHODS

- A. Install gypsum wallboard panels as follows:
  - 1. On partitions/walls, apply gypsum panels vertically (parallel to framing), unless otherwise indicated, and provide panel lengths that will minimize end joints.
  - 2. On partitions/walls, apply gypsum panels horizontally (perpendicular to framing), unless parallel application is required for fire-resistance-rated assemblies. Use maximum-length panels to minimize end joints.
    - a. Stagger abutting end joints not less than one framing member in alternate courses of board.
    - b. At stairwells and other high walls, install panels horizontally.

3.04 INSTALLING TRIM ACCESSORIES

- A. General: For trim accessories with back flanges, fasten to framing with the same fasteners used to fasten gypsum board. Otherwise, fasten trim accessories according to accessory manufacturer's directions for type, length, and spacing of fasteners.
- B. Install cornerbead at external corners.
- C. Install edge trim where edge of gypsum panels would otherwise be exposed. Provide edge trim type with face flange formed to receive joint compound, except where other types are indicated.
  - 1. Install LC-bead where gypsum panels are tightly abutted to other construction and back flange can be attached to framing or supporting substrate.
  - 2. Install L-bead where edge trim can only be installed after gypsum panels are installed.
- D. Install control joints at locations indicated.
- E. Install control joints according to ASTM C 840 and manufacturer's

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GYPSUM BOARD ASSEMBLIES - Section 09255

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recommendations and in specific locations approved by Architect for visual effect.

3.05 FINISHING GYPSUM BOARD ASSEMBLIES

- A. General: Treat gypsum board joints, interior angles, flanges of cornerbead, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration.
- B. Prefill open joints, rounded or beveled edges, and damaged areas using setting-type joint compound.
- C. Apply joint tape over gypsum board joints, except those with trim accessories having flanges not requiring tape.
- D. Apply joint tape over gypsum board joints and to flanges of trim accessories as recommended by trim accessory manufacturer.
- E. Sand surfaces to become suitable to receive paint

3.06 CLEANING AND PROTECTION

- A. Promptly remove any residual joint compound from adjacent surfaces.
- B. Provide final protection and maintain conditions, in a manner acceptable to Installer, that ensure gypsum board assemblies are without damage or deterioration at the time of Substantial Completion.

END OF SECTION

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SHEATHING AND SOFFIT BOARD –Section 09270

PART 1 – GENERAL

1.01 WORK INCLUDED

- A. Wall, ceiling, sheathing and soffit board
- B. Soffit vent
- C. The requirements of this section are in addition to the requirements of the General Conditions, Supplementary Conditions and Division 1.

1.02 RELATED WORK

- A. Steel Studs, Section 05422
- B. Exterior Insulated Finish System (E.I.F.S.), Section 07240

1.03 SUBMITTALS

- A. Before starting the work, submit the following submittals in accordance with Section 01340
  - 1. Product data: Submit manufacturer's descriptive literature indicating material composition, thickness, sizes and fire resistance
  - 2. Certificates: Submit manufacturer's written certification that product meets specified requirements

1.04 QUALITY ASSURANCE

- A. Fire resistant ratings: Where applicable, provide materials and construction that are identical to those of assemblies whose fire resistant ratings are indicated

1.05 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Deliver materials to job site in manufacturer's original packaging, containers and bundles with manufacturer's brand name and identification intact and legible
- B. Storage and handling: Store level and handle materials to protect against contact with damp and wet surfaces, exposure to weather, breakage and damage to edges. Provide air circulation under covering and around stacks of materials

1.06 LIMITATIONS

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- A. Do not use Dens-Glass Gold sheathing as a base for nailing or mechanical fastening. Fasteners should be flush to the face of the board, not countersunk.
- B. The use of forced air heaters creates volumes of water vapor which, when not properly vented, can condense on building materials. The use of these type heaters and any resulting damage is not the responsibility of G-P Gypsum. Consult heater manufacturer for proper use and ventilation. Avoid any condition that will create moisture in the air and condensation on the exterior walls during periods when the exterior temperature is lower than the interior.
- C. When Dens-Glass Gold panels are used in slanted wall applications, that portion of the wall must be temporarily protected from the elements by the use of a weather barrier such as #15 felt prior to application of the cladding. Also, exposed wall ends such as may be found in parapets must be covered to prevent water from infiltrating the cavity.
- D. G-P Gypsum does not warrant and is not responsible or liable for the performance of the cladding or exterior systems applied over Dens-Glass Gold sheathing. The suitability and compatibility of any system is the responsibility of the system manufacturer or design authority.
- E. Do not laminate Dens-Glass Gold sheathing to masonry surfaces; use furring strips or framing spaced at manufacturer's specifications.
- F. Dens-Glass Gold sheathing is not intended for roof applications. For roof applications consult our Dens-Deck® roof board brochure.
- G. Dens-Glass Gold sheathing is not intended for tile applications. For tile applications, consult our Dens-Shield® Tile Backer brochure.
- H. Dens-Glass Gold sheathing is not a structural product and should not be used in lieu of plywood where required
- I. Do not apply Dens-Glass Gold sheathing below grade.
- J. For all installations, design details such as fasteners, sealants and control joints per system specifications must be properly installed per system specifications. Openings and penetrations must be properly flashed and sealed. Failure to do so will void the warranty.
- K. Dens-Glass Gold sheathing is exceptionally resistant to weather, but it is not intended for immersion in water or sustained exposure to water and moisture. Cascading roof/floor water should be directed away from the sheathing until appropriate drainage is installed.

1.07 WARRANTY

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SHEATHING AND SOFFIT BOARD –Section 09270

- A. Materials Warranty: Provide sheathing manufacturer’s standard warranty covering sheathing materials for five years commencing on date of purchase.
- B. Weathering Warranty: Provide sheathing manufacturer’s standard warranty covering in-place exposure damage to sheathing for six months commencing on date of purchase by contract

PART 2 – PRODUCTS

2.01 SHEATHING BOARD

- A. Acceptable Products:
  - 1. Georgia Pacific 1.5/8" Dens-Glass Gold sheathing
  - 2. Georgia Pacific 2.5/8" Dens-Glass Gold Fireguard sheathing
- B. Characteristics:
  - 1. Size:
    - a. Dens-Glass Gold sheathing: . (12.7mm) thick by 4' by 8', 9' or 10' (1.9 lb. per square foot).
    - b. Dens-Glass Gold Fireguard Sheathing: Nominal 5/8" (15.9mm) thick by 4' by 8', 9' or 10' (2.5 lb. per square foot).
  - 2. Composition:
    - a. Gypsum sheathing manufactured in accordance with ASTM C 1177 with glass mats both sides and long edges, water-resistant treated core.
  - 3. Fire resistance:
    - a. Noncombustible when tested in accordance with ASTM E 136.
    - b. 1/2" or 5/8" Dens-Glass Gold sheathing: Flame spread 0, smoke developed 0, when tested in accordance with ASTM E 84.
    - c. 5/8" Dens-Glass Gold Fireguard: Sheathing is rated “Type X” as defined in ASTM C 36 when tested according to

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### SHEATHING AND SOFFIT BOARD –Section 09270

ASTM E 119 and can be used as a replacement to any other generic assembly utilizing a  $\frac{5}{8}$ " Type X gypsum board (see GA-600 for numeric assemblies). Dens-Glass Gold Fireguard sheathing is UL classified, Type DGG in UL designs N501, N502, N505, U301, U302, U305, U309, U337, U411, U425, U467, U473, X508, X516.

#### 2.02 BUILDING PAPER

- A. If required by local building code, No. 15, nonperforated, asphalt saturated felt complying with ASTM D 226, Type 1 or equal.

#### 2.03 ACCESSORIES

- A. Joint tape: 2" wide, 10 x 10 glass mesh tape.
- B. Joint compound: G-P Gypsum setting-type joint compound.
- C. Nails, wood framing: Hot dip, 11-gauge galvanized nails with  $\frac{7}{16}$ " head, 1  $\frac{1}{2}$ " min. length.
- D. Screws, metal framing:
  - 1. Type S-12, bugle head, self-tapping, rust-resistant, fine thread for heavy-steel gauge (12 to 22).
  - 2. Type S, bugle head, rust-resistant sharp point, fine thread for light-gauge metal framing or furring.
- E. Screws, metal or wood framing:
  - 1. Wafer head, rust-resistant, Type S-12 drill or Hi-Lo, min. 1" length. Or Type W rust-resistant, bugle head, coarse thread, sharp point for wood
- F. Sealants, caulk and tape:
  - 1. Dow Corning 795 or equivalent; Pecora 895 or equivalent.
  - 2. Borden HPPG Elmers Siliconized Acrylic Latex Caulk or equivalent; Pecora AC-20 acrylic latex sealant; GE Silicone Silpruf Sealant; Tremco Dymonic
  - 3. 2" wide 10 x 10 glass mesh Quick Tape or equivalent
- G. Soffit Vent:
  - 1. Air vent (or equal)
  - 2. SV202 continuous white aluminum 2  $\frac{1}{2}$ "
- H. .093 Zinc expansion joint

#### 3.01 EXAMINATION

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SHEATHING AND SOFFIT BOARD –Section 09270

- A. Examine subframing; verify that surface of framing and furring members to receive sheathing does not vary more than  $\frac{1}{4}$ " from the place of faces of adjacent members.

3.02 SHEATHING

- A. Provide Dens-Glass Gold sheathing where indicated on drawings. Install sheathing in accordance with manufacturer's instructions and applicable instructions in GA-253 and ASTM C 1280.
- B. Install Dens-Glass Gold sheathing with gold side out.
- C. Use maximum lengths possible to minimize number of joints.
- D. Wood framing: Attach Dens-Glass Gold sheathing to wood framing with nails spaced 4" o.c. at perimeter for racking shear resistance; 8" o.c. at perimeter where there are framing supports and where racking shear resistance is not required; and 8" o.c. along intermediate framing in field for both conditions.
- E. Metal framing: Attach Dens-Glass Gold sheathing to metal framing with screws spaced 8" o.c. at perimeter where there are framing supports; and 8" o.c. along intermediate framing in field.
- F. Drive fasteners to bear tight against and flush with surface of sheathing. Do not countersink.
- G. Locate fasteners minimum  $\frac{3}{8}$ " from edges and ends of sheathing panels.
- H. Building paper: If required, install building paper or equal with flashing around openings.
- I. Finishing:
  - 1. Seal fasteners using Dow Corning 795 or Borden HPPG Elmers Siliconized Acrylic Latex Caulk or equivalent.
  - 2. Finish joints using Dow Corning 795 or Borden HPPG Elmers Siliconized Acrylic Latex Caulk or equivalent. Reinforce with 2" wide 10 x 10 glass mesh Quick Tape or equivalent.

3.03 CEILINGS AND SOFFITS

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- A. Joint treatment and finish preparation:
  - 1. Painted ceilings and soffits
    - a. Apply joint tape over joints and embed in setting-type joint compound specified.
    - b. Skim coat surface with setting-type joint compound for smooth finish.
    - c. Prime and paint with exterior grade, good quality paints.

3.04 E.I.F.S.

- A. Do not tape joints where sheathing is covered with E.I.F.S.

3.05 Caution:

**THIS PRODUCT CONTAINS CONTINUOUS FILAMENT FIBERGLASS**  
Fiber released during normal handling of this product can cause skin, eye and respiratory irritation. Avoid breathing dust and contact with skin and eyes. Follow these standard work practices:

- Wear long-sleeved, loose-fitting clothing, gloves and eye protection.
- Use a respirator, such as a 3M Model 9900 or equivalent.
- Wash exposed areas with soap and warm water after handling.
- Wash work clothes separately from other clothing; rinse washer thoroughly. Operations which generate high airborne fiber concentrations (over 10 fibers/cc) require additional respiratory protection.

END OF SECTION

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PAINTING - Section 09900

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PART - GENERAL

1.01 WORK INCLUDED

- A. Paint
  - 1. Furnish and install field painting of all surfaces normally requiring finish unless otherwise expected.
  - 2. Furnish only sample color specimens for approval and use at standard.
  - 3. Work not required:
    - i. Prime coats for items delivered with shop coats applied.
  - 4. Refer to Painting Systems Schedule in this Section.
- B. The requirements of this section are in addition to the requirements of the General Conditions, Supplementary Conditions and Division 1.

1.02 RELATED WORK

- A. Coordinate the work of this section with:
  - 1. Building Sealants, Section 07920.

1.03 PRODUCT DATA AND SAMPLES

- A. Before starting work submit in accordance with Section 01340.
- B. Product Data: Submit Manufacturer's Technical Data, installation instructions, and recommendations for each product. Include data substantiating that materials comply with specified requirements.
- C. Samples:
  - 1. Paint
    - a. Initial Color Selection Samples:
      - i. Two (2) 8" x 8" chips for each color and sheen of paint required, will be furnished to the Architect by the Contractor.
    - b. Final Color Selection Samples:
      - i. Samples of each color selected, plus one shade variation lighter and darker, shall be painted on the surface designated for each color.
      - ii. Samples for wall shall be a minimum of 8'-0" x 8'-0" in area. Accents shall be width of field

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sample and height of accent shown on the drawings.

- c. Specimens shall be marked as follows:
  - i. Manufacturer's color number and name of color.
  - ii. Manufacturer's name and type of paint (latex, oil, vinyl, etc.)
  - iii. Number of coats required.
  - iv. Whenever possible, specimens shall be on the same type of material as that on which it is to be used.

1.04 WARRANTY

- A. All painting and wall covering coating shall be warranted for one year against becoming unserviceable or objectionable in appearance as a result of being defective or non-conforming. Without limiting the warranty scope, the work shall be warranted not to:
  - 1. Noticeably discolor, yellow, streak, bloom, bleach or darken. Concrete sealer shall be warranted for 5 years against yellowing.
  - 2. Change sheen with excessive speed or irregularity.
  - 3. Peel, crack, blister or alligator.
  - 4. Release from the substrate or intermediate coats.
  - 5. Chalk or dust excessively.
  - 6. Stay tacky or become tacky.
  - 7. Mildew.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver paint materials in sealed original labeled containers, bearing manufacturer's name, type of paint, brand named, color designation and instructions for mixing and/or reducing.
- B. Deliver wall covering in sealed, unopened rolls
- C. Provide adequate storage facilities. Store paint materials at minimum ambient temperature of 45 degrees F (7 degrees C) in well ventilated area.
- D. Take precautionary measures to prevent fire hazards and spontaneous combustions.

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1.06 ENVIRONMENTAL CONDITIONS

- A. Ensure surface temperatures or the surrounding air temperature is in compliance with requirements of paint manufacturer.
- B. Provide adequate continuous ventilation and sufficient heating facilities to maintain the required temperatures before, during and 48 hours after application of finishes.

1.07 PROTECTION

- A. Adequately protect other surfaces from paint and damage. Repair damage as a result of inadequate or unsuitable protection.
- B. Furnish sufficient drop cloths, shields and protective equipment to prevent spray or droppings from fouling surfaces not being painted and in particular, surfaces within storage and preparation area.
- C. Place cotton waste, cloths and material, which may constitute a fire hazard in closed metal containers and remove daily from site.
- D. Remove electrical plates, surface hardware, fittings and fastenings, prior to painting operations. These items are to be carefully stored, cleaned and replaced on completion of work in each area. Do NOT use solvent to clean hardware that may remove permanent lacquer finish.
- E. DO NOT paint UL labels on fire rated doors and frames. UL Labels must remain visible after painting work is complete.
  - 1. The colored "dot" (approximately 1/4" diameter) on edge of fire rated doors are used by some manufacturers to identify the rating. DO NOT PAINT THESE COLORED DOTS.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Paint
  - 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to the following:
    - a. See Drawings

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PAINTING - Section 09900

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2.02 PAINT GENERAL

- A. "Paint" includes emulsions, enamels, paints, stains, varnishes, sealers, fillers and other coatings, whether used as prime, intermediate or finish coats.
- B. Pigments shall be well ground, paint shall not settle badly, cake or thicken in container, shall be easily mixed to a smooth consistency and have easy brushing properties.
- C. Paint shall be ready-mixed, except that tinting and thinning may be done on the job.
- D. All materials shall be delivered on the job in original unopened cans with labels and tags intact.

2.03 EXTERIOR PAINTING SYSTEMS SCHEDULE

- A. Exterior concrete– textured painted
  - 1. Locations: Where indicated on the drawings
  - 2. System: (Sherwin Williams)
    - a. 1<sup>st</sup> coat: Loxon exterior acrylic masonry primer or PrepRite block fill
    - b. 2<sup>nd</sup> coat: Ultracrete textured masonry topcoat (medium)
    - c. 3<sup>rd</sup> coat: Same as 2<sup>nd</sup> coat
- B. Galvanized metal:
  - 1. Locations: Include roof equipment, steel lintels or shelf angles, other galvanized iron and steel exposed to public view
  - 2. Preparation: Clean with commercial pre-treating solution equal to 4 oz. copper sulfate in one gallon water. Allow to dry on metal surface not less than 12 hours. Dust off with stiff brush
  - 3. System:
    - a. 1<sup>st</sup> coat: Zinc dust zinc oxide primer (FS TT – P-641)
    - b. 2<sup>nd</sup> coat: High gloss alkyd enamel (FS TT – E-489)
    - c. 3<sup>rd</sup> coat: Repeat 2<sup>nd</sup> coat

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- C. Exterior ferrous metals
  - 1. Locations: Include (if not noted on drawings), bollards, exposed piping, all exterior iron and steel not otherwise indicated
  - 2. System:
    - a. 1<sup>st</sup> coat: Red alkyd primer
    - b. 2<sup>nd</sup> coat: Semi gloss alkyd enamel (FS TT-E529, Class A)
    - c. 3<sup>rd</sup> coat: Repeat 2<sup>nd</sup> coat

2.04 COLORS – AS NEEDED ON DRAWINGS

PART 3 - EXECUTION

3.01 STORAGE

- A. All materials used on the job shall be stored in a single place.
- B. The Contractor shall be responsible for keeping the designated storage space neat and clean and for the repair of any damage by said Contractor to the area of it's surroundings.
- C. All soiled or used rags, waste, etc. must be removed from the building at the end of each work day and every precaution taken, by the Contractor to avoid the danger of fire.

3.02 PAINT

- A. Preparation
  - 1. Nail holes, splits or scratches shall be puttied or spackled smooth after prime coat.
  - 2. Unpainted or shop coated steel or iron shall be washed free of grease, dirt and oil with petroleum solvents, then primed or spot primed where metal is exposed, with rust inhibitive primer after removing any rust which may have formed.
  - 3. Mill primed and unfinished millwork shall be sanded smooth.
  - 4. Drop cloths shall be provided and full precaution taken to prevent paint materials from falling on, marring any adjacent surfaces not to be painted.

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5. Knots and pitch streaks shall be covered with orange shellac, aluminum paint or resin sealer.
6. Poured and cured concrete shall be thoroughly cleaned of form oils or coating compounds using the method of treatment as recommended by the manufacturer of the particular form oil or compound used.
7. All surfaces requiring finishing shall be thoroughly cleaned and dry prior to painting.

B. Workmanship

1. All materials shall be applied and put in neatly so as to dry uniformly to the colors and sheen specified, free from runs, sags, wrinkles, shiners, streaks and brush marks.
2. All materials shall be applied by skilled workmen and in accordance with the printed directions of the manufacturer.
  - a. Any thinning required shall be done in a manner and exclusively with the type reducer recommended by manufacturer.
  - b. During the application and drying of interior paint, a minimum temperature of 65 degrees F shall be maintained unless otherwise indicated on the printed directions of the manufacturer of the paint being applied.
  - c. The temperature shall be held as constant as possible to prevent condensation.
  - d. Adequate ventilation shall be provided at all times so that the humidity cannot rise above the dew point of the coldest wall.
3. Exterior painting shall not be done while the surface is damp, or during cold, rainy or frosty weather, or when the temperature is below 50 degrees F.
  - a. Avoid painting surfaces while they are exposed to hot sun.
  - b. Allow paint to dry hard between coats and sand smooth all varnish and enamel undercoats prior to recoating.

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PAINTING - Section 09900

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- c. Access doors, shall be painted the same color as adjacent surface unless otherwise indicated in the drawings.
      - d. Covering shall be complete.
    - 4. When color, stain, or undercoats show through the final coat of paint the work shall be covered by additional coats until the surface is of uniform color and appearance and coverage is complete.
    - 5. Where two or more coats of paint are specified, the coat prior to the finish coat shall be applied noticeably lighter in shade than that of the final coat.
    - 6. Hardware, accessories, fixtures and similar items placed prior to painting shall be removed or adequately protected during painting and replaced on completion of painting.
    - 7. At completion touch up and restore finish where damaged or defaced, remove all paint where it has been spilled, splashed, splattered on surfaces, including fixtures, glass, furniture fittings, etc., leave job in a first class condition.
  - C. Sealant work
    - 1. Use exterior quality sealants to seal exterior side of door frames. Comply with requirements of Section 07920 - Building Sealants.
  - D. Cleaning
    - 1. As work proceeds and upon completion, promptly remove paint where spilled, splashed or spattered.
    - 2. During progress of work keep premises free from any unnecessary accumulation of tools, equipment, surplus materials and debris.
    - 3. Upon completion of work leave premises neat and clean, to the satisfaction of Architect.
  - E. Post Construction
    - 1. Leave 1 gallon of each specified paint on site

END OF SECTION

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FIRE EXTINGUISHERS -Section 10522

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Fire extinguishers.
- B. Accessories
- C. The requirements of this section are in addition to the requirements of the General Conditions, Supplementary Conditions and Division 1

1.02 PERFORMANCE REQUIREMENTS

- A. Conform to NFPA 10.
- B. Provide extinguishers classified and labeled by Underwriters laboratories, Inc. for the purpose specified and indicated.

1.03 SUBMITTALS

- A. Submit the following in accordance with Section 01340
  - 1. Shop Drawings: Indicate cabinet physical dimensions, rough-in measurements for recessed cabinets, wall bracket mounted measurements, and location.
  - 2. Product Data: Provide extinguisher operational features, color and finish, and anchorage details.
  - 3. Manufacturer's Installation Instructions: Indicate special criteria and wall opening coordination.
  - 4. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.04 SUBMITTALS AT PROJECT CLOSEOUT

- A. Section 01700 - Contract Closeout: Procedures for submittals.
- B. Maintenance Data: Include test, refill or recharge schedules and re-certification requirements.

1.05 ENVIRONMENTAL REQUIREMENTS

- A. Do not install extinguishers when ambient temperature may cause freezing of extinguisher ingredients.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Potter-Roemer

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FIRE EXTINGUISHERS -Section 10522

- B. Larsen's Manufacturing Co.
- C. J.L. Industries
- D. Substitutions: Refer to Section 01630 - Material and Equipment

2.02 FIRE EXTINGUISHERS

- A. Provide fire extinguisher(s) with required signage as directed by local jurisdiction
- B. Multi-purpose dry chemical fire extinguisher Potter-Roemer Model 30/20 20lb. U.L. rating 2A-120 BC
- C. Extinguisher Finish: Steel, enamel to red color.

2.03 ACCESSORIES

- A. Extinguisher Brackets: Formed steel, white enamel finish.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify rough openings for cabinet are correctly sized and located.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Secure rigidly in place.
- C. Place extinguishers on brackets.
- D. Do not install extinguishers until Substantial Completion.

3.03 SCHEDULES

- A. See drawings for location
- B. Provide extinguishers as required by authority having jurisdiction.
- C. Review with Fire Marshall or local authority having jurisdiction prior to bid to verify requirement and quantity.

END OF SECTION

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PRE-FINISHED ALUMINUM CANOPY - Section 10530

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PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Pre-finished canopies, louvers and related trim and accessories.
- B. The requirements of this section are in addition to the requirements of General Conditions, Supplementary Conditions and Division 1.

1.02 REFERENCE STANDARDS

- A. The Aluminum Association – Aluminum Design Manual 2010
- B. American Welding Society – AWS D1.2/D1.2M: 2008
- C. ASTM B209 Aluminum & Aluminum Alloy Sheet and Plate
- D. ASTM B221 Aluminum & Aluminum Alloy Extruded Bars, Rods, Wires, Shapes and Tubes

1.03 QUALITY ASSURANCE

- A. Installer:
  - 1. A minimum of 10 years previous experience of this type system and scope of work.
  - 2. Authorized by the manufacturer as an approved installer.

1.04 SUBMITTAL

- A. Submit the following in accordance with Section 01340:
  - 1. SHOP DRAWINGS: Indicate size, material, finish and service load reactions. Show locations and installation procedures. Include details of joints, attachments and clearances. **Submittal to be sealed by a Structural Engineer and include load reactions.**
  - 2. PRODUCT DATA: Submit schedules, charts, literature and illustrations to indicate the performance, fabrication procedures, products variations and accessories.
  - 3. SAMPLES:
    - a. SELECTION: Submit full range of colors, patterns, textures and finishes available for selection.
    - b. APPROVAL: Submit two interlocking 24 inch x 12 inch samples of the panel assembly complete with exterior face

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PRE-FINISHED ALUMINUM CANOPY - Section 10530

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and interior face. Include typical fastener and anchorage.

1.05 DELIVERY AND STORAGE

- A. DELIVERY: Deliver clearly labeled, undamaged materials in the manufacturer's containers.
- B. STORAGE: Store materials in a clean, dry location, protected from weather and abuse.
- C. HANDLING: Do not use fork lifts or other equipment which may bend or damage panels.

1.06 GUARANTEE

- A. Upon completion and acceptance of the project, furnish to the Owner a written guarantee. Guarantee all items and work included in this section for a period of two years from date of acceptance, against defective workmanship and materials.
- B. Defects resulting from faulty materials and/or workmanship during the guarantee period shall be repaired or replaced by the Contractor at his expense.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Aluminum Techniques, 13302 Redfish Lane, Stafford, TX 77477, 281-499-9026 Fax: 281-499-8601
- B. Avadek, 6000 Berry Brook Drive, Houston, TX 77017, 713-944-0988, 800-777-4031, 713-944-5815 Fax
- C. "Equal" manufacturers are acceptable

2.02 PRODUCTS

- A. Canopy
  - 1. Structure: Aluminum tube frame and .080" (min) thick deck
  - 2. Fascia: Extruded Aluminum
  - 3. Soffit Panels: 12" wide roll formed .032" aluminum

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PRE-FINISHED ALUMINUM CANOPY - Section 10530

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4. Aluminum diverter/cover at scuppers
5. Finish and color – Super Dynapon 2-coat where visually exposed; 1-coat elsewhere. Color per drawings.
6. Use concealed fasteners at fascia and soffit
7. Flashing shall be .040” (min) aluminum sheet to match the color of the canopy
8. All components shall be 6063, 6061, or 6005 alloy extruded aluminum.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. GENERAL
  1. Install in accordance with manufacturer’s procedures.
  2. Install flashing and corners to provide a watertight system.
- B. EXPANSION JOINTS: As recommended by the manufacturer.
- C. FLASHING AND TRIM: Provide wherever necessary to provide weather tightness and finished appearance.
- D. Install soffit panels continuous from fascia to face of building.

END OF SECTION

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POSTAL SPECIALTIES– Section 10550

PART-1 GENERAL

1.01 WORK INCLUDED

- A. Furnish and install mailboxes
- B. The requirements of this section are in addition to the requirements of the General Conditions, Supplementary Conditions and Division 1

1.02 REFERENCE STANDARDS

- A. United States Postal Services specifications

1.03 REGULATORY REQUIREMENTS

- A. Conform to United States Postal Services specifications

1.04 SUBMITTALS

- A. Submit shop drawings and product data in accordance with Section 01340.
  - 1. Submit two 2” x 3” color samples for selection
  - 2. Submit manufacturer’s certificate that materials meet or exceed these specifications

1.05 DELIVERY STORAGE AND HANDLING

- A. Store materials on site in a manner so they will not be damaged. Materials shall be placed so water will drain and not accumulate.

PART-2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURER

- A. Salsbury Industries
  - 1. Manufacturing and distribution, Los Angeles, CA \*Columbus, OH
  - 2. Phone: 800-624-5269, Fax: 800-660-1966
  - 3. [salsbury@mailboxes.com](mailto:salsbury@mailboxes.com)
  - 4. [www.mailboxes.com](http://www.mailboxes.com)

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POSTAL SPECIALTIES– Section 10550

2.02 MATERIALS

- A. Two (2) box units comprised of a cluster box unit (including pedestal) 13B size doors and one (1) parcel locker in Sandstone with USPS access-Type IV (model no. 3313SAN-U).
- B. Custom engraved self adhesive placard for cluster box unit and outdoor panel locker door
- C. This is for pricing only. Verify quantity, size and color with Owner prior to ordering

PART 3- EXECUTION

3.01 INSPECTION

- A. Contractor responsible for contacting local postmaster to determine acceptable location
- B. Advise Owner of location prior to installation

3.02 INSTALLATION

- A. Install in accordance with
  - 1. Manufacturer's drawings and specifications.
  - 2. United States Postal Services specifications

END OF SECTION