PROJECT MANUAL

TCD LLC

Trellis at Colter – Unit 2

1617 W Colter Street
Phoenix, Arizona, 85015

CONSTRUCTION DOCUMENTS

August 24, 2018

ART Project No: 17022
SECTION 00 01 10
TABLE OF CONTENTS

PROCUREMENT AND CONTRACTING REQUIREMENTS

DIVISION 00 -- PROCUREMENT AND CONTRACTING REQUIREMENTS

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>00 01 10</td>
<td>Table of Contents</td>
</tr>
<tr>
<td>00 44 00</td>
<td>Electronic Data Transfer</td>
</tr>
<tr>
<td>00 63 25</td>
<td>Substitution Request Form - During Construction</td>
</tr>
<tr>
<td>00 72 00</td>
<td>General Conditions</td>
</tr>
<tr>
<td>00 73 00</td>
<td>Supplementary Conditions</td>
</tr>
</tbody>
</table>

SPECIFICATIONS

DIVISION 01 -- GENERAL REQUIREMENTS

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 10 00</td>
<td>Summary</td>
</tr>
<tr>
<td>01 20 00</td>
<td>Price and Payment Procedures</td>
</tr>
<tr>
<td>01 26 13</td>
<td>Contractor's Requests for Information</td>
</tr>
<tr>
<td>01 30 00</td>
<td>Administrative Requirements</td>
</tr>
<tr>
<td>01 32 16</td>
<td>Construction Progress Schedule</td>
</tr>
<tr>
<td>01 40 00</td>
<td>Quality Requirements</td>
</tr>
<tr>
<td>01 50 00</td>
<td>Temporary Facilities and Controls</td>
</tr>
<tr>
<td>01 57 13</td>
<td>Temporary Erosion and Sediment Control</td>
</tr>
<tr>
<td>01 57 19</td>
<td>Temporary Environmental Controls</td>
</tr>
<tr>
<td>01 61 16</td>
<td>Volatile Organic Compound (VOC) Content Restrictions</td>
</tr>
<tr>
<td>01 70 00</td>
<td>Execution and Closeout Requirements</td>
</tr>
</tbody>
</table>

DIVISION 02 -- EXISTING CONDITIONS

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>02 41 00</td>
<td>Demolition</td>
</tr>
</tbody>
</table>

DIVISION 03 -- CONCRETE

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>03 01 00</td>
<td>Maintenance of Concrete</td>
</tr>
<tr>
<td>03 30 00</td>
<td>Cast-in-Place Concrete</td>
</tr>
</tbody>
</table>

DIVISION 04 -- MASONRY

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>04 05 11</td>
<td>Masonry Mortaring and Grouting</td>
</tr>
<tr>
<td>04 20 00</td>
<td>Unit Masonry</td>
</tr>
</tbody>
</table>

DIVISION 05 -- METALS

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>05 50 00</td>
<td>Metal Fabrications</td>
</tr>
</tbody>
</table>

DIVISION 06 -- WOOD, PLASTICS, AND COMPOSITES

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>06 10 00</td>
<td>Rough Carpentry</td>
</tr>
<tr>
<td>06 17 53</td>
<td>Shop-Fabricated Wood Trusses</td>
</tr>
<tr>
<td>06 18 00</td>
<td>Glued-Laminated Construction</td>
</tr>
<tr>
<td>06 20 00</td>
<td>Finish Carpentry</td>
</tr>
<tr>
<td>06 41 00</td>
<td>Architectural Wood Casework</td>
</tr>
<tr>
<td>06 83 16</td>
<td>Fiberglass Reinforced Paneling</td>
</tr>
</tbody>
</table>

DIVISION 07 -- THERMAL AND MOISTURE PROTECTION

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>07 21 00</td>
<td>Thermal Insulation</td>
</tr>
</tbody>
</table>
07 27 26 - Fluid Applied Membrane Air Barriers
07 42 13 - Metal Wall Panels
07 57 00 - Coated Foamed Roofing
07 62 00 - Sheet Metal Flashing and Trim
07 72 00 - Roof Accessories
07 84 00 - Firestopping
07 92 00 - Joint Sealants

DIVISION 08 -- OPENINGS
08 14 16 - Flush Wood Doors
08 16 00 - Composite Doors
08 31 00 - Access Doors and Panels
08 36 13 - Sectional Doors
08 51 13 - Aluminum Windows
08 71 00 - Finish Hardware

DIVISION 09 -- FINISHES
09 21 16 - Gypsum Board Assemblies
09 24 53 - One-Coat Stucco System
09 30 00 - Tiling
09 30 50 - Tile Setting Materials and Accessories
09 65 00 - Resilient Flooring
09 91 00 - Painting

DIVISION 10 -- SPECIALTIES
10 28 00 - Toilet, Bath, and Laundry Accessories
10 55 00 - Postal Specialties

DIVISION 11 -- EQUIPMENT
11 30 13 - Residential Appliances

DIVISION 12 -- FURNISHINGS
12 21 16 - Vertical Louver Blinds
12 32 13 - Manufactured Casework
12 36 00 - Countertops
12 93 13 - Bicycle Racks

DIVISION 21 -- FIRE SUPPRESSION - SEE MECHANICAL ENGINEER'S SPECIFICATIONS
DIVISION 22 -- PLUMBING - SEE MECHANICAL ENGINEER'S SPECIFICATIONS
DIVISION 23 -- HEATING, VENTILATING, AND AIR-CONDITIONING (HVAC) - SEE MECHANICAL ENGINEER'S SPECIFICATIONS
DIVISION 26 -- ELECTRICAL - SEE ELECTRICAL ENGINEER'S SPECIFICATIONS
DIVISION 27 -- COMMUNICATIONS - SEE ELECTRICAL ENGINEER'S SPECIFICATIONS
DIVISION 28 -- ELECTRONIC SAFETY AND SECURITY - SEE ELECTRICAL ENGINEER'S SPECIFICATIONS
DIVISION 31 -- EARTHWORK - SEE CIVIL ENGINEER'S SPECIFICATIONS
DIVISION 32 -- EXTERIOR IMPROVEMENTS - SEE LANDSCAPE ARCHITECT'S SPECIFICATIONS EXCEPT AS LISTED BELOW
32 17 13 - Parking Bumpers

END OF SECTION
SECTION 00 44 00
ELECTRONIC DATA TRANSFER TERMS AND CONDITIONS

IN ACCEPTING AND UTILIZING ELECTRONIC DRAWINGS, MODELS AND/OR DATA, “ELECTRONIC DATA” GENERATED BY ARCHITECTURAL RESOURCE TEAM, INC. (ART) AND RELATED CONSULTANTS, RECIPIENT COVENANTS AND AGREES THAT ALL SUCH DRAWINGS AND/OR DATA ARE INSTRUMENTS OF SERVICE OF ART AND RELATED CONSULTANTS, WHO SHALL BE DEEMED THE AUTHOR OF THE DRAWINGS AND/OR DATA AND SHALL RETAIN ALL COMMON LAW, STATUTORY LAW AND OTHER RIGHTS, INCLUDING COPYRIGHTS.

IT IS THE RESPONSIBILITY OF THE RECIPIENT TO FULLY UNDERSTAND THE BUILDING IN TERMS OF VERTICAL RELATIONSHIPS, STRUCTURAL COMPONENTS, AND BUILDING SYSTEMS BY WAY OF THE CONTRACT DOCUMENTS. ANY USE OF, OR RELIANCE ON, THE ELECTRONIC DATA SHALL BE AT THEIR SOLE RISK AND WITHOUT LIABILITY TO ART AND RELATED CONSULTANTS. ANY INFORMATION CONTAINED WITHIN THE ELECTRONIC DATA PROVIDED IS COMPLEMENTARY TO ALL OTHER DOCUMENTS AND AS SUCH IS INCOMPLETE IN TERMS OF INFORMATION PROVIDED. ANY INFORMATION PROVIDED ELECTRONICALLY THAT IS NOT IN AGREEMENT WITH OTHER CONTRACT DOCUMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT FOR CLARIFICATION PRIOR TO PROCEEDING WITH DESIGN OR CONSTRUCTION. FAILURE TO DO SO WAIVES THE RIGHT TO MAKE CLAIM FOR COMPENSATION DUE TO ERRORS OR OMISSIONS IN DOCUMENTS.

ART PROJECT NAME __________________________________________________
ART PROJECT NUMBER _______________________________________________

The electronic data is provided for the recipient’s convenience and are not legal documents. The recipient further agrees not to use the electronic data, in whole or in part, for any purpose or project other than the specific project for which it was created. The recipient agrees to waive all claims against art and related consultants resulting in any way from any unauthorized changes, or use of the drawings and/or electronic data for any other project by anyone other than ART.

In addition, the recipient agrees, to the fullest extent permitted by law, to indemnify and hold ART and related consultants harmless from any damage, liability or cost, including reasonable attorneys' fees and costs of defense, arising from any changes made by anyone other than ART or from any reuse of the drawings and/or electronic data without prior written consent of ART.

Due to varying environmental and storage conditions, integrity of electronic media and data are inherently subject to corruption. ART makes no warranties, either express or implied, of merchantability and/or fitness of the electronic data for any particular purpose

PLEASE ACKNOWLEDGE ACCEPTANCE OF TRANSFER TERMS AND CONDITIONS BY SIGNING AND DATING BELOW AND RETURNING THIS FORM TO ART.

Date Requested: _____________________________

____________________________________________
Company Name

____________________________________________
Signature

____________________________________________
Title
### SECTION 00 63 25

**SUBSTITUTION REQUEST**

*(AFTER THE BIDDING PHASE)*

---

<table>
<thead>
<tr>
<th>Project: ______________________________</th>
<th>Substitution Request Number: __________</th>
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<tr>
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<td>Contract For: ________________________</td>
</tr>
</tbody>
</table>

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<th>Specification Title: __________________</th>
<th>Description: __________________________</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section: _______</th>
<th>Page: _______</th>
<th>Article/Paragraph: ___________________</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
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| Proposed Substitution: _______________________________________________________
<table>
<thead>
<tr>
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</thead>
<tbody>
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</tr>
</tbody>
</table>

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<th>Manufacturer: ___________________</th>
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</tr>
</thead>
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<tr>
<td>Trade Name: ___________________</td>
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<td></td>
</tr>
<tr>
<td>Installer: _____________________</td>
<td>Address: ______________</td>
<td>Phone: ________</td>
</tr>
</tbody>
</table>

History:  
- New product  
- 2-5 years old  
- 5-10 years old  
- More than 10 years old  

Differences between proposed substitution and specified product: _______________________________________________________

- Point-by-point comparative data attached - REQUIRED BY A/E

<table>
<thead>
<tr>
<th>Reason for not providing specified item: __________________________________________</th>
</tr>
</thead>
</table>

Similar Installation:

<table>
<thead>
<tr>
<th>Project: ______________________</th>
<th>Architect: ______________________</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address: ______________________</td>
<td>Owner: ________________________</td>
</tr>
<tr>
<td></td>
<td>Date Installed: ________________</td>
</tr>
</tbody>
</table>

Proposed substitution affects other parts of Work:  
- No  
- Yes; explain ____________________________

| Savings to Owner for accepting substitution: ____________________________ ($________) |
|---------------------------------------------------------------------------------

Proposed substitution changes Contract Time:  
- No  
- Yes; [Add] [Deduct] ________ days.

Supporting Data Attached:  
- Drawings  
- Product Data  
- Samples  
- Tests  
- Reports

---

**THE UNDERSIGNED CERTIFIES:**

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.

---

**TCD LLC**

Architectural Resource Team

Trellis at Colter - Unit 2

Phoenix Arizona

**SUBSTITUTION REQUEST**

Construction Documents | 17022

August 24, 2018
Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.

Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.

Proposed substitution does not affect dimensions and functional clearances.

Payment will be made for changes to building design, including A/E design, detailing, and construction costs by the substitution.

Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

_A/E’S REVIEW AND ACTION_

- Substitution approved - Make submittals in accordance with Specifications.
- Substitution approved as noted – Make submittals in accordance with Specification
- Substitution rejected - Use specified materials.
- Substitution Request received too late - Use specified materials.

Signed by: ___________________________ Date: ________________

Additional Comments: _ Contractor _ Subcontractor _ Supplier _ Manufacturer A/E

________________________________________________________________________
SECTION 00 72 00
GENERAL CONDITIONS

FORM OF GENERAL CONDITIONS

1.01  THE GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION, AIA DOCUMENT A201-2007, PAGES 1-40 (PAGE COUNT MAY VARY WITH ELECTRONIC EDITIONS), HEREAFTER REFERRED TO AS GENERAL CONDITIONS, ARE HEREBY INCORPORATED INTO AND MADE PART OF THESE CONTRACT DOCUMENTS THE SAME AS IF BOUND HEREIN IN FULL.

SUPPLEMENTARY CONDITIONS

2.01  REFER TO DOCUMENT 00 73 00 - SUPPLEMENTARY CONDITIONS FOR AMENDMENTS TO THESE GENERAL CONDITIONS.

END OF SECTION
SECTION 00 73 00
SUPPLEMENTARY CONDITIONS

GENERAL SUPPLEMENTS TO GENERAL CONDITIONS - 2007 EDITION

1.01 GENERAL SUPPLEMENTS TO GENERAL CONDITIONS - 2007 EDITION
   A. THE FOLLOWING SUPPLEMENTS AIA DOCUMENT A201-2007, GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION. WHERE A PORTION OF THE GENERAL CONDITIONS IS MODIFIED OR DELETED BY THESE SUPPLEMENTARY CONDITIONS, THE UNALTERED PORTIONS OF THE GENERAL CONDITIONS SHALL REMAIN IN EFFECT.

1.02 ARTICLE 1 - GENERAL PROVISIONS
   A. Paragraph 1.1.3 - Delete in its entirety and substitute the following:
      1.1.3 THE WORK
      The term 'Work' means the completed construction required by the Contract Documents and includes all labor necessary to produce such construction, and materials and equipment incorporated or to be incorporated in such construction.
   B. Paragraph 1.1 - Add the following subparagraph:
      1.1.9 MISCELLANEOUS DEFINITIONS
      1. The term 'Product' as used herein includes materials, systems and equipment."
   C. Paragraph 1.2 - Add the following subparagraph:
      1.2.4 Make no changes from the Contract Documents without having first received permission from the Architect. Where detailed information is lacking, if Work is required in a manner that makes it impossible to produce satisfactory Work, or should discrepancies appear among Contract Documents, request interpretation from the Architect before proceeding with Work."
   D. Paragraph 1.2.1 – Add the following subsubparagraph:
      1.2.1.1 In the event of conflicts or discrepancies among the Contract Documents, interpretations will be based on the following priorities:
      1. Modifications
      2. The Agreement
      3. Addenda with those of later date having precedence over those of earlier date
      4. The Supplementary Conditions
      5. The General Conditions of the Contract for Construction
      6. Division 1 of the Specifications
      7. Divisions 2 – 49 of the Specifications
      8. Drawings
      9. Other documents specifically enumerated in the Agreement as part of the Contract Documents.
      In the case of conflicts or discrepancies between Drawings and Division 2 – 49 of the Specifications, or within or among the Contract Documents and not clarified by Addendum, the Architect will determine which takes precedence in accordance with paragraphs 4.2.11, 4.2.12 and 4.2.13."
   E. Paragraph 1.4 - Add the following subparagraphs:
      1.4.2 The misplacement, addition or omission of any letter, word or punctuation mark shall in no way damage the true spirit, intent, or meaning of the Contract Documents.
      1.4.3 The words 'shown,' 'indicated,' 'noted,' 'scheduled,' or words of like effect shall be understood to mean that reference is made to the Drawings accompanying this Project Manual.
      1.4.4 Where reference herein is made to products 'as approved' or 'as selected,' selection or approval shall be by the Architect."
   F. Paragraph 1.5.1 - Add the following after the words "Drawings and Specifications" in the first sentence:
(as enumerated on Drawing Title Sheet and Project Manual Table of Contents)".

1.03 ARTICLE 2 - OWNER
   A. Subparagraph 2.2.5 - Delete in its entirety and substitute the following:
      2.2.5 Contract Documents furnished to Contractor for use during construction:
      1. Owner will provide at no charge to Contractor the Owner's extra copies of the Drawings and Project Manual which are returned by Bidders.
      2. Contractor shall obtain from the Architect, with no charge to the Owner, such additional copies of the Drawings and Project Manual as are reasonably necessary for the execution of the Work. Contractor shall pay to Architect the cost of reproducing such Drawings and Project Manual."

1.04 ARTICLE 3 - CONTRACTOR
   A. Paragraph 3.2.2 - Add the following subparagraphs:
      1. In addition to study and comparison of the various Drawings and other Contract Documents prior to starting each portion of the work, the Contractor shall, prior to starting the entire Work, review the various Drawings and other Contract Documents in general for planning purposes and to generally familiarize the Contractor to the overall project requirements.
      2. A properly prepared request for information shall include a detailed written statement that indicates the specific Drawings or Specification in need of clarification and the nature of the clarification requested. See also Section 01 26 13 - Contractor's Requests for Information."
   B. Paragraph 3.2.4 - Delete the words "for differences between field measurements or conditions and the Contract Documents" in the 3rd sentence.
   C. Paragraph 3.2 - Add the following subparagraphs:
      3.2.5 Neither the Owner nor the Architect assumes any responsibility for an understanding or representation made by any of their agents or representatives prior to the execution of the Agreement unless (1) such understandings or representations are expressly stated in the Agreement, and (2) the Agreement expressly provides that responsibility therefore is assumed by the Owner."
      3.2.6 The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect for evaluating and responding to the Contractor’s requests for information that are not prepared in accordance with the Contract Documents or where the requested information is available to the contractor from a careful study and comparison of the Contract Documents, field conditions, other Owner-provided information, Contractor prepared coordination drawings, or prior Project correspondence or documentation.
   D. Paragraph 3.3.1 - Delete the remainder of the sentence following the word “Contract” in the second sentence. Change the word "concerning" to the words "which may affect" in the third sentence. Delete the words "except as stated below" in the third sentence. Delete the fourth and fifth sentences in their entirety.
   E. Paragraph 3.4.2 - Add the following subparagraph:
      1. Substitutions shall be submitted in accordance with the requirements of Section 01 60 00 - Materials and Equipment.
   F. Paragraph 3.12.10 - Change the word "all" to "applicable" prior to the words "performance and design criteria" in the third and sixth sentences. Delete the words "approve or take other appropriate action" in the seventh sentence. Add the following to the last sentence:
      "however, the Contractor shall notify the Architect if additional performance or design criteria is required in accordance with paragraph 3.2 of the General Conditions."
   G. Paragraph 3.12.11 – Add the following subparagraph:
      3.12.11 The Architect’s review of Contractor’s submittals will be limited to examination of an initial submittal and two (2) resubmittals. The Owner is entitled to obtain
reimbursement from the Contractor for amounts paid to the Architect for evaluation of additional resubmittals.

1.05 ARTICLE 4 - ARCHITECT

A. Subparagraph 4.1.1 - Delete in its entirety and substitute the following:

4.1.1 The Architect is the firm of Architectural Resource Team, Inc., referred throughout the Contract Documents as if singular in number. The term 'Architect' means the Architect or the Architect's authorized representative."

B. Paragraph 4.2 - Add the following subparagraph:

4.2.15 Architectural and Engineering Services. It is understood that normal Architectural and Engineering liaison for the purpose of interpretation of the Drawings and Specifications is provided for by the Owner. Should the services of the Architect be required to assist in the corrections of errors or omissions in construction by the Contractor, or services of the Architect be required because of changes in structure or equipment where the Contractor has requested approval of substitute products, these services will be provided by the Architect at the standard hourly rates. The Architect will charge the Owner and such costs will be deducted from money still due the Contractor.

1.06 ARTICLE 5 - SUBCONTRACTORS

A. Paragraph 5.2 - Add the following subparagraph:

5.2.5 Two weeks after signing of the Owner-Contractor Agreement, the General Contractor shall verify that the Subcontractor List is firm and that the Subcontractors are under contract for this Project."

B. Paragraph 5.3 - Add the following sentence:

"Subcontracts shall be by written agreement for the Subcontractors listed on the 'Subcontractor List Form'."

1.07 ARTICLE 7 - CHANGES IN THE WORK

A. Paragraph 7.3 - Add the following subparagraphs:

7.3.11 General Contractor's Mark-up: Total cost for mark-ups to the actual cost of labor and materials for Extra Work authorized to be done by the Contractor's own forces shall be as follows:
1. Overhead: 5% of the actual cost of labor and materials.
2. Profit: 10% of the actual cost of labor and materials.
4. Bond: Actual bond cost based upon the actual cost of labor and materials, plus overhead, plus profit, plus sales tax.

7.3.12 Subcontractor's Mark-up: The total cost for mark-ups to the actual cost of labor and materials for Extra Work authorized to be done by the Subcontractor's forces shall be as follows:
1. Overhead: 5% of the actual cost of labor and materials.
2. Profit: 10% of the actual cost of labor and materials.

7.3.13 General Contractor's Mark-up of Subcontractor's Work: The total cost for mark-ups made by the General Contractor to the actual cost of labor and materials for Extra Work authorized to be done by the Subcontractor's forces shall be as follows:
1. Overhead and Profit: 5% of the actual cost of labor and materials.
2. Sales Tax: Statutory amount of the actual cost of labor and materials, plus overhead and profit.
3. Bond: Actual bond cost based upon the actual cost of labor and materials, plus overhead and profit, plus sales tax.
7.3.14 Where changes in the Work involve both added and omitted Work, the overhead, profit, taxes and bond figures specified above shall be added to only the increased amount over the original Contract Amount.

7.3.15 Work omitted from Contract:
1. If Contract Amount has been previously increased by Change Order for additional Work, then overhead and profit will be deducted for omitted Work.
2. If Contract Amount has not been previously increased, and unless revised Contract Amount will be less than original Contract amount, then overhead and profit will not be deducted as part of the deductive Change Order for Work omitted.
3. Taxes and Bonds shall always be based upon the current contract amount whether more or less than the original Contract Amount.

B. Paragraph 7.4 - Add the following sentence:
"Written orders for minor changes will be issued upon an "Architect's Supplemental Instructions" form, AIA G710, current edition."

C. Add the following paragraph:
7.5 EXTRA WORK
7.5.1 When authorized as described by Paragraph 7.1, Extra Work may be ordered. Claims for additional compensation, on account of Extra Work done, will not be recognized unless such Extra Work has been authorized in advance and writing by the Owner and the Architect. The Contractor shall perform such Extra Work and charge the Owner as provided in Subparagraph 7.3.6.

1.08 ARTICLE 8 - TIME
A. Subparagraph 8.3.1 - Delete from first sentence: "...or by delay authorized by the Owner pending mediation and arbitration..."

B. Add the following paragraphs:
8.3.4 The Owner will not pay for costs related to supervision, construction procedures, general conditions, overhead and profit, should the time required to substantially complete the Work be extended beyond the Contract Time stated in the Contract due to inclement weather or any other reason, exclusive of adjustments in time by Change Order which included changes or additions to the scope of Work. The Contract Amount shall include the costs related to supervision and construction procedures, general conditions, overhead and profit for time beyond that stated in the Contract and the Base Bid received by the Owner shall include these costs.

8.4 RESPONSIBILITY FOR COMPLETION
8.4.1 The Contractor shall furnish such manpower, materials, facilities, and equipment and shall work such hours, including night shifts, overtime operations and Sunday and holidays, as may be necessary to insure the prosecution and completion of the Work in accordance with the approved and currently - updated progress schedule. If Work actually in place falls behind the currently updated and approved schedule by 14 days or more and it becomes apparent from the current schedule that the Work will not be completed within the Contract Time, the Contractor agrees to, take some or all of the following actions at no additional cost to the Owner to improve progress as necessary:
1. Increase manpower in such quantities and crafts as will substantially eliminate, in the judgment of the Architect, the backlog of Work;
2. Increase the number of working hours per shift, shifts per working day, working days per week, the amount of equipment, or any combination of the foregoing, sufficient to substantially eliminate, in the judgment of the Architect, the backlog of Work; and,
3. Reschedule activities to achieve maximum practical concurrency of accomplishment of activities.

8.4.2 In addition, the Architect may require the Contractor to submit a revised chart demonstrating his program and proposed plan to make up lag in scheduled progress and to
ensure completion of the Work within the Contract Time. If the Architect finds the proposed plan not acceptable, the Architect may require the Contractor to submit a new plan. If the actions taken by the Contractor or the second plan proposed are not satisfactory, the Architect may require the Contractor to take any of the actions set forth in subparagraph 8.4.1 without additional cost to the Owner to make up the lag in scheduled progress.

8.4.3 Failure of the Contractor to substantially comply with the requirements of this paragraph 8.4 may be considered grounds for a determination by the Owner, pursuant to Article 14, that the Contractor is failing to prosecute the Work with such diligence as will ensure its completion within the time specified."

1.09 ARTICLE 9 - PAYMENTS AND COMPLETION

A. Subparagraph 9.3.1 - Delete in its entirety and substitute the following:

9.3.1 The Contractor shall review with the Architect's representative in the field on or about the 25th day of the month, the tentative Application for Payment for that month. The form for application for payment shall be AIA Document G702 'Application and Certificate for Payment' supported by AIA Document G703 'Continuation Sheet,' and shall be submitted, after the above review, to the Architect on or before the first day of the following month. The Application for Payment shall be notarized, if required, and supported by such data substantiating the Contractor's right to payment as the Owner or Architect may require, such as copies of requisitions from Subcontractors and materials suppliers, and reflecting retainage if provided for elsewhere in the Contract Documents."

B. Subsubparagraph 9.3.1.2 - Add the following:

"The Contractor shall include a written notice, on the Contractor's letterhead, stating the name of and amount owed to each Subcontractor which has requested payment which has not been included on the Application for Payment."

C. Subparagraph 9.3.1 - Add the following subsubparagraph:

9.3.1.3 Until final payment the Owner will pay 90 percent of the amount due the Contractor on account of Progress Payments."

D. Subparagraph 9.5.1, subsubparagraph .1 - Delete in its entirety and substitute the following:

1. Work not in conformance with Contract Documents which is not remedied, or failure to begin remedial action within five days following notification,"

E. Subparagraph 9.6.3 - Delete the word "will" and insert the word "may".

F. Subparagraph 9.7 - Change the words "as provided for in the Contract Documents" to "at the prevailing rate mandated by law" in the last sentence.

G. Subparagraph 9.8.2 - Delete in its entirety and substitute the following:

"9.8.2 When the Contractor is of the opinion that the Project, (or a portion thereof which the Owner agrees to accept separately), is substantially complete in accordance with the Contract Documents, the Contractor shall send to the Architect a written statement that the Project is substantially complete (naming a date) and shall request a substantial completion inspection by the Architect to determine the status of completion. Such notice shall be given at least three days prior to the requested date.

1. If the Architect finds that the Project is substantially complete, the Architect will prepare a Certificate of Substantial Completion, AIA Document G704, which shall establish the date of Substantial Completion, shall state the responsibilities of the Owner and the Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Work shall be completed. The Architect shall attach to the Certificate a list of all items to be completed and corrected, (the "Punch List"). This list, prepared by the General Contractor's clerical staff based upon information provided by Architect, will be as complete as possible based on the Architect's observations, but shall not relieve or otherwise waive the Contractor's responsibility to complete or correct subsequently discovered items, or to complete the Work in accordance with the Contract Documents. The Certificate of Substantial Completion shall be submitted to the Contractor and the Owner for their approval and acceptance. Warranties required by the Contract..."
Documents shall commence on the date of Substantial Completion unless otherwise provided.

2. If the Architect does not concur in the Contractor's claim of Substantial completion, the Architect will so notify the Contractor, and thereafter, the Contractor shall initiate a new request for Substantial completion Inspection."

H. Subparagraph 9.9.1 - Delete the word "list" in the third sentence and insert the words "written statement".

I. Subparagraph 9.10.1 - Add the following:

"Should it become necessary for the Architect to conduct additional inspections subsequent to the final inspection because of acts or omissions of the Contractor, the Architect will conduct such inspections at the Architect's standard hourly rate and will charge the Owner, and such costs will be deducted from monies still due the Contractor."

J. Subparagraph 9.10.2 - Delete in its entirety and substitute the following:

9.10.2 Neither the final payment nor the remaining retained percentage shall become due until the Contractor submits to the Architect (1) Affidavit of Payment of Debts and Claims, AIA Document G706 and attachments including Contractor's Release or Waiver of Liens, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days' prior notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) Consent of Surety to Final Payment, or satisfaction of all such obligations such as receipts, releases and waivers or liens arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify him against any such lien. If such lien remains unsatisfied after all payments are made, the Contractor shall refund to the Owner all money that the latter may be compelled to pay in discharging such lien, including all costs and reasonable attorney's fees."

K. Add the following paragraph:

9.11 TIME FOR COMPLETION

9.11.1 The Work shall commence as established in Subparagraph 8.1.2. The Contractor agrees that said Work shall be prosecuted regularly, diligently, and without interruption at such rate of progress as will insure full completion of the Project no later than 420 calendar days from the date of Notice to Proceed.

9.11.2 It is hereby understood and mutually agreed, by and between the Contractor and the Owner, that the date of beginning, rate of progress, and the time for completion of the Work to be done hereunder, are ESSENTIAL CONDITIONS of this Contract; and it is further mutually understood and agreed that time for completion of this Contract shall begin from the date of commencement. The Contractor also shall consider that the Owner needs the complete use of these facilities as quickly as possible."

1.10 ARTICLE 11 – INSURANCE AND BONDS

A. Subparagraph 11.1.1 - Add the following clause;

9. Liability insurance shall include all major divisions of coverage and be on a comprehensive basis including:
   a. Premises Operation (including X,C and U coverages as applicable).
   b. Independent Contractor's Protective.
   c. Products and Completed Operations.
   d. Personal Injury Liability with Employment Exclusion deleted.
   e. Contractual, including specified provision for Contractor's obligation under Paragraph 3.18.
   f. Owned, non-owned and hired motor vehicles.
   g. Broad Form Property Damage including Completed Operations.
B. Subparagraph 11.1.2 - Delete in its entirety and substitute the following:

11.1.2 The insurance required by Subparagraph 11.1.1 shall be written for not less than any limits of liability required by law or as specified herein, whichever is greater. The Contractor shall not allow any Subcontractor to commence Work on a Subcontract until the same type of insurance in the amount specified below have been obtained by the Subcontractor. If any such Subcontractor shall subcontract any portion of his subcontract, the Contractor shall require the Secondary Subcontractor to take out and maintain such contingent of protective insurance as will protect the Primary subcontract from damage claims arising from his operations. Such Contingency Protective insurance shall be in the same amount as his Primary Subcontractor's Public Liability and Property Damage Insurance. Maintain all required insurance for the life of the contract. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from date of commencement of the Work until date of final payment and termination of any coverage required to be maintained after final payment, and, with respect to the Contractor's completed operations coverage, until the expiration of the period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents."

C. Subparagraph 11.1.3 - Add new subsubparagraphs:

1. Furnish one copy of Certificates herein required for each copy of the Agreement; specifically set forth evidence of all coverage required by Subparagraphs 11.1.1 and 11.1.2 and in the amounts required by Subparagraph 11.1.4. The form of the Certificate shall be ACORD from 25-S.

2. Furnish to the Owner copies of endorsements that are subsequently issued naming Owner and Architect as additional insured within 60 days of start of work or endorsements that are subsequently issued amending coverage of limits."

3. TCD LLC and Architectural Resource Team, Inc. and its subconsultants shall be named as "Additional Insured" on Certificates of Insurance.

4. Contractor's comprehensive general liability policy shall be endorsed to name

   a. TCD LLC and Architectural Resource Team, Inc. and its subconsultants as additional insureds with respect to liability arising out of operations performed for the Owner by or on behalf of the Contractor. The certificate of insurance must reflect this condition.

D. Paragraph 11.1 - Add the following subparagraph:

11.1.5 Contractor's liability insurance shall be written for not less than the following limits of liability:

1. Workmen's Compensation - Statutory. In case any class of employees engaged in Work under this Contract, at the site of the Project, is not protected under the Workmen's compensation Statute, the Contractor shall provide and cause each Subcontractor to provide special insurance for the protection of those employees not otherwise protected.

2. Employer's Liability - Statutory.

3. Comprehensive General Liability:

   a. Bodily Injury: Contractor Subcontractor
      Note 1 $1,000,000

   b. Property Damage:
      Note 1 $1,000,000

   c. Premises and Operations
      1) Bodily Injury: Notice 1 $1,000,000
      2) Property Damage:
      Note 1 $1,000,000

   d. Personal Injury Supplements:
      Note 1 Same as Above

   e. Product & Completed Operations Aggregate
      Note 1 $2,000,000

4. Comprehensive Auto. Liability:

   a. Bodily Injury:
      Note 1 $1,000,000

   b. Property Damage:
      Note 1 $1,000,000

Note 1: Per Owner/Contractor Contract
5. Owner's and Contractor's Protective - Same limits as above.
6. Independent Contractor's Protective - Same limits as above.
7. Products and Completed Operations - Same limits as above for two years commencing with issuance of final Certificates for Payment.
8. Contractual Liability - Same limits as above.

E. Subparagraph 11.3.1 - Delete in its entirety and substitute the following:

11.3.1 The Contractor shall purchase and maintain Property Insurance on an “all risk” builders risk policy upon the entire Work at the site to the full insurable value thereof, including subsequent modifications to the Contract Sum for the entire Work at the site on a replacement cost basis without voluntary deductibles. Such insurance shall be issued by a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located and against which the Owner has no reasonable objection. This insurance shall include the interest of the Owner, the Contractor, Subcontractor, and Subsubcontractors in the Work. If this insurance is written with stipulated amounts deductible under the terms of the policy, the Contractor shall pay the difference attributable to deductions in any payments made by the insurance carrier on claims paid by this insurance. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Paragraph 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Paragraph 11.3 to be covered, whichever is earlier.

F. Subsubparagraphs 11.3.1.2 through 11.3.1.3 - Delete in their entirety.

G. Subparagraph 11.3.4 - Delete in its entirety.

H. Subparagraph 11.3.6 - Delete in its entirety and substitute the following:

11.3.6 The Contractor shall file the original and one certified copy of all policies with the Owner and Architect before exposure to loss may occur. If the Owner is damaged by the failure of the Contractor to maintain such insurance and to so notify the Owner, then the Contractor shall bear all reasonable costs properly attributable thereto. Each policy shall contain all generally applicable condition, definition, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner.

I. Subparagraph 11.3.8 - Delete the word "Owner's" before the words "property insurance; and, delete the remainder of the sentence after the word "clause" in the first sentence.

J. Subparagraph 11.3.9 - Delete in its entirety and substitute the following:

11.3.9 If required in writing by any party in interest, the Owner as trustee shall, upon the occurrence of an insured loss, give bond for the proper performance of the required duties. The Owner shall deposit in a separate account any money so received, and the Owner shall distribute it in accordance with such agreement as the parties in interest may reach. If after such loss no other special agreement is made, replacement of damaged Work shall be covered by an appropriate Change Order.

K. Subparagraph 11.3.10 - Delete in its entirety.

1.11 ARTICLE 13 - MISCELLANEOUS PROVISIONS

A. Paragraph 13.1 - Add the following sentence:

It shall be mandatory on the Contractor to whom the contract is awarded, and upon any subcontractor under him, to comply in every respect with the provisions of Titles 23, 32, and 34, Arizona Revised Statutes and with all other requirements of the state of Arizona, applicable to contract for the construction of Public Works, and with all applicable City, County, State, and Federal laws and ordinances.

B. Subparagraph 13.5.1 - Add the following subsubparagraphs:
1. When the initial tests indicate variance to the Contract Documents, subsequent retesting of the same Work to establish compliance shall be performed by the same agency and the cost thereof borne by the Contractor.

2. Representatives of the testing agency shall have access to the Work at all times. The Contractor shall provide facilities for such access in order that the agency may properly perform its functions.

3. Inspection or Testing performed exclusively for the Contractor's convenience shall be the sole responsibility of the Contractor.

C. Subparagraph 13.5.4 - Delete in its entirety and substitute the following:

13.5.4 The independent agency, employed by the Owner, will prepare the test reports, logs, and certificates applicable to the specific inspections and tests and promptly deliver the specified number of copies of same to the designated parties. Other required certificates of inspection, testing or approval shall be secured by the Contractor and delivered by the Contractor to the Architect, in such time as to not delay progress of the Work or final payment therefore."

1.12 ARTICLE 15 – CLAIMS AND DISPUTES

A. Paragraph 15.1.6 - Delete the words "losses of use" in subparagraph 15.1.6.1.

B. Paragraph 15.4 - Delete in its entirety.

C. Add the following Article:

ARTICLE 16 - EQUAL OPPORTUNITY

16.1 The Contractor shall maintain policies of employment as follows:

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

16.1.2 The Contractor and all Subcontractors shall, in all solicitations or advertisements for employees placed by them or in their behalf; state that all qualified applicants will receive consideration for employment without regard to race, religion, color, sex or national origin."
SECTION 01 10 00
SUMMARY

PART 1 GENERAL
1.01 PROJECT
   A. Project Name: Trellis at Colter - Unit 2
   B. Owner’s Name: TCD LLC.
   C. Architect's Name: Architectural Resource Team.
   D. The Project consists of the Site Demolition and Construction of new 3 - Story Residential Building.

1.02 CONTRACT DESCRIPTION
   A. Contract Type: A single prime contract based on a Stipulated Price.

1.03 FUTURE WORK
   A. Project is designed for future Stages.

1.04 OWNER OCCUPANCY
   A. Owner intends to occupy the Project upon Substantial Completion.
   B. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.
   C. Schedule the Work to accommodate Owner occupancy.

1.05 CONTRACTOR USE OF SITE AND PREMISES
   A. Construction Operations: Limited to areas noted on Drawings.
   B. Provide access to and from site as required by law and by Owner:
      1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
      2. Do not obstruct roadways, sidewalks, or other public ways without permit.
   C. Time Restrictions:
      1. Limit conduct of especially noisy, malodorous, and dusty exterior work to those approved by City and Owner.
   D. Utility Outages and Shutdown:
      1. Do not disrupt or shut down life safety systems, including but not limited to fire sprinklers and fire alarm system, without 7 days notice to Owner and authorities having jurisdiction.
      2. Prevent accidental disruption of utility services to other facilities.

1.06 SPECIFICATION SECTIONS APPLICABLE TO ALL CONTRACTS
   A. Unless otherwise noted, all provisions of the sections listed below apply to all contracts. Specific items of work listed under individual contract descriptions constitute exceptions.
   B. Section 01 20 00 - Price and Payment Procedures.
   C. Section 01 30 00 - Administrative Requirements.
   D. Section 01 32 16 - Construction Progress Schedule.
   E. Section 01 40 00 - Quality Requirements.
   F. Section 01 50 00 - Temporary Facilities and Controls.
   G. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
   H. Section 01 70 00 - Execution and Closeout Requirements.

PART 2 PRODUCTS - NOT USED
PART 3 EXECUTION - NOT USED

END OF SECTION
SECTION 01 20 00
PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES
   A. Procedures for preparation and submittal of applications for progress payments.

1.02 RELATED REQUIREMENTS
   A. Section 00 72 00 - General Conditions: Additional requirements for progress payments, final payment, changes in the Work.
   B. Section 00 73 00 - Supplementary Conditions: Percentage allowances for Contractor's overhead and profit.

1.03 SCHEDULE OF VALUES
   A. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit draft to Architect for approval.
   B. Forms filled out by hand will not be accepted.

1.04 APPLICATIONS FOR PROGRESS PAYMENTS
   A. Payment Period: Submit at intervals stipulated in the Agreement.
   B. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Architect for approval.
   C. Forms filled out by hand will not be accepted.
   D. Execute certification by signature of authorized officer.
   E. Submit one electronic and three hard-copies of each Application for Payment.

1.05 MODIFICATION PROCEDURES
   A. For minor changes not involving an adjustment to the Contract Sum or Contract Time, Architect will issue instructions directly to Contractor.
   B. For other required changes, Architect will issue a document signed by Owner instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.
      1. The document will describe the required changes and will designate method of determining any change in Contract Sum or Contract Time.
      2. Promptly execute the change.
   C. For changes for which advance pricing is desired, Architect will issue a document that includes a detailed description of a proposed change with supplementary or revised drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within number days as stated in Owner/Contractor Contract.
   D. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.

1.06 APPLICATION FOR FINAL PAYMENT
   A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.
   B. Application for Final Payment will not be considered until the following have been accomplished:
      1. All closeout procedures specified in Section 01 70 00.

PART 2 PRODUCTS - NOT USED
PART 3 EXECUTION - NOT USED

END OF SECTION
SECTION 01 26 13
CONTRACTOR'S REQUESTS FOR INFORMATION / INTERPRETATION

PART 1  GENERAL
1.01  SUMMARY
A. Section Includes: Administrative requirements for requests for information / interpretation.

1.02  DEFINITIONS
A. Request For Information / Interpretation (RFI):
   1. A document submitted by the Contractor requesting clarification of a portion of the Contract Documents, hereinafter referred to as RFI.
   2. A properly prepared request for information / interpretation shall include a detailed written statement that indicates the specific Drawings or Specification in need of clarification and the nature of the clarification requested.
      a. Drawings shall be identified by drawing number and location on the drawing sheet.
      b. Specifications shall be identified by Section number, page and paragraph.
   3. Request made by Contractor concerning items not indicated on drawings or contained in Project Manual that is required to properly perform the work.
   4. Request made by Contractor in accordance with Owner's Representative's third party obligations to the contract for construction.

B. Improper RFI's:
   1. RFI's that are not properly prepared.
   2. Improper RFI's will be processed by the Architect at the Architect's standard hourly rate and Architect will charge the Owner, and such costs will be deducted from monies still due the Contractor. The Contractor will be notified by the Architect prior to the processing of improper RFI's.

C. Frivolous RFI's:
   1. RFI's that request information that is clearly shown on the Contract Documents.
   2. Frivolous RFI's may be returned unanswered or may be processed by the Architect at the Architect's standard hourly rate and Architect will charge the Owner, and such costs will be deducted from monies still due the Contractor. The Contractor will be notified by the Architect prior to the processing of frivolous RFI's.

1.03  CONTRACTOR'S REQUESTS FOR INFORMATION
A. RFI's shall be submitted on a form prepared by the Contractor acceptable to the Architect or the form at the end of this section.
   1. Forms shall be completely filled in, and if prepared by hand, shall be fully legible after photocopying or transmission by facsimile (fax).
   2. RFI's shall be submitted in numerical order with no breaks in the consecutive numbering.
   3. Each page of attachments to RFI's shall bear the RFI number and shall be consecutively numbered in chronological order.
   4. RFI's may be submitted by E-Mail.
      a. Submittal by E-Mail is the preferred method of submittal.
      b. Address for E-Mail will be distributed by the Architect at the Pre-Construction Conference.
      c. An electronic version of RFI form will be provided upon request.

B. When the Contractor is unable to determine from the Contract Documents, the material, process or system to be installed, the Architect shall be requested to make a clarification of the indeterminate item.
   1. Wherever possible, such clarification shall be requested at the next appropriate project meeting, with the response entered into the meeting minutes. When clarification at the meeting is not possible, either because of the urgency of the need, or the complexity of the item, Contractor shall prepare and submit an RFI to the Architect.
2. RFI requesting clarification of an item required of a document known to have been prepared by a consultant to the Architect, may be sent directly to the consultant with a copy to the Architect, if this direct communication is approved by the Architect.

C. Contractor shall endeavor to keep the number of RFI's to a minimum. In the event that the process becomes unwieldy, in the opinion of the Architect, because of the number and frequency of RFI's submitted, the Architect may require the Contractor to abandon the process and submit future requests as either submittals, substitutions or requests for change.

D. RFI's shall be originated by the Contractor.
   1. RFI's from subcontractors or material suppliers shall be submitted through, reviewed by, and signed by the Contractor prior to submittal to the Architect.
   2. RFI's from subcontractors or material suppliers sent directly to the Owner's Representative, Architect or the Architect's consultants shall not be accepted and will be returned unanswered.

E. Contractor shall carefully study the Contract Documents to assure that the requested information is not available therein. RFI's which request information available in the Contract Documents will be deemed either "improper" or "frivolous" as noted above.

F. In cases where RFI's are issued to request clarification of coordination issues, for example, pipe and duct routing, clearances, specific locations of work shown diagrammatically, and similar items, the Contractor shall fully lay out a suggested solution using drawings or sketches drawn to scale, and submit same with the RFI. RFI's which fail to include a suggested solution will be returned unanswered with a requirement that the Contractor submit a complete request.

G. RFI's shall not be used for the following purposes:
   1. To request approval of submittals
   2. To request approval of substitutions,
   3. To request changes which are known to entail additional cost or credit. (A Change Order Request form shall be used.)
   4. To request different methods of performing work than those drawn and specified.

H. In the event the Contractor believes that a clarification by the Architect results in additional cost or time, Contractor shall not proceed with the work indicated by the RFI until a Change Order (or Construction Change Directive, if applicable to project) is prepared and approved. RFI's shall not automatically justify a cost increase in the work or a change in the project schedule.
   1. Answered RFI's shall not be construed as approval to perform extra work.
   2. Unanswered RFI's will be returned with a stamp or notation: Not Reviewed.

I. Contractor shall prepare and maintain a log of RFI'S, and at any time requested by the Architect, Contractor shall furnish copies of the log showing outstanding RFI'S. Contractor shall note unanswered RFI's in the log.

J. Contractor shall allow up to 5 working days review and response time for RFI'S, unless review is required of multiple consultants, then the review and response period shall be 7 working days.
   1. The Architect will endeavor to respond in a timely fashion to RFI's.
   2. RFI shall state requested date/time for response, however, this requested date/time for response is not a guarantee that the RFI will be answered by that date/time if that date/time is too expeditious

1.04 ARCHITECT'S RESPONSE TO RFI'S

A. Architect will respond to RFI's on one of the following forms:
   1. Properly prepared RFI's:
      a. Response directly upon Request for Information / Interpretation form.
      b. Architect's Supplemental Instruction.
      c. Request for Proposal.
   2. Improper or Frivolous RFI's
      a. Notification of Processing Fee(s).
      b. Unanswered RFI's will be returned with a stamp or notation: Not Reviewed..
3. Answers to properly prepared RFI's may or may not be made directly upon the RFI form as deemed appropriate by the Architect.

B. Architect may opt to retain RFI's for discussion during regularly scheduled project meetings for inclusion of responses in meeting minutes in lieu of responding on a written form.
REQUEST FOR INFORMATION / INTERPRETATION

PROJECT: ___________________________  R.F.I NUMBER: ___________________________

TO: ________________________________  DATE: ________________________________

FROM: ______________________________  A/E PROJECT NUMBER: __________________

SPECIFICATION SECTION: _____ PARAGRAPH: _____  DRAWING REFERENCE: _____
DETAIL: __________
REQUEST:

* REQUESTED DATE/TIME FOR RESPONSE:
SIGNED BY:

RESPONSE:

ATTACHMENTS:

RESPONSE FROM: _________ TO: _________  * DATE REC'D: _________  * DATE RET'D: _________
SIGNED BY: __________________________________________

COPIES: OWNER _____ CONSULTANTS _______ _____ _____ FILE

* CONTRACTOR SHALL ALLOW UP TO 5 WORKING DAYS REVIEW AND RESPONSE TIME FOR
RFI'S, UNLESS REVIEW IS REQUIRED OF MULTIPLE CONSULTANTS, THEN THE REVIEW AND
RESPONSE PERIOD SHALL BE 7 WORKING DAYS.
SECTION 01 30 00
ADMINISTRATIVE REQUIREMENTS

PART 1  GENERAL

1.01  SECTION INCLUDES
A. General administrative requirements.
B. Electronic document submittal service.
C. Progress meetings.
D. Submittals for review, information, and project closeout.
E. Number of copies of submittals.
F. Requests for Interpretation (RFI) procedures.
G. Submittal procedures.

1.02  RELATED REQUIREMENTS
A. Section 00 72 00 - General Conditions: Dates for applications for payment.
B. Section 00 73 00 - Supplementary Conditions: Duties of the Construction Manager.
C. Section 01 32 16 - Construction Progress Schedule: Form, content, and administration of schedules.
D. Section 01 70 00 - Execution and Closeout Requirements: Additional coordination requirements.

1.03  GENERAL ADMINISTRATIVE REQUIREMENTS
A. Conform to requirements of Section 01 70 00 - Execution and Closeout Requirements for coordination of execution of administrative tasks with timing of construction activities.
B. Make the following types of submittals to Architect:
   1. Requests for Interpretation (RFI).
   2. Requests for substitution.
   3. Shop drawings, product data, and samples.
   4. Test and inspection reports.
   5. Design data.
   6. Manufacturer’s instructions and field reports.
   7. Applications for payment and change order requests.
   8. Progress schedules.
   9. Coordination drawings.
   10. Correction Punch List and Final Correction Punch List for Substantial Completion.
   11. Closeout submittals.

PART 2  PRODUCTS - NOT USED

PART 3  EXECUTION

3.01  ELECTRONIC DOCUMENT SUBMITTAL SERVICE
A. All documents transmitted for purposes of administration of the contract are to be in electronic (PDF, MS Word, or MS Excel) format, as appropriate to the document, and transmitted via an Internet-based submittal service that receives, logs and stores documents, provides electronic stamping and signatures, and notifies addressees via email.
   1. Besides submittals for review, information, and closeout, this procedure applies to Requests for Interpretation (RFIs), progress documentation, contract modification documents (e.g. supplementary instructions, change proposals, change orders), applications for payment, field reports and meeting minutes, Contractor’s correction punchlist, and any other document any participant wishes to make part of the project record.
   2. Contractor and Architect are required to use this service.
   3. It is Contractor’s responsibility to submit documents in allowable format.
4. Contractor is to provide this service at no additional cost to the owner.
5. Subcontractors, suppliers, and Architect's consultants will be permitted to use the service at no extra charge.
6. Users of the service need an email address, internet access, and PDF review software that includes ability to mark up and apply electronic stamps (such as Adobe Acrobat, www.adobe.com, or Bluebeam PDF Revu, www.bluebeam.com), unless such software capability is provided by the service provider.
7. Paper document transmittals will not be reviewed; emailed electronic documents will not be reviewed.
8. All other specified submittal and document transmission procedures apply, except that electronic document requirements do not apply to samples or color selection charts.

B. Submittal Service: The selected service is: to be agreed upon by the Owner, Contractor and Architect.

C. Project Closeout: Architect will determine when to terminate the service for the project and is responsible for obtaining archive copies of files for Owner.

3.02 PROGRESS MEETINGS
A. Architect will schedule and administer meetings throughout progress of the Work at minimum monthly intervals.

B. Attendance Required:
1. Contractor.
2. Owner.
3. Architect.
4. Contractor's superintendent.

C. Agenda:
1. Review minutes of previous meetings.
2. Review of work progress.
3. Field observations, problems, and decisions.
4. Identification of problems that impede, or will impede, planned progress.
5. Review of submittals schedule and status of submittals.
6. Maintenance of progress schedule.
7. Corrective measures to regain projected schedules.
8. Planned progress during succeeding work period.
10. Effect of proposed changes on progress schedule and coordination.
11. Other business relating to work.

D. Record minutes and distribute copies within three days after meeting to participants, with digital copies to Architect, Owner, participants, and those affected by decisions made.

3.03 REQUESTS FOR INTERPRETATION (RFI)
A. See Specification Section 01 26 13.

3.04 SUBMITTAL SCHEDULE
A. Submit to Architect for review a schedule for submittals in tabular format.

3.05 SUBMITTALS FOR REVIEW
A. When the following are specified in individual sections, submit them for review:
1. Product data.
2. Shop drawings.
3. Samples for selection.
4. Samples for verification.

B. Submit to Architect for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.

C. Samples will be reviewed for aesthetic, color, or finish selection.
D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below.

3.06 SUBMITTALS FOR INFORMATION
A. When the following are specified in individual sections, submit them for information:
1. Design data.
2. Certificates.
3. Test reports.
4. Inspection reports.
5. Manufacturer's instructions.
6. Manufacturer's field reports.
7. Other types indicated.
B. Submit for Architect's knowledge as contract administrator or for Owner.

3.07 SUBMITTALS FOR PROJECT CLOSEOUT
A. Submit Correction Punch List for Substantial Completion.
B. Submit Final Correction Punch List for Substantial Completion.
C. Submit for Owner's benefit during and after project completion.

3.08 NUMBER OF COPIES OF SUBMITTALS
A. Electronic Documents: Submit one electronic copy in PDF format; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.
B. Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect.
   1. After review, produce duplicates.
   2. Retained samples will not be returned to Contractor unless specifically so stated.

3.09 SUBMITTAL PROCEDURES
A. General Requirements:
B. Transmit each submittal digitally with a copy of approved submittal form.

3.10 SUBMITTAL REVIEW
A. Submittals for Review: Architect will review each submittal, and approve, or take other appropriate action.
B. Submittals for Information: Architect will acknowledge receipt and review. See below for actions to be taken.
C. Architect's actions will be reflected by marking each returned submittal using virtual stamp on electronic submittals.
D. Architect's and consultants' actions on items submitted for review:
   1. Authorizing purchasing, fabrication, delivery, and installation:
      a. "Approved", or language with same legal meaning.
      b. "Approved as Noted, Resubmission not required", or language with same legal meaning.
         1) At Contractor's option, submit corrected item, with review notations acknowledged and incorporated.
      c. "Approved as Noted, Resubmit for Record", or language with same legal meaning.
   2. Not Authorizing fabrication, delivery, and installation:
E. Architect's and consultants' actions on items submitted for information:
   1. Items for which no action was taken:
      a. "Received" - to notify the Contractor that the submittal has been received for record only.
   2. Items for which action was taken:
a. "Reviewed" - no further action is required from Contractor.

END OF SECTION
SECTION 01 32 16
CONSTRUCTION PROGRESS SCHEDULE

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Preliminary schedule.
B. Construction progress schedule, bar chart type.

1.02 REFERENCE STANDARDS

1.03 SUBMITTALS
A. Within 10 days after date of Agreement, submit preliminary schedule.
B. If preliminary schedule requires revision after review, submit revised schedule within 10 days.
C. Within 10 days after joint review, submit complete schedule.
D. Submit updated schedule with each Application for Payment.
E. Submit under transmittal letter form specified in Section 01 30 00 - Administrative Requirements.

1.04 SCHEDULE FORMAT
A. Listings: In chronological order according to the start date for each activity. Identify each activity with the applicable specification section number.
B. Sheet Size: Multiples of 8-1/2 x 11 inches.
C. Scale and Spacing: To allow for notations and revisions.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PRELIMINARY SCHEDULE
A. Prepare preliminary schedule in the form of a horizontal bar chart.

3.02 CONTENT
A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.
B. Identify each item by specification section number.
C. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.
D. Coordinate content with schedule of values specified in Section 01 20 00 - Price and Payment Procedures.
E. Provide legend for symbols and abbreviations used.

3.03 BAR CHARTS
A. Include a separate bar for each major portion of Work or operation.
B. Identify the first work day of each week.

3.04 UPDATING SCHEDULE
A. Maintain schedules to record actual start and finish dates of completed activities.
B. Indicate progress of each activity to date of revision, with projected completion date of each activity.
C. Annotate diagrams to graphically depict current status of Work.
D. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.
E. Indicate changes required to maintain Date of Substantial Completion.
F. Submit reports required to support recommended changes.

3.05 DISTRIBUTION OF SCHEDULE

A. Distribute copies of updated schedules to Contractor's project site file, to subcontractors, suppliers, Architect, Owner, and other concerned parties.

B. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.

END OF SECTION
SECTION 01 40 00
QUALITY REQUIREMENTS

PART 1  GENERAL
1.01  SECTION INCLUDES
   A. Submittals.
   B. Quality assurance.
   C. Testing and inspection agencies and services.
   D. Control of installation.
   E. Defect Assessment.

1.02  RELATED REQUIREMENTS
   A. Section 01 30 00 - Administrative Requirements: Submittal procedures.

1.03  SUBMITTALS
   A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
   B. Test Reports: After each test/inspection, promptly submit two copies of report to Architect and Contractor.
      1. Include:
         a. Date issued.
         b. Project title and number.
         c. Name of inspector.
         d. Date and time of sampling or inspection.
         e. Identification of product and specifications section.
         f. Location in the Project.
         g. Type of test/inspection.
         h. Date of test/inspection.
         i. Results of test/inspection.
         j. Conformance with Contract Documents.
         k. When requested by Architect, provide interpretation of results.

1.04  QUALITY ASSURANCE
   A. Testing Agency Qualifications:
      1. Prior to start of work, submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.

1.05  TESTING AND INSPECTION AGENCIES AND SERVICES
   A. Owner will employ and pay for services of an independent testing agency to perform specified testing and inspection.
   B. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

PART 2  PRODUCTS - NOT USED
PART 3  EXECUTION

3.01  CONTROL OF INSTALLATION
   A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
   B. Comply with manufacturers' instructions, including each step in sequence.
   C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.
D. Comply with specified standards as minimum quality for the work except where more stringent
tolerances, codes, or specified requirements indicate higher standards or more precise
workmanship.
E. Have work performed by persons qualified to produce required and specified quality.
F. Verify that field measurements are as indicated on shop drawings or as instructed by the
manufacturer.
G. Secure products in place with positive anchorage devices designed and sized to withstand
stresses, vibration, physical distortion, and disfigurement.

3.02 TESTING AND INSPECTION
A. Testing Agency Duties:
   1. Provide qualified personnel at site. Cooperate with Architect and Contractor in
      performance of services.
   2. Perform specified sampling and testing of products in accordance with specified
      standards.
   3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
   4. Promptly notify Architect and Contractor of observed irregularities or non-conformance of
      Work or products.
   5. Perform additional tests and inspections required by Architect.
   6. Submit reports of all tests/inspections specified.
B. Limits on Testing/Inspection Agency Authority:
   1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
   2. Agency may not approve or accept any portion of the Work.
   3. Agency may not assume any duties of Contractor.
   4. Agency has no authority to stop the Work.
C. Contractor Responsibilities:
   1. Deliver to agency at designated location, adequate samples of materials proposed to be
      used that require testing, along with proposed mix designs.
   2. Cooperate with laboratory personnel, and provide access to the Work and to
      manufacturers' facilities.
   3. Provide incidental labor and facilities:
      a. To provide access to Work to be tested/inspected.
      b. To obtain and handle samples at the site or at source of Products to be
         tested/inspected.
      c. To facilitate tests/inspections.
      d. To provide storage and curing of test samples.
   4. Notify Architect and laboratory 24 hours prior to expected time for operations requiring
      testing/inspection services.
   5. Employ services of an independent qualified testing laboratory and pay for additional
      samples, tests, and inspections required by Contractor beyond specified requirements.
   6. Arrange with Owner's agency and pay for additional samples, tests, and inspections
      required by Contractor beyond specified requirements.
D. Re-testing required because of non-conformance to specified requirements shall be performed
   by the same agency on instructions by Architect.
E. Re-testing required because of non-conformance to specified requirements shall be paid for by
   Contractor.

3.03 DEFECT ASSESSMENT
A. Replace work or portions of the work not conforming to specified requirements.

END OF SECTION
SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Temporary telecommunications services.
B. Temporary sanitary facilities.
C. Temporary Controls: Barriers, enclosures, and fencing.
D. Security requirements.
E. Waste removal facilities and services.
F. Field offices.

1.02 REFERENCE STANDARDS

1.03 TEMPORARY UTILITIES
A. Owner will provide the following:
   1. Electrical power and metering, consisting of connection to existing facilities.
   2. Water supply, consisting of connection to existing facilities.
B. Provide and pay for all electrical power, lighting, water, heating and cooling, and ventilation required for construction purposes.
C. New permanent facilities may be used.

1.04 TELECOMMUNICATIONS SERVICES
A. Provide, maintain, and pay for telecommunications services to field office at time of project mobilization.
B. Telecommunications services shall include:
   1. Internet Connections: Minimum of one; DSL modem or faster.
   2. Email: Account/address reserved for project use.

1.05 TEMPORARY SANITARY FACILITIES
A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.
B. Maintain daily in clean and sanitary condition.

1.06 TEMPORARY USE OF PERMANENT ELEVATORS - NOT ALLOWED

1.07 BARRIERS
A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
B. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.
C. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.08 FENCING
A. Provide 6 foot high fence around construction site; equip with vehicular and pedestrian gates with locks.

1.09 EXTERIOR ENCLOSURES
A. Provide temporary insulated weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections,
and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.

1.10 SECURITY
   A. Provide security and facilities to protect Work, existing facilities, and Owner’s operations from unauthorized entry, vandalism, or theft.

1.11 VEHICULAR ACCESS AND PARKING
   A. Coordinate access and haul routes with governing authorities and Owner.
   B. Provide and maintain access to fire hydrants, free of obstructions.
   C. Provide means of removing mud from vehicle wheels before entering streets.
   D. Provide temporary parking areas to accommodate construction personnel. When site space is not adequate, provide additional off-site parking.

1.12 WASTE REMOVAL
   A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
   B. Provide containers with lids. Remove trash from site daily.
   C. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.
   D. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.13 FIELD OFFICES
   A. Office: Weathertight, with lighting, electrical outlets, heating, cooling equipment, and equipped with sturdy furniture, drawing rack, and drawing display table.
   B. Provide space for Project meetings, with table and chairs to accommodate 6 persons.
   C. Locate offices a minimum distance of 30 feet from existing and new structures.

1.14 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS
   A. Remove temporary utilities, equipment, facilities, materials, prior to Date of Substantial Completion inspection.
   B. Remove underground installations to a minimum depth of 2 feet. Grade site as indicated.
   C. Clean and repair damage caused by installation or use of temporary work.
   D. Restore new permanent facilities used during construction to specified condition.

END OF SECTION
SECTION 01 57 13
TEMPORARY EROSION AND SEDIMENT CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Prevention of erosion due to construction activities.
B. Prevention of sedimentation of waterways, open drainage ways, and storm and sanitary sewers due to construction activities.
C. Restoration of areas eroded due to insufficient preventive measures.
D. Performance bond.
E. Compensation of Owner for fines levied by authorities having jurisdiction due to non-compliance by Contractor.

1.02 REFERENCE STANDARDS
A. EPA (NPDES) - National Pollutant Discharge Elimination System (NPDES), Construction General Permit; Current Edition.

1.03 PERFORMANCE REQUIREMENTS
A. Comply with requirements of EPA (NPDES) for erosion and sedimentation control, as specified by the NPDES, for Phases I and II, and in compliance with requirements of Construction General Permit (CGP), whether the project is required by law to comply or not.
B. Develop and follow an Erosion and Sedimentation Prevention Plan and submit periodic inspection reports.
C. Do not begin clearing, grading, or other work involving disturbance of ground surface cover until applicable permits have been obtained; furnish all documentation required to obtain applicable permits.
D. Provide to Owner a Performance Bond covering erosion and sedimentation preventive measures only, in an amount equal to 100 percent of the cost of erosion and sedimentation control work.
E. Timing: Put preventive measures in place as soon as possible after disturbance of surface cover and before precipitation occurs.
F. Storm Water Runoff: Control increased storm water runoff due to disturbance of surface cover due to construction activities for this project.
   1. Prevent runoff into storm and sanitary sewer systems, including open drainage channels, in excess of actual capacity or amount allowed by authorities having jurisdiction, whichever is less.
   2. Anticipate runoff volume due to the most extreme short term and 24-hour rainfall events that might occur in 25 years.
G. Erosion On Site: Minimize wind, water, and vehicular erosion of soil on project site due to construction activities for this project.
   1. Control movement of sediment and soil from temporary stockpiles of soil.
   2. Prevent development of ruts due to equipment and vehicular traffic.
   3. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.
H. Erosion Off Site: Prevent erosion of soil and deposition of sediment on other properties caused by water leaving the project site due to construction activities for this project.
   1. Prevent windblown soil from leaving the project site.
   2. Prevent tracking of mud onto public roads outside site.
   3. Prevent mud and sediment from flowing onto sidewalks and pavements.
   4. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.
I. Sedimentation of Waterways On Site: Prevent sedimentation of waterways on the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
   1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.
   2. If sediment basins are used as temporary preventive measures, pump dry and remove deposited sediment after each storm.

J. Sedimentation of Waterways Off Site: Prevent sedimentation of waterways off the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
   1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.

K. Open Water: Prevent standing water that could become stagnant.

L. Maintenance: Maintain temporary preventive measures until permanent measures have been established.

1.04 SUBMITTALS
A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
B. Erosion and Sedimentation Control Plan:
   1. Include:
      a. Site plan identifying soils and vegetation, existing erosion problems, and areas vulnerable to erosion due to topography, soils, vegetation, or drainage.
      b. Site plan showing grading; new improvements; temporary roads, traffic accesses, and other temporary construction; and proposed preventive measures.
      c. Where extensive areas of soil will be disturbed, include storm water flow and volume calculations, soil loss predictions, and proposed preventive measures.
      d. Schedule of temporary preventive measures, in relation to ground disturbing activities.
      e. Other information required by law.
      f. Format required by law is acceptable, provided any additional information specified is also included.
   2. Obtain the approval of the Plan by authorities having jurisdiction.
   3. Obtain the approval of the Plan by Owner.
C. Inspection Reports: Submit report of each inspection; identify each preventive measure, indicate condition, and specify maintenance or repair required and accomplished.

PART 2 PRODUCTS - SEE CIVIL DRAWINGS AND SPECIFICATIONS.

PART 3 EXECUTION
3.01 EXAMINATION
A. Examine site and identify existing features that contribute to erosion resistance; maintain such existing features to greatest extent possible.

3.02 PREPARATION
A. Schedule work so that soil surfaces are left exposed for the minimum amount of time.

3.03 INSTALLATION
A. Traffic-Bearing Aggregate Surface:
   1. Excavate minimum of 6 inches.
   2. Place geotextile fabric full width and length, with minimum 12 inch overlap at joints.
   3. Place and compact at least 6 inches of 1 1/2 to 3 1/2 inch diameter stone.
3.04 MAINTENANCE
   A. Inspect preventive measures weekly, within 24 hours after the end of any storm that produces 0.5 inches or more rainfall at the project site, and daily during prolonged rainfall.
   B. Repair deficiencies immediately.
   C. Clean out temporary sediment control structures weekly and relocate soil on site.
   D. Place sediment in appropriate locations on site; do not remove from site.

3.05 CLEAN UP
   A. Remove temporary measures after permanent measures have been installed, unless permitted to remain by Architect.
   B. Clean out temporary sediment control structures that are to remain as permanent measures.
   C. Where removal of temporary measures would leave exposed soil, shape surface to an acceptable grade and finish to match adjacent ground surfaces.

   END OF SECTION
SECTION 01 57 19
TEMPORARY ENVIRONMENTAL CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Construction procedures to promote adequate indoor air quality after construction.

1.02 PROJECT GOALS
A. Dust and Airborne Particulates: Prevent deposition of dust and other particulates in HVAC ducts and equipment.
   1. Cleaning of ductwork is not contemplated under this Contract.
   2. Contractor shall bear the cost of cleaning required due to failure to protect ducts and equipment from construction dust.
B. Airborne Contaminants: Procedures and products have been specified to minimize indoor air pollutants.
   1. Furnish products meeting the specifications.
   2. Avoid construction practices that could result in contamination of installed products leading to indoor air pollution.

1.03 RELATED REQUIREMENTS
A. Section 01 40 00 - Quality Requirements: Testing and inspection services.
B. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

1.04 REFERENCE STANDARDS
B. In addition to the SMACNA requirements, new ductwork is to be sealed during construction.

1.05 DEFINITIONS
A. Adsorptive Materials: Gypsum board, acoustical ceiling tile and panels, carpet and carpet tile, fabrics, fibrous insulation, and other similar products.
B. Contaminants: Gases, vapors, regulated pollutants, airborne mold and mildew, and the like, as specified.
C. Particulates: Dust, dirt, and other airborne solid matter.
D. Wet Work: Concrete, plaster, coatings, and other products that emit water vapor or volatile organic compounds during installation, drying, or curing.

1.06 SUBMITTALS
A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
B. Indoor Air Quality Management Plan: Describe in detail measures to be taken to promote adequate indoor air quality upon completion; use SMACNA (OCC) as a guide.
   1. Submit not less than 60 days before enclosure of building.
   2. Identify potential sources of odor and dust.
   3. Identify construction activities likely to produce odor or dust.
   4. Identify areas of project potentially affected, especially occupied areas.
   5. Evaluate potential problems by severity and describe methods of control.
   6. Describe construction ventilation to be provided, including type and duration of ventilation, use of permanent HVAC systems, types of filters and schedule for replacement of filters.
   7. Describe cleaning and dust control procedures.
C. Interior Finishes Installation Schedule: Identify each interior finish that either generates odors, moisture, or vapors or is susceptible to adsorption of odors and vapors, and indicate air handling zone, sequence of application, and curing times.
D. Duct and Terminal Unit Inspection Report.
1.07 QUALITY ASSURANCE
   A. Testing and Inspection Agency Qualifications: Independent testing agency having minimum of 5 years experience in performing the types of testing specified.

PART 2 PRODUCTS

2.01 MATERIALS
   A. Low VOC Materials: See Section 01 61 16.

PART 3 EXECUTION

3.01 CONSTRUCTION PROCEDURES
   A. Prevent the absorption of moisture and humidity by adsorptive materials by:
      1. Sequencing the delivery of such materials so that they are not present in the building until wet work is completed and dry.
      2. Delivery and storage of such materials in fully sealed moisture-impermeable packaging.
      3. Provide sufficient ventilation for drying within reasonable time frame.
   B. Begin construction ventilation when building is substantially enclosed.
   C. Do not store construction materials or waste in mechanical or electrical rooms.
   D. Prior to use of return air ductwork without intake filters clean up and remove dust and debris generated by construction activities.
      1. Inspect duct intakes, return air grilles, and terminal units for dust.
      2. Clean plenum spaces, including top sides of lay-in ceilings, outsides of ducts, tops of pipes and conduit.
      3. Clean tops of doors and frames.
      4. Clean mechanical and electrical rooms, including tops of pipes, ducts, and conduit, equipment, and supports.
      5. Clean return plenums of air handling units.
      6. Remove intake filters last, after cleaning is complete.
   E. Do not perform dusty or dirty work after starting use of return air ducts without intake filters.
   F. Use other relevant recommendations of SMACNA (OCC) for avoiding unnecessary contamination due to construction procedures.

END OF SECTION
SECTION 01 61 16
VOLATILE ORGANIC COMPOUND (VOC) CONTENT RESTRICTIONS

PART 1 GENERAL

1.01 SECTION INCLUDES
   A. Requirements for Indoor-Emissions-Restricted products.
   B. Requirements for VOC-Content-Restricted products.
   C. Requirement for installer certification that they did not use any non-compliant products.

1.02 RELATED REQUIREMENTS
   A. Section 01 30 00 - Administrative Requirements: Submittal procedures.
   B. Section 01 40 00 - Quality Requirements: Procedures for testing and certifications.
   C. Section 01 57 19 - Temporary Environmental Controls: Procedures and testing.
   D. Section 07 92 00 - Joint Sealants: Emissions-compliant sealants.

1.03 DEFINITIONS
   A. Indoor-Emissions-Restricted Products: All products in the following product categories, whether specified or not:
      1. Interior paints and coatings applied on site.
      2. Interior adhesives and sealants applied on site, including flooring adhesives.
      3. Flooring.
      5. Products making up wall and ceiling assemblies.
      6. Thermal and acoustical insulation.
      7. Other products when specifically stated in the specifications.
   B. VOC-Content-Restricted Products: All products in the following product categories, whether specified or not:
      1. Interior paints and coatings applied on site.
      2. Interior adhesives and sealants applied on site, including flooring adhesives.
   C. Interior of Building: Anywhere inside the exterior weather barrier.
   D. Adhesives: All gunnable, trowelable, liquid-applied, and aerosol adhesives, whether specified or not; including flooring adhesives, resilient base adhesives, and pipe jointing adhesives.
   E. Sealants: All gunnable, trowelable, and liquid-applied joint sealants and sealant primers, whether specified or not; including firestopping sealants and duct joint sealers.
   F. Inherently Non-Emitting Materials: Products composed wholly of minerals or metals, unless they include organic-based surface coatings, binders, or sealants; and specifically the following:
      1. Concrete.
      2. Clay brick.
      3. Metals that are plated, anodized, or powder-coated.
      4. Glass.
      5. Ceramics.
      6. Solid wood flooring that is unfinished and untreated.

1.04 REFERENCE STANDARDS
E. CARB (ATCM) - Airborne Toxic Control Measure to Reduce Formaldehyde Emissions from Composite Wood Products; California Air Resources Board; current edition.
F. CARB (SCM) - Suggested Control Measure for Architectural Coatings; California Air Resources Board; 2007.
G. CHPS (HPPD) - High Performance Products Database; Current Edition at www.chps.net/.
J. SCAQMD 1113 - South Coast Air Quality Management District Rule No.1113; current edition.
K. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; current edition.
L. SCS (CPD) - SCS Certified Products; current listings at www.scscertified.com.

1.05 SUBMITTALS
A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
B. Product Data: For each VOC-restricted product used in the project, submit evidence of compliance.
C. Installer Certifications Regarding Prohibited Content: Require each installer of any type of product (not just the products for which VOC restrictions are specified) to certify that either 1) no adhesives, joint sealants, paints, coatings, or composite wood or agrifiber products have been used in the installation of installer's products, or 2) that such products used comply with these requirements.

1.06 QUALITY ASSURANCE
A. Indoor Emissions Standard and Test Method: CAL (CDPH SM), using Standard Private Office exposure scenario and the allowable concentrations specified in the method, and range of total VOC's after 14 days.
   1. Wet-Applied Products: State amount applied in mass per surface area.
   2. Paints and Coatings: Test tinted products, not just tinting bases.
   3. Evidence of Compliance: Acceptable types of evidence are the following;
      a. Current UL (GGG) certification.
      b. Current SCS (CPD) Floorscore certification.
      c. Current SCS (CPD) Indoor Advantage Gold certification.
      d. Current listing in CHPS (HPPD) as a low-emitting product.
      e. Current CRI (GLP) certification.
      f. Test report showing compliance and stating exposure scenario used.
   4. Product data submittal showing VOC content is NOT acceptable evidence.
   5. Manufacturer's certification without test report by independent agency is NOT acceptable evidence.
B. VOC Content Test Method: 40 CFR 59, Subpart D (EPA Method 24), or ASTM D3960, unless otherwise indicated.
   1. Evidence of Compliance: Acceptable types of evidence are:
      a. Report of laboratory testing performed in accordance with requirements.
      b. Published product data showing compliance with requirements.
C. Composite Wood Emissions Standard: CARB (ATCM) for ultra-low emitting formaldehyde (ULEF) resins.
   1. Evidence of Compliance: Acceptable types of evidence are:
b. Report of laboratory testing performed in accordance with requirements.
c. Published product data showing compliance with requirements.

D. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

PART 2 PRODUCTS

2.01 MATERIALS

A. All Products: Comply with the most stringent of federal, State, and local requirements, or these specifications.

B. Indoor-Emissions-Restricted Products: Comply with Indoor Emissions Standard and Test Method, except for:
   2. Inherently Non-Emitting Materials.

C. VOC-Content-Restricted Products: VOC content not greater than required by the following:
   4. Paints and Coatings: Each color; most stringent of the following:
      a. 40 CFR 59, Subpart D.
      b. SCAQMD 1113 Rule.
      c. CARB (SCM).

PART 3 EXECUTION

3.01 FIELD QUALITY CONTROL

A. Owner reserves the right to reject non-compliant products, whether installed or not, and require their removal and replacement with compliant products at no extra cost to Owner.

B. Additional costs to restore indoor air quality due to installation of non-compliant products will be borne by Contractor.

END OF SECTION
SECTION 01 70 00
EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL
1.01 SECTION INCLUDES
A. Examination, preparation, and general installation procedures.
B. Cutting and patching.
C. Surveying for laying out the work.
D. Cleaning and protection.
E. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.

1.02 RELATED REQUIREMENTS
A. Section 01 10 00 - Summary: Limitations on working in existing building; continued occupancy; work sequence; identification of salvaged and relocated materials.
B. Section 01 30 00 - Administrative Requirements: Submittals procedures, Electronic document submittal service.
C. Section 01 40 00 - Quality Requirements: Testing and inspection procedures.
D. Section 01 50 00 - Temporary Facilities and Controls: Temporary exterior enclosures.
E. Section 01 57 13 - Temporary Erosion and Sediment Control: Additional erosion and sedimentation control requirements.
F. Section 02 41 00 - Demolition: Demolition of whole structures and parts thereof; site utility demolition.
G. Section 07 84 00 - Firestopping.

1.03 REFERENCE STANDARDS

1.04 SUBMITTALS
A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
B. Survey work: Submit name, address, and telephone number of Surveyor before starting survey work.
   1. On request, submit documentation verifying accuracy of survey work.
   2. Submit a copy of site drawing signed by the Land Surveyor, that the elevations and locations of the work are in conformance with Contract Documents.
   3. Submit surveys and survey logs for the project record.
C. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
   1. Structural integrity of any element of Project.
   2. Integrity of weather exposed or moisture resistant element.
   3. Efficiency, maintenance, or safety of any operational element.
   5. Work of Owner or separate Contractor.

1.05 QUALIFICATIONS
A. For demolition work, employ a firm specializing in the type of work required.
B. For surveying work, employ a land surveyor registered in Arizona and acceptable to Architect. Submit evidence of surveyor's Errors and Omissions insurance coverage in the form of an Insurance Certificate. Employ only individual(s) trained and experienced in collecting and recording accurate data relevant to ongoing construction activities.

1.06 PROJECT CONDITIONS
A. Use of explosives is not permitted.
B. Protect site from puddling or running water.
C. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

1.07 COORDINATION
A. See Section 01 10 00 for occupancy-related requirements.
B. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
C. Notify affected utility companies and comply with their requirements.
D. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
E. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on drawings. Follow routing indicated for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
F. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
G. Coordinate completion and clean-up of work of separate sections.
H. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

PART 2 PRODUCTS
2.01 PATCHING MATERIALS
A. New Materials: As specified in product sections; match existing products and work for patching and extending work.
B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.
C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 60 00 - Product Requirements.

PART 3 EXECUTION
3.01 EXAMINATION
A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
C. Examine and verify specific conditions described in individual specification sections.
D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.
E. Verify that utility services are available, of the correct characteristics, and in the correct locations.
F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION
A. Clean substrate surfaces prior to applying next material or substance.
B. Seal cracks or openings of substrate prior to applying next material or substance.
C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 LAYING OUT THE WORK
A. Verify locations of survey control points prior to starting work.
B. Promptly notify Architect of any discrepancies discovered.
C. Protect survey control points prior to starting site work; preserve permanent reference points during construction.
D. Promptly report to Architect the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.
E. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Architect.
F. Utilize recognized engineering survey practices.
G. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:
   1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
   2. Grid or axis for structures.
   3. Building foundation, column locations, ground floor elevations.
H. Periodically verify layouts by same means.
I. Maintain a complete and accurate log of control and survey work as it progresses.

3.04 GENERAL INSTALLATION REQUIREMENTS
A. In addition to compliance with regulatory requirements, conduct construction operations in compliance with NFPA 241, including applicable recommendations in Appendix A.
B. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
C. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
D. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
E. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
F. Make neat transitions between different surfaces, maintaining texture and appearance.

3.05 CUTTING AND PATCHING
A. Whenever possible, execute the work by methods that avoid cutting or patching.
B. Perform whatever cutting and patching is necessary to:
   1. Complete the work.
   2. Fit products together to integrate with other work.
   3. Provide openings for penetration of mechanical, electrical, and other services.
   4. Match work that has been cut to adjacent work.
   5. Repair areas adjacent to cuts to required condition.
   6. Repair new work damaged by subsequent work.
   7. Remove samples of installed work for testing when requested.
   8. Remove and replace defective and non-conforming work.
C. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.
D. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
E. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

F. Restore work with new products in accordance with requirements of Contract Documents.

G. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

H. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 84 00, to full thickness of the penetrated element.

I. Patching:
   1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
   2. Match color, texture, and appearance.
   3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.06 PROGRESS CLEANING

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.07 PROTECTION OF INSTALLED WORK

A. Protect installed work from damage by construction operations.

B. Provide special protection where specified in individual specification sections.

C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

G. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

3.08 ADJUSTING

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

3.09 FINAL CLEANING

A. Use cleaning materials that are nonhazardous.

B. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.

C. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.

D. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
E. Clean filters of operating equipment.
F. Clean debris from roofs, gutters, downspouts, scuppers, overflow drains, area drains, and drainage systems.
G. Clean site; sweep paved areas, rake clean landscaped surfaces.
H. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.10 CLOSEOUT PROCEDURES

A. Make submittals that are required by governing or other authorities.
   1. Provide copies to Architect and Owner.

B. Accompany Architect on preliminary inspection to determine items to be listed for completion or correction in the Contractor's Correction Punch List for Contractor's Notice of Substantial Completion.

C. Notify Architect when work is considered ready for Architect's Substantial Completion inspection.

D. Submit written certification containing Contractor's Correction Punch List, 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 Substantial Completion inspection.

E. Conduct Substantial Completion inspection and create Final Correction Punch List containing Architect's and Contractor's comprehensive list of items identified to be completed or corrected and submit to Architect.

F. Correct items of work listed in Final Correction Punch List and comply with requirements for access to Owner-occupied areas.

G. Notify Architect when work is considered finally complete and ready for Architect's Substantial Completion final inspection.

H. Complete items of work determined by Architect listed in executed Certificate of Substantial Completion.

END OF SECTION
SECTION 02 41 00
DESTRUCTION

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Selective demolition of existing site elements.
B. Abandonment and removal of existing utilities and utility structures.

1.02 RELATED REQUIREMENTS
A. Section 00 31 00 - Available Project Information: Soils Report, Owner provided.
B. Section 01 10 00 - Summary: Limitations on Contractor's use of site and premises.
C. Section 01 50 00 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.
D. Section 01 57 13 - Temporary Erosion and Sediment Control.
E. Section 01 70 00 - Execution and Closeout Requirements: Project conditions; protection of removed products; temporary bracing and shoring.

1.03 REFERENCE STANDARDS

1.04 SUBMITTALS
A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
B. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

1.05 QUALITY ASSURANCE
A. Demolition Firm Qualifications: Company specializing in the type of work required.
   1. Minimum of five years of documented experience.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION

3.01 SCOPE
A. Remove paving and curbs as required to accomplish new work.
B. Remove utilities as required by their relocation as indicated on the Drawings.
C. Fill excavations, open pits, and holes in ground areas generated as result of removals, using specified fill; compact fill as specified in Soils Report.

3.02 GENERAL PROCEDURES AND PROJECT CONDITIONS
A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
   1. Obtain required permits.
   2. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
   3. Provide, erect, and maintain temporary barriers and security devices.
   4. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
   5. Do not close or obstruct roadways or sidewalks without permit.
6. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.

7. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.

B. Do not begin removal until receipt of notification to proceed from Owner.

C. Protect existing structures and other elements that are not to be removed.
   1. Provide bracing and shoring.
   2. Prevent movement or settlement of adjacent structures.
   3. Stop work immediately if adjacent structures appear to be in danger.

3.03 EXISTING UTILITIES

A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.

B. Protect existing utilities to remain from damage.

C. Do not disrupt public utilities without permit from authority having jurisdiction.

D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.

E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.

F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

3.04 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site.

B. Leave site in clean condition, ready for subsequent work.

C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION
SECTION 03 01 00
MAINTENANCE OF CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Cleaning of existing concrete surfaces.
B. Resurfacing of concrete surfaces having spalled areas and other damage.
C. Repair of deteriorated concrete.
D. Scope of Work: As indicated on the drawings.

1.02 RELATED REQUIREMENTS
A. Section 03 30 00 - Cast-in-Place Concrete: Finishing of concrete surface to tolerance; floating, troweling, and similar operations; curing.

1.03 REFERENCE STANDARDS

1.04 ADMINISTRATIVE REQUIREMENTS
A. Scheduling: Perform blast cleaning only between the hours of 7 am to 10 pm.

1.05 SUBMITTALS
A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
B. Product Data: Indicate product standards, physical and chemical characteristics, technical specifications, limitations, maintenance instructions, and general recommendations regarding each material.

1.06 QUALITY ASSURANCE
A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
B. Cleaner Qualifications: Company specializing in, and with minimum of 3 years of experience in, the type of cleaning specified.
C. Installer Qualifications: Company specializing in performing work of the type specified and with minimum of 3 years of documented experience.

1.07 MOCK-UP(S)
A. Horizontal Surface Repair: Total of 10 foot square area, demonstrating each type of repair.
B. Locate mock-up(s) where directed.
C. Re-work mock-up(s) until satisfactory to Owner.
D. Satisfactory mock-up(s) may remain as part of the work.

1.08 DELIVERY, STORAGE, AND HANDLING
A. Comply with manufacturers' instructions for storage, shelf life limitations, and handling of products.

PART 2 PRODUCTS

2.01 CLEANING MATERIALS
A. Degreaser:
   1. Manufacturers:
      a. ARDEX Engineered Cements: www.ardexamericas.com/#sle..
B. Detergent: Non-ionic detergent.

### 2.02 CEMENTITIOUS PATCHING AND REPAIR MATERIALS

A. Manufacturers:
   1. ARDEX Engineered Cements: www.ardexamericas.com/#sle.

B. Cementitious Pavement Repair Mortar: Fast hardening, flowable; composed of cement, sand, and additives; capable of setting in cold weather conditions without the aid of chloride- or gypsum-based accelerators; in-place material resistant to freeze/thaw conditions.
   1. Dry Material: Complies with ASTM C928/C928M.
   2. Manufacturers:
      a. ARDEX Engineered Cements; ARDEX CD: www.ardexamericas.com/#sle.

### 2.03 ACCESSORIES

A. Anchoring Adhesive: Self-leveling or non-sag as applicable.


C. Sand: ASTM C33/C33M or ASTM C404; uniformly graded, clean.

D. Water: Clean and potable.

### PART 3 EXECUTION

#### 3.01 EXAMINATION

A. Verify that surfaces are ready to receive work.

B. Beginning of installation means acceptance of substrate.

#### 3.02 CLEANING EXISTING CONCRETE

A. Clean concrete surfaces of dirt or other contamination using the gentlest method that is effective.
   1. Try the gentlest method first, then, if not clean enough, use a less gentle method taking care to watch for impending damage.
   2. Clean out cracks and voids using same methods.

B. The following are acceptable cleaning methods, in order from gentlest to less gentle:
   1. Water washing using low-pressure, maximum of 100 psi, and, if necessary, brushes with natural or synthetic bristles.
   2. Increasing the water washing pressure to maximum of 400 psi.
   3. Adding detergent to washing water; with final water rinse to remove residual detergent.
   4. Steam-generated low-pressure hot-water washing.

#### 3.03 CONCRETE SURFACE REPAIR USING CEMENTITIOUS MATERIALS

A. Clean concrete surfaces, cracks, and joints of dirt, laitance, corrosion, and other contamination using method(s) specified above and allow to dry.

B. Apply coating of bonding agent to entire concrete surface to be repaired.

C. Fill voids with cementitious mortar flush with surface.

D. Apply repair mortar by steel trowel to a minimum thickness of 1/4 inch over entire surface, terminating at a vertical change in plane on all sides.

E. Trowel finish to match adjacent concrete surfaces.

END OF SECTION
SECTION 03 30 00  
CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Concrete formwork.
B. Floors and slabs on grade.
C. Concrete reinforcement.
D. Joint devices associated with concrete work.
E. Miscellaneous concrete elements, including equipment pads and light pole bases.
F. Concrete curing.

1.02 RELATED REQUIREMENTS
A. Section 07 92 00 - Joint Sealants: Products and installation for sealants and joint fillers for saw cut joints and isolation joints in slabs.

1.03 REFERENCE STANDARDS
B. ACI 301 - Specifications for Structural Concrete; 2010 (Errata 2012).
C. ACI 302.1R - Guide for Concrete Floor and Slab Construction; 2004 (Errata 2007).
E. ACI 305R - Hot Weather Concreting; 2010.
F. ACI 306R - Cold Weather Concreting; 2010.
G. ACI 308R - Guide to Curing Concrete; 2001 (Reapproved 2008).
H. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; 2011.
S. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2015.


Y. ASTM E1643 - Standard Practice for Selection, Design, Installation and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs; 2011.

Z. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs; 2011.

AA. COE CRD-C 48 - Method of Test for Water Permeability of Concrete; 1992.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Mix Design: Submit proposed concrete mix design.
   1. Indicate proposed mix design complies with requirements of ACI 301, Section 4 - Concrete Mixtures.
   2. Indicate what each mix design is to be used for.
   3. Indicate proposed mix design conforms to fiber reinforcing manufacturer's written recommendations.

1.05 QUALITY ASSURANCE

A. Perform work of this section in accordance with ACI 301 and ACI 318.

B. Follow recommendations of ACI 305R when concreting during hot weather.

C. Follow recommendations of ACI 306R when concreting during cold weather.

1.06 WARRANTY

A. See Section 01 70 00 - Execution and Closeout Requirements, for additional warranty requirements

B. Termite-Resistant Vapor Barrier Sheet: Provide five year manufacturer's limited warranty.

PART 2 PRODUCTS

2.01 FORMWORK

A. Form Materials: Contractor's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.
   1. Form Coating: Release agent that will not adversely affect concrete or interfere with application of coatings.
   2. Form Ties: Cone snap type that will leave no metal within 1-1/2 inches of concrete surface.

2.02 REINFORCEMENT MATERIALS

A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi) unless noted otherwise - See Drawings.
   1. Type: Deformed billet-steel bars.
   2. Finish: Unfinished, unless otherwise indicated.

B. Steel Welded Wire Reinforcement (WWR): Plain type, ASTM A1064/A1064M.
   1. Form: Coiled Rolls.
   2. WWR Style: As indicated on drawings.

C. Reinforcement Accessories:
   1. Tie Wire: Annealed, minimum 16 gage, 0.0508 inch.
2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
3. Provide stainless steel, galvanized, plastic, or plastic coated steel components for placement within 1-1/2 inches of weathering surfaces.

2.03 CONCRETE MATERIALS
A. Cement: ASTM C150, Type II - Moderate Portland type, alkali content not to exceed 0.6%
   1. Acquire cement for entire project from same source.
B. Fine and Coarse Aggregates: ASTM C33/C33M.
   1. Acquire aggregates for entire project from same source.
C. Fly Ash: ASTM C618, Class C or F.
D. Calcined Pozzolan: ASTM C618, Class N.
E. Water: Clean and not detrimental to concrete.
F. Structural Fiber Reinforcement: ASTM C1116/C1116M.
   1. Fiber Type: Alkali-resistant synthetic.
   2. Fiber Length: 0.75 inch, nominal.
   3. Manufacturers:
      d. Substitutions: See Section 01 60 00 - Product Requirements.

2.04 ADMIXTURES
A. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.
B. High Range Water Reducing and Retarding Admixture: ASTM C494/C494M Type G.
C. Waterproofing Admixture: Admixture formulated to reduce permeability to liquid water, with no adverse effect on concrete properties. Located at exterior concrete over interior spaces as indicated on drawings
   1. Admixture Composition: Crystalline, functioning by growth of crystals in capillary pores.
   2. Permeability of Cured Concrete: No measurable leakage when tested in accordance with COE CRD-C 48 at 350 feet of head; provide test reports.
   3. Manufacturers:
      a. Xypex Chemical Corporation; XYPEX Admix C-500: www.xypex.com/#sle.

2.05 ACCESSORY MATERIALS
A. Termite-Resistant Vapor Barrier Sheet: Plastic sheet complying with ASTM E1745, Class C; stated by manufacturer as suitable for installation in contact with soil or granular fill under concrete slabs, and for exclusion of subterranean termites.
   1. Installation: Comply with ASTM E1643.
   2. Accessory Products: Vapor retarder manufacturer's recommended tape, adhesive, prefabricated boots, etc., for sealing seams and penetrations.
   3. Manufacturers:
B. Non-Shrink Cementitious Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
   1. ASTM C1107/C1107M; Grade B.
   2. Minimum Compressive Strength at 28 Days: 7,000 pounds per square inch.
   3. Flowable Products:
d. Sika Grout 212.
e. Substitutions: See Section 01 60 00 - Product Requirements.

2.06 BONDING AND JOINTING PRODUCTS

A. Latex Bonding Agent: Non-redispersable acrylic latex, complying with ASTM C1059/C1059M, Type II.
1. Manufacturers:
   b. Substitutions: See Section 01 60 00 - Product Requirements.

B. Epoxy Bonding System:
1. Complying with ASTM C881/C881M and of Type required for specific application.
2. Manufacturers:
   b. Sika Sikadur 32, Hi-Mod.
   c. Substitutions: See Section 01 60 00 - Product Requirements.

C. Slab Isolation Joint Filler: 1/2 inch thick, height equal to slab thickness, with removable top section that will form 1/2 inch deep sealant pocket after removal.

D. Slab Construction Joint Devices: Combination keyed joint form and screed, galvanized steel, with rectangular or round knockout holes for conduit or rebar to pass through joint form at 6 inches on center; ribbed steel stakes for setting.
1. Provide removable plastic cap strip that forms wedge-shaped joint for sealant installation.
2. Height: To suit slab thickness.

2.07 CURING MATERIALS

A. Evaporation Reducer: Liquid thin-film-forming compound that reduces rapid moisture loss caused by high temperature, low humidity, and high winds; intended for application immediately after concrete placement.
1. Manufacturers:
   a. Dayton Superior Corporation; AquaFilm Concentrate J74: www.daytonsuperior.com/#sle.
   b. Euclid Chemical Company ; EUCOBAR: www.euclidchemical.com/#sle.

B. Curing Compound, Non-dissipating: Liquid, membrane-forming, clear, non-yellowing acrylic; complying with ASTM C309.
2. Gloss: Low.
3. VOC Content: OTC compliant.
4. Manufacturers:

C. Curing and Sealing Compound, High Gloss: Liquid, membrane-forming, clear, non-yellowing acrylic; complying with ASTM C1315 Type 1 Class A.
1. VOC Content: Ozone Transport Commission (OTC) compliant.
2. Manufacturers:
   b. Substitutions: See Section 01 60 00 - Product Requirements.
D. Water: Potable, not detrimental to concrete.

2.08 CONCRETE MIX DESIGN
A. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI 301. See Drawings for concrete strength requirements.
   1. For trial mixtures method, employ independent testing agency acceptable to Architect for preparing and reporting proposed mix designs.
B. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended or required by manufacturer.
C. Fiber Reinforcement: Add to mix at rate of 1.5 pounds per cubic yard, or as recommended by manufacturer for specific project conditions.
D. Normal Weight Concrete:
   1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: As indicated on drawings.
   2. Fly Ash Content: Maximum 25 percent of cementitious materials by weight.
   3. Calcined Pozzolan Content: Maximum 10 percent of cementitious materials by weight.
   4. Water-Cement Ratio used for interior slab on grade construction: 0.4-0.45.
   5. Maximum Slump: 4.5 inches maximum
   6. Use of water reducing admixture, if needed, shall be submitted for approval. Proportion water reducing admixture in accordance with Manufacturer's recommendations. Delivery tickets shall state the amount and kind of admixture.

2.09 MIXING
A. Transit Mixers: Comply with ASTM C94/C94M, option A.
   1. Not more than 90 minutes shall elapse from time water is introduced into the concrete mixture until completion of placement.
   2. Do not add water to mix that has stiffened to increase its workability.
   3. At no time shall concrete mix exceed a bulb thermometer reading of 90 degF or over.
   4. Use ice or other method as reviewed by Architect or Structural Engineer, to keep concrete below 90 degF temperature.

PART 3 EXECUTION
3.01 EXAMINATION
A. Verify lines, levels, and dimensions before proceeding with work of this section.

3.02 PREPARATION
A. Formwork: Comply with requirements of ACI 301. Design and fabricate forms to support all applied loads until concrete is cured, and for easy removal without damage to concrete.
B. Verify that forms are clean and free of rust before applying release agent.
C. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.
D. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning and applying bonding agent in accordance to bonding agent manufacturer's instructions.
   1. Use epoxy bonding system for bonding to damp surfaces, for structural load-bearing applications, and where curing under humid conditions is required.
   2. Use latex bonding agent only for non-load-bearing applications.
E. Interior Slabs on Grade: Install vapor retarder under interior slabs on grade. Lap joints minimum 6 inches. Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions. Repair damaged vapor retarder before covering.
1. For spaces with Exposed Aggregate Concrete Finish: Granular Fill Over Vapor Retarder: Cover vapor retarder with compactible granular fill as shown on the drawings. Do not use sand.

### 3.03 INSTALLING REINFORCEMENT AND OTHER EMBEDDED ITEMS

- **A.** Comply with requirements of ACI 301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.
- **B.** Install welded wire reinforcement in maximum possible lengths, and offset end laps in both directions. Splice laps with tie wire.

### 3.04 PLACING CONCRETE

- **A.** Place concrete in accordance with ACI 304R.
- **B.** Place concrete for floor slabs in accordance with ACI 302.1R.
- **C.** Ensure reinforcement, inserts, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.
- **D.** Place concrete continuously without construction (cold) joints wherever possible; where construction joints are necessary, before next placement prepare joint surface by removing laitance and exposing the sand and sound surface mortar, by sandblasting or high-pressure water jetting.
- **E.** Finish floors level and flat, unless otherwise indicated, within the tolerances specified below.

### 3.05 SLAB JOINTING

- **A.** Locate joints as indicated on the drawings.
- **B.** Anchor joint fillers and devices to prevent movement during concrete placement.
- **C.** Isolation Joints: Use preformed joint filler with removable top section for joint sealant, total height equal to thickness of slab, set flush with top of slab.
- **D.** Saw Cut Contraction Joints: Saw cut joints before concrete begins to cool, within 4 to 12 hours after placing; use 3/16 inch thick blade and cut at least 1 inch deep but not less than one quarter \((1/4)\) the depth of the slab.
- **E.** Construction Joints: Where not otherwise indicated, use metal combination screed and key form, with removable top section for joint sealant.

### 3.06 FLOOR FLATNESS AND LEVELNESS TOLERANCES

- **A.** Maximum Variation of Surface Flatness:
  1. Exposed Concrete Floors: \(1/4\) inch in 10 ft.
  2. Under Seamless Resilient Flooring: \(1/4\) inch in 10 feet.
  3. Floors scheduled to receive thin-set tile applications shall meet \(1/8\) inch in 10 ft tolerance
  4. Under Carpeting: \(1/4\) inch in 10 feet.
- **B.** Correct the slab surface if tolerances are less than specified.
- **C.** Correct defects by grinding or by removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

### 3.07 CONCRETE FINISHING

- **A.** Repair surface defects, including tie holes, immediately after removing formwork.
- **B.** Concrete Slabs: Finish to requirements of ACI 302.1R, and as follows:
  1. Surfaces to Receive Thick Floor Coverings: "Wood float" as described in ACI 302.1R; thick floor coverings include quarry tile, ceramic tile, and Portland cement terrazzo with full bed setting system.
  2. Surfaces to Receive Thin Floor Coverings: "Steel trowel" as described in ACI 302.1R; thin floor coverings include carpeting, resilient flooring, seamless flooring, resinous matrix terrazzo, thin set quarry tile, and thin set ceramic tile.
3. Decorative Exposed Surfaces: Trowel as described in ACI 302.1R; use steel-reinforced plastic trowel blades instead of steel blades to avoid black-burnish marks; decorative exposed surfaces include surfaces to be stained or dyed, pigmented concrete, surfaces to receive liquid hardeners, surfaces to receive dry-shake hardeners, surfaces to be polished, and all other exposed slab surfaces.

C. In areas with floor drains, maintain floor elevation at walls; pitch surfaces uniformly to drains at 1:100 nominal.

3.08 CURING AND PROTECTION

A. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
   1. Normal concrete: Not less than seven days.
   2. High early strength concrete: Not less than four days.

C. Formed Surfaces: Cure by moist curing with forms in place for full curing period.

D. Surfaces Not in Contact with Forms:
   1. Initial Curing: Start as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than three days by water ponding, water-saturated sand, water-fog spray, or saturated burlap.
   2. Final Curing: Begin after initial curing but before surface is dry.

3.09 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests, as specified in Section 01 40 00 - Quality Requirements.
   1. Provide free access to concrete operations at project site and cooperate with appointed firm.
   2. Tests of concrete and concrete materials may be performed at any time to ensure conformance with specified requirements.
   3. Compressive Strength Tests: ASTM C39/C39M, for each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cubic yards or less of each class of concrete placed.
   4. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.
   5. Perform one slump test for each set of test cylinders taken, following procedures of ASTM C143/C143M.
   6. Concrete which does not meet the compressive strength requirement at 28 days will be rejected and removed from the Project, and disposed of in a legal manner.

B. Calcium chloride test requirements:
   1. Two weeks before installation of the ceramic tile, VCT, vinyl, wood, carpet, epoxy flooring and/or other finish flooring systems over the interior concrete slabs, provide calcium chloride test to determine the level of water vapor transmission in the slab.
   2. Conduct testing in accordance with ASTM F1869-04 or ASTM F710-08 (quantitative anhydrous calcium chloride test).
   3. Conduct calcium chloride tests after HVAC system has been in continuous use for 36 hours with a minimum ambient temperature of 72 degrees F. Water vapor transmission levels are directly affected by ambient room temperature and readings conducted without a sustained ambient temperature is NOT acceptable.
   4. Document test results and provide copy to Architect with a marked up floor finish plan showing test results.
   5. Provide a written clarification on status of HVAC system before and during the test and the length of time the ambient air temperature was maintained before the tests.
3.10 DEFECTIVE CONCRETE
   A. Test Results: The testing agency shall report test results in writing to Architect and Contractor within 24 hours of test.
   B. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.

3.11 PROTECTION
   A. Do not permit traffic over unprotected concrete floor surface until fully cured.
   B. Protect finished surfaces from stains or abrasions. Protect surfaces or edges by leaving forms in place or by providing temporary covers. Protect concrete from rain, flowing water or mechanical injury.
   C. Protect floor slabs from the droppings of plaster, paint, dirt, and other marred by covering with polyethylene plastic sheet, or other acceptable floor protection covering, well lapped and sealed.
      1. Where concrete slabs are scheduled to be the finished floor surface, or where slab is treated with a special concrete finish serving as the finished floor surface, provide a continuous covering of 1/2 inch particle board, joints tightly butted and cut to sizes tight to wall construction, over entire floor area over polyethylene plastic sheet, or other acceptable floor protection sheeting. Maintain covering (polyethylene and particleboard) in good condition until danger of damage is past.

END OF SECTION
SECTION 04 05 11
MORTAR AND MASONRY GROUT

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Mortar for masonry.
B. Grout for masonry.

1.02 RELATED REQUIREMENTS
A. Section 04 20 00 - Unit Masonry: Installation of mortar and grout.

1.03 REFERENCE STANDARDS

1.04 SUBMITTALS
A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
B. Product Data: Include design mix and indicate whether the Proportion or Property specification of ASTM C270 is to be used. Also include required environmental conditions and admixture limitations.
C. Reports: Submit reports on mortar indicating conformance of mortar to property requirements of ASTM C270 and test and evaluation reports per ASTM C780.
D. Reports: Submit reports on grout indicating conformance of component grout materials to requirements of ASTM C476 and test and evaluation reports to requirements of ASTM C1019.

1.05 DELIVERY, STORAGE, AND HANDLING
A. Maintain packaged materials clean, dry, and protected against dampness, freezing, and foreign matter.

1.06 FIELD CONDITIONS
A. Temperature: Mortar and grout shall have a temperature between 50 degrees F. and 90 degrees F. while being used.

PART 2 PRODUCTS

2.01 MORTAR AND GROUT APPLICATIONS
A. At Contractor’s option, mortar and grout may be made from factory premixed dry materials with addition of water only or ready-mixed.
B. Mortar Color: Dark Gray unless otherwise indicated.
   1. Exterior, Non-loadbearing Masonry: Type N.
2.02 MATERIALS
   A. Packaged Dry Material for Mortar for Unit Masonry: Premixed Portland cement, hydrated lime, and sand; complying with ASTM C387/C387M and capable of producing mortar of the specified strength in accordance with ASTM C270 with the addition of water only.
      1. Type: Type N.
      3. Water repellent mortar for use with water repellent masonry units.
   B. Packaged Dry Material for Mortar for Repointing: Premixed Portland cement, hydrated lime, and graded sand; capable of producing Type O mortar in accordance with ASTM C270 with the addition of water only.
   C. Packaged Dry Material for Grout for Masonry: Premixed cementitious materials and dried aggregates; capable of producing grout of the specified strength in accordance with ASTM C476 with the addition of water only.
   D. Portland Cement: ASTM C150/C150M.
      1. Type: Type I - Normal; ASTM C150/C150M.
   E. Masonry Cement: ASTM C91/C91M.
      1. Type: Type N; ASTM C91/C91M.
   F. Hydrated Lime: ASTM C207, Type S.
   G. Quicklime: ASTM C5, non-hydraulic type.
   H. Mortar Aggregate: ASTM C144.
   I. Water: Clean and potable.

PART 3 EXECUTION
3.01 PREPARATION
   A. Plug clean-out holes for grouted masonry with brick masonry units. Brace masonry to resist wet grout pressure.

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

3.03 FIELD QUALITY CONTROL
   A. An independent testing agency will perform field tests, in accordance with provisions of Section 01 40 00 - Quality Requirements.
   B. Tests
      1. Frequency: As determined by the Architect based upon total time for construction of masonry with not less than two tests per each level of masonry construction, foundation to roof or floors.
      2. Testing Laboratory: Inspection and testing of mortar and grout will be performed by a testing laboratory in accordance with Section 01410. The testing laboratory, in addition to meeting requirements of ASTM E329, must be an approved laboratory competent to perform cement physical testing.
      3. Distribution of Results of Tests: Within 24 hours of results of tests, copies of the results shall be submitted to the Architect, Contractor, masonry contractor, and the grout supplier if applicable.
   C. Test and evaluate mortar in accordance with ASTM C780 procedures.
1. Proportion Specification (ASTM C270): Field quality control shall be performed by inspection only. In case of dispute, the mortar proportions must be tested in accordance with the Property Specification of ASTM C270.

2. For determining hardened mortar properties, prepare 3 test specimens for each test age and property. A strength test shall be the average of the strengths of the specimens tested at the age specified. Specimens shall be tested at 7 and 28 days.

D. Test and evaluate grout in accordance with ASTM C1019 procedures.

1. Three test specimens shall constitute one sample. A strength test shall be the average of the strengths of the specimen tested at the age specified.

2. Specimens shall be tested at 7 and 28 days.

3. The compression strength will be considered satisfactory if the average of three consecutive tests of the grout is equal to or greater than the specified strength and no individual strength test falls below the specified strength by more than 500 psi.

END OF SECTION
SECTION 04 20 00
UNIT MASONRY

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Concrete Block.
B. Reinforcement and Anchorage.
C. Flashings.
D. Accessories.

1.02 RELATED REQUIREMENTS
A. Section 04 05 11 - Mortar and Masonry Grout.
B. Section 07 92 00 - Joint Sealants: Sealing control and expansion joints.

1.03 REFERENCE STANDARDS
D. ASTM C140/C140M - Standard Test Methods of Sampling and Testing Concrete Masonry Units and Related Units; 2014.
E. ASTM C744 - Standard Specification for Prefaced Concrete and Calcium Silicate Masonry Units; 2014.

1.04 SUBMITTALS
A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

1.05 QUALITY ASSURANCE
A. Comply with provisions of ACI 530/530.1/ERTA, except where exceeded by requirements of the contract documents.
B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING
A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

PART 2 PRODUCTS

2.01 CONCRETE MASONRY UNITS
A. Concrete Block: Comply with referenced standards and as follows:
   1. Size: Standard units with nominal face dimensions of 16 by 8 inches and nominal depth of 8 inches.
   2. Pre-Faced Units: ASTM C90, hollow block, with smooth resinous facing complying with ASTM C744.
      a. Colors and styles: As selected by Architect.
      b. Manufacturers:
         1) Trenwythe Verastone by Oldcastle.

2.02 MORTAR AND GROUT MATERIALS
A. Mortar and Grout: As specified in Section 04 05 11.

2.03 REINFORCEMENT AND ANCHORAGE
A. Manufacturers:

B. Reinforcing Steel: ASTM A615/A615M, Grade 40 (40,000 psi), deformed billet bars; galvanized.

2.04 ACCESSORIES
A. Preformed Control Joints: Rubber material. Provide with corner and tee accessories, fused joints.
   1. Rubber: Extruded, solid section, ASTM D2000 2AA-805 with a durometer hardness of 70 or 80 when tested per ASTM D2240.
B. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.

2.05 SOURCE QUALITY CONTROL
A. Concrete masonry units to be provided for exterior exposed building wall construction shall be tested by manufacturer using a spray bar test as follows:
   1. Testing shall be performed at no additional cost to Owner.
   2. Individual concrete masonry units shall be placed on a rack where water is sprayed at a rate of 140 gallons per hour for a minimum of 4 hours.
   3. Testing shall be made upon concrete masonry units prior to application of post-applied water repellent.
   4. Test results for units regularly manufactured using a standard mix design within the previous 6 months shall be acceptable.
   5. Submit test reports as specified herein under "Submittals."

PART 3 EXECUTION
3.01 EXAMINATION
A. Verify that field conditions are acceptable and are ready to receive masonry.
B. Verify that related items provided under other sections are properly sized and located.
C. Verify that built-in items are in proper location, and ready for roughing into masonry work.
D. Do not use units with chips, cracks, or other defects which might be visible in the finished Work unless otherwise acceptable to the Architect.

3.02 PREPARATION
A. Direct and coordinate placement of metal anchors supplied for installation under other sections.
B. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

3.03 COURSING
A. Workmanship
   1. Provide Custom Level workmanship at exposed masonry and Economy Level at concealed masonry. Both as defined by AMG Standard 107.
   2. Concrete masonry units which will be exposed in the finished work shall be treated as an architectural finish and shall be handled carefully to ensure that chippages do not occur during handling and laying. Handling shall be minimized on the jobsite to eliminate chances for chippage
B. Establish lines, levels, and coursing indicated. Protect from displacement.
C. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
D. Concrete Masonry Units:
   1. Bond: Running.
   2. Coursing: One unit and one mortar joint to equal 8 inches.

3.04 PLACING AND BONDING
A. Lay hollow masonry units with face shell bedding on head and bed joints.
B. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.
C. Remove excess mortar and mortar smears as work progresses.
D. Remove excess mortar with water repellant admixture promptly. Do not use acids, sandblasting or high pressure cleaning methods.
E. Interlock intersections and external corners, except for units laid in stack bond.
F. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
G. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
H. Cut mortar joints flush where wall tile is scheduled or resilient base is scheduled.
I. Isolate masonry partitions from vertical structural framing members with a control joint as indicated.
J. Isolate top joint of masonry partitions from horizontal structural framing members and slabs or decks with compressible joint filler.

3.05 CAVITY MORTAR CONTROL
A. Do not permit mortar to drop or accumulate into cavity air space or to plug weep/cavity vents.

3.06 GROUTED COMPONENTS
A. Install reinforcing of grouted components per Structural Drawings
B. Lap splices minimum 24 bar diameters.
C. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.
D. Place and consolidate grout fill without displacing reinforcing.

3.07 CONTROL AND EXPANSION JOINTS
A. Do not continue horizontal joint reinforcement through control or expansion joints.
B. Install preformed control joint device in continuous lengths. Seal butt and corner joints in accordance with manufacturer's instructions.
C. Size control joints as indicated on drawings; if not indicated, 3/4 inch wide and deep.

3.08 TOLERANCES
A. Maximum Variation from Alignment of Columns: 1/4 inch.
B. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.
C. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.
D. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.
E. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.
F. Maximum Variation of Mortar Joint Thickness: Head joint, minus 1/4 inch, plus 3/8 inch.
G. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.

3.09 PARGING
A. Dampen masonry walls prior to parging.
B. Scarify each parging coat to ensure full bond to subsequent coat.
C. Parge masonry walls in two uniform coats of mortar to a total thickness of 3/4 inch.
D. Steel trowel surface smooth and flat with a maximum surface variation of 1/8 inch per foot.
E. Strike top edge of parging at 45 degrees.
3.10 FIELD QUALITY CONTROL
   A. An independent testing agency will perform field quality control tests, as specified in Section 01 40 00 - Quality Requirements.
   B. Concrete Masonry Unit Tests: Test each variety of concrete unit masonry in accordance with ASTM C140/C140M for conformance to requirements of this specification.

3.11 CLEANING
   A. Remove excess mortar and mortar droppings as work progresses.
   B. Replace defective mortar. Match adjacent work.
   C. Clean soiled surfaces with cleaning solution.
   D. Use non-metallic tools in cleaning operations.

3.12 PROTECTION
   A. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.
   B. Carefully cover tops of walls left incomplete at conclusion of day's Work with tarpaulins or other approved covering.
   C. In hot and dry weather, protect masonry against too rapid drying.

   END OF SECTION
SECTION 05 50 00
METAL FABRICATIONS

PART 1  GENERAL

1.01  SECTION INCLUDES
A. Shop fabricated steel items.
B. Prefabricated ladders and ship ladders.

1.02  RELATED REQUIREMENTS
A. Section 03 30 00 - Cast-in-Place Concrete: Placement of metal fabrications in concrete.

1.03  REFERENCE STANDARDS
C. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2013.
E. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 1999 (Ed. 2004).

1.04  SUBMITTALS
A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

1.05  QUALITY ASSURANCE
A. Design shall be under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in Arizona.

PART 2  PRODUCTS

2.01  MATERIALS - STEEL
A. Steel Sections: ASTM A36/A36M unless noted otherwise per structural drawings.
B. Steel Tubing: ASTM A500/A500M, Grade B cold-formed structural tubing.
C. Plates: ASTM A36.
E. Bolts, Nuts, and Washers: ASTM A307, Grade A, plain unless noted otherwise per structural drawings.
F. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.
G. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
H. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

2.02  FABRICATION
A. Fit and shop assemble items in largest practical sections, for delivery to site.
B. Fabricate items with joints tightly fitted and secured.
C. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
D. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.
2.03 FABRICATED ITEMS
   A. Bollards: Steel pipe, concrete filled, crowned cap, as detailed; prime paint finish.
   B. Joist Hangers: Strap anchors, fabricated with sheet steel, 18 gage, 0.0478 inch minimum base metal thickness; galvanized finish.

2.04 FINISHES - STEEL
   A. Prime paint steel items.
      1. Exceptions: Galvanize items to be embedded in concrete and items to be imbedded in masonry.
   B. Prime Painting: One coat.

2.05 FABRICATION TOLERANCES
   A. Squareness: 1/8 inch maximum difference in diagonal measurements.
   B. Maximum Offset Between Faces: 1/16 inch.
   C. Maximum Misalignment of Adjacent Members: 1/16 inch.
   D. Maximum Bow: 1/8 inch in 48 inches.
   E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

PART 3 EXECUTION
3.01 EXAMINATION
   A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION
   A. Clean and strip primed steel items to bare metal where site welding is required.
   B. Supply setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

3.03 INSTALLATION
   A. Install items plumb and level, accurately fitted, free from distortion or defects.
   B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
   C. Obtain approval prior to site cutting or making adjustments not scheduled.

3.04 TOLERANCES
   A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.
   B. Maximum Offset From True Alignment: 1/4 inch.

END OF SECTION
SECTION 06 10 00
ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Structural dimension lumber framing.
B. Non-structural dimension lumber framing.
C. Rough opening framing for doors, windows, and roof openings.
D. Sheathing.
E. Subflooring.
F. Roof-mounted curbs.
G. Roofing nailers.
H. Preservative treated wood materials.
I. Miscellaneous framing and sheathing.
J. Communications and electrical room mounting boards.
K. Concealed wood blocking, nailers, and supports.

1.02 RELATED REQUIREMENTS

A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
B. Section 03 30 00 - Cast-in-Place Concrete: Setting anchors in concrete.
C. Section 03 54 00 - Cast Underlayment.
D. Section 05 50 00 - Metal Fabrications: Miscellaneous steel connectors and support angles for wood framing.
E. Section 06 17 33 - Wood I-Joists.
F. Section 07 27 26 - Fluid Applied Membrane Air Barriers
G. Section 07 62 00 - SHEET METAL FLASHING AND TRIM: Sill flashings.
H. Section 07 72 00 - Roof Accessories: Prefabricated roof curbs.
I. Section 09 21 16 - GYPSUM BOARD ASSEMBLIES: Gypsum-based sheathing.

1.03 REFERENCE STANDARDS

E. PS 1 - Structural Plywood; 2009.
F. PS 2 - Performance Standard for Wood-Based Structural-Use Panels; 2010.
I. WWPA G-5 - Western Lumber Grading Rules; 2011.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide technical data on wood preservative materials and application instructions.
1.05 QUALITY ASSURANCE

1.06 DELIVERY, STORAGE, AND HANDLING
   A. General: Cover wood products to protect against moisture. Support stacked products to prevent
deformation and to allow air circulation.

1.07 WARRANTY
   A. Correct defective Work within a five year period after Date of Substantial Completion.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS
   A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
      1. Species: Douglas Fir-Larch, unless otherwise indicated.
      2. If no species is specified, provide any species graded by the agency specified; if no
         grading agency is specified, provide lumber graded by any grading agency meeting the
         specified requirements.
      3. Grading Agency: Any grading agency whose rules are approved by the Board of Review,
         American Lumber Standard Committee (www.alsc.org) and who provides grading service
         for the species and grade specified; provide lumber stamped with grade mark unless
         otherwise indicated.
      4. Lumber of other species or grades is acceptable provided structural and appearance
         characteristics are equivalent to or better than products specified.
   B. Lumber fabricated from old growth timber is not permitted.
   C. General Contractor to send notice to all wood supplies per LEED for Homes Credit 2
      Environmentally Preferable Products 2.1

2.02 DIMENSION LUMBER
   A. Grading Agency: Western Wood Products Association; WWPA G-5.
   B. Sizes: Nominal sizes as indicated on drawings, S4S.
   C. Moisture Content: S-dry or MC19.
   D. Stud Framing (2 by 2 through 2 by 6):
      2. Grade: No. 2.
   E. Joist, Rafter, and Small Beam Framing (2 by 6 through 4 by 16):
      1. Lumber greater than 20 square inches, nominally, in cross section shall be composite
         lumber.
      3. Grade: No. 2.
   F. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
      1. Lumber: S4S, No. 2.
      2. Boards: Standard or No. 3.

2.03 CONSTRUCTION PANELS
   A. Subfloor/Underlayment Combination: Any PS 2 type, rated Single Floor.
      3. Performance Category: 1-1/8 PERF CAT.
      4. Edges: Tongue and groove.
   B. Subfloor/Underlayment Combination: Oriented strand board wood structural panel; PS 2, rated
      Single Floor.
   C. Subflooring: Any PS 2 type, rated Sheathing per structural drawings
3. Performance Category: 3/4 PERF CAT.

D. Roof Sheathing: Oriented strand board wood structural panel; PS 2.
   1. Grade: Structural 1 Sheathing.
   2. Bond Classification: Exposure 1.
   3. Performance Category: 5/8 PERF CAT.
   5. Edges: Square.
   6. Exposure Time: Sheathing will not delaminate or require sanding due to moisture absorption from exposure to weather for up to 500 days.
   7. Provide fastening guide on top panel surface with separate markings indicating fastener spacing for 16 inches and 24 inches on center, respectively.
   8. Warranty: Manufacturer’s standard lifetime limited warranty against manufacturing defects and that panels will not delaminate or require sanding due to moisture absorption damage from exposure to weather for up to the stated period.

E. Wall Sheathing: Any PS 2 type per structural drawings.
   2. Grade: Structural I Sheathing.
   4. Performance Category: 1/2 PERF CAT.
   5. Edge Profile: Square edge.

F. Communications and Electrical Room Mounting Boards: PS 1 A-D plywood, or medium density fiberboard; 3/4 inch thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84.

2.04 ACCESSORIES

A. Fasteners and Anchors shall be provided per structural drawings:

B. Sill Gasket on Top of Foundation Wall: 1/4 inch thick, plate width, closed cell plastic foam from continuous rolls.

C. Termite-Resistant Sill Plate Barrier: Self-adhesive, film-backed barrier with release sheet; adheres to concrete substrates and blocks termite access.
   1. Thickness: 68 mils (0.068 inch).
   2. Termite Resistance: 100 percent when tested in accordance with ICC-ES AC380.

D. Subfloor Adhesives: Waterproof, air cure type, cartridge dispensed.
   1. Manufacturers:
      a. Shall Meet VOC requirements per Section 01 61 16
   2. Construction Adhesives:
      a. Shall Meet VOC requirements per Section 01 61 16

E. Nails:
   1. Common wire, galvanized for exterior Work, meeting ASTM F1667 of the sizes indicated on the Drawings.
   2. Ring shank nails shall be used at plywood OSB subflooring.

F. Screws: Standard domestic manufacture, bright steel, except galvanized for exterior use and of brass, bronze, aluminum or stainless steel when used to attach items made of those materials. Screws used for attaching interior trim and finish to drywall partitions shall be Type S self-drilling, self-tapping corrosion resistant coated steel drywall screws of required lengths as specified in Section 09 29 00.
   1. The following screws have been found to resist corrosion when used to fasten preservative treated wood. The new Alkaline Copper Quaternary (ACQ) has been found to be more corrosive to metal fasteners.
2. Screws used for attaching preservative treated wood shall be Type S self-drilling, self-tapping corrosion resistant coated steel screws. Acceptable products include the following:
   a. DEC-KING Exterior Wood Screw with Climacoat.
   b. Tapcon Concrete Anchor with Blue Climaseal or White UltraShield.
   c. Wood-To-Metal TEKS with Grey Spex.
   d. Roofgrip with Spex or Blue Climaseal.
   e. GY-FAST Nail with Climacoat.
   f. Maxi-Set Tapcon White UltraShield.

G. Bolts: Standard mild steel, square head machine bolts with square nuts and malleable iron or steel plate washers or carriage bolts with square nuts and cut washers as indicated. Bolts, nuts and washers, wholly or partially exposed on exterior shall be galvanized.

H. Structural Bolts: Machine bolts, or carriage bolts, of structural grade steel with square nuts, conforming to ASTM A307.

I. Steel plates and angles: ASTM A36, galvanized after fabrication.


K. Framing anchors and joist hangers: Simpson Company products or similar devices as approved by Structural Engineer through Architect and noted on Drawings.

L. Power driven inserts: Ramset, or as approved by Structural Engineer through Architect meeting FS GGG-D-777a. Install as per manufacturer's printed directions. Charge shall be powerful enough to prevent spalling of concrete.

M. Air Barrier: As specified in Section 07 27 26.

2.05 FACTORY WOOD TREATMENT

A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
   1. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.

B. Preservative Treatment:
   1. Chromated copper arsenate (CCA) shall not be allowed.
   2. Provide ammoniacal copper quaternary (ACQ) or copper boron azole (CBA) as produced by the following manufacturers:
      a. Manufacturers:
         4) Substitutions: See Section 01 60 00 - Product Requirements.
      a. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
      b. Treat lumber in contact with roofing, flashing, or waterproofing.
      c. Treat lumber in contact with masonry or concrete.
      d. Treat lumber other locations as required by code.
PART 3 EXECUTION

3.01 PREPARATION
   A. Install sill gasket under sill plate of framed walls bearing on foundations; puncture gasket cleanly to fit tightly around protruding anchor bolts.
   B. Coordinate installation of rough carpentry members specified in other sections.

3.02 INSTALLATION - GENERAL
   A. Select material sizes to minimize waste.
   B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.
   C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.03 FRAMING INSTALLATION
   A. Set structural members level, plumb, and true to line. Discard pieces with defects that would lower required strength or result in unacceptable appearance of exposed members.
   B. Coordination: Install wood framing making proper provisions for Work of other trades. Cut wood required to accommodate plumbing, heating and ventilating, electrical and other trades. Fit neatly around exposed items, as outlet boxes, conduit, pipes and ducts. Protect adjacent Work. Before proceeding with rigid sheathing, make certain required inspections have been made by Building Official.
   C. Structural Members: No cutting, notching or drilling without prior approval of the Structural Engineer through the Architect.
   D. Wood Backing: Provide wood backing, furring, stripping or blocking indicated or required for installation and attachment of work of other trades. Provide fire-proofed wood backing approved by Building Official where required by Code in noncombustible or fire-rated construction.
   E. Connections: Subdrill where necessary to avoid splitting.
   F. Bolts: Drill bolt holes 1/32 inch (0.8mm) larger than bolt diameter. Use square plate or malleable iron washers under heads and nut where they bear against wood. Re-tighten bolts immediately prior to concealing with finish materials. Re-tighten exposed bolts immediately prior to final inspection by Building Official.
   G. Lag Screws and Screws: Subdrill, use square plate or malleable iron washer under lag screw heads when they bear on wood.
   H. Exterior base plates or sills resting on concrete: Bed in cement mortar to obtain a continuous bearing. Mortar shall consist of one part cement to three parts sand. Mix mortar in small quantities so that it can be used promptly. Size plates or sills and set level and true to line. Bolt down with bolts of size, length and spacing indicated with a bolt not more than 9 inches from the end of any piece.
   I. Rough framing: Fit closely, set accurately to required lines and levels, and secure rigidly in place. Set horizontal and inclined members with crown edge up. Reinforce cut members as directed by Structural Engineer through Architect. Bolt, nail and spike in a thorough manner with not less than the sizes and quantities indicated or specified. Structural members shall provide full contact at bearing surfaces.
   J. Studs: Wall and partitions shall be nominal 2x4 (50mm x 100mm) and 2x6 (50mm x 150mm) studs 16 inches (400mm) on center unless otherwise noted or unless they are required to be larger to accommodate mechanical or electrical equipment, piping and fixtures or fixtures or equipment of any other Trade. Unless otherwise detailed, panels, valve covers, cleanouts, devices, access doors, recessed cabinet boxes, etc., shall be mounted flush with the adjacent wall surface. When any such item is of a depth where it is not practical to use solid studding to the full thickness of the wall, then the wall shall be furred. When furring is required, it shall
extend the full width and from floor to roof or ceiling joists. The studs comprising interior
partitions and the wall material affixed thereto shall extend from floor to roof or ceiling joist
framing except as shown. Staggered stud walls shall be constructed where shown on plans and
as detailed.

K. Top plates in bearing partitions: Shall be doubled and lapped at each intersection with walls or
partitions. Stagger joints in upper and lower members of top plate not less than 4 feet.

L. Provide blocking not less than 2 inches (50mm) in thickness of same width as stud as follows:
1. Stud partitions or walls more than 8 feet (2400mm), but not more than 14 feet in (4280mm)
   height: One row of blocking fitted snugly and nailed into mid-height of stud.
2. Walls or partitions over 14 feet (4280mm) in height: 2 or more rows of blocking. Locate
   rows of blocking so that in no case will the distance between sole or top plates and
   blocking or between lines of blocking exceed 8 feet(1200mm).
3. Provide solid fire blocking at ceiling line at dropped ceilings.

M. Make provisions for temporary construction loads, and provide temporary bracing sufficient to
maintain structure in true alignment and safe condition until completion of erection and
installation of permanent bracing.

N. Install structural members full length without splices unless otherwise specifically detailed.

O. Comply with member sizes, spacing, and configurations indicated, and fastener size and
spacing indicated, but not less than required by applicable codes and AWC (WFCM) Wood
Frame Construction Manual.

P. Construct double joist headers at floor and ceiling openings and under wall stud partitions that
are parallel to floor joists; use metal joist hangers unless otherwise detailed.

Q. Frame wall openings with two or more studs at each jamb; support headers on cripple studs.

R. At roofs: Provide crickets, cants, equipment curbs, wood saddles, cant strips, curbs for plywood
at parapet walls; other miscellaneous backing, blocking, curbing, and wood nailers bolted to
tops of concrete or masonry and at expansion joints, as specified or required.

3.04 BLOCKING, NAILERS, AND SUPPORTS

A. Provide framing and blocking members as indicated or as required to support finishes, fixtures,
specialty items, and trim.

B. In framed assemblies that have concealed spaces, provide solid wood fireblocking as required
by applicable local code, to close concealed draft openings between floors and between top
story and roof/attic space; other material acceptable to code authorities may be used in lieu of
solid wood blocking.

C. In walls, provide 2x12 blocking attached to studs as backing and support for wall-mounted
items, unless item can be securely fastened to two or more studs or other method of support is
explicitly indicated.

D. Where ceiling-mounting is indicated, provide blocking and supplementary supports above
ceiling, unless other method of support is explicitly indicated.

E. Provide the following specific non-structural framing and blocking:
1. Cabinets and shelf supports.
2. Wall brackets.
3. Handrails.
4. Grab bars.
5. Towel and bath accessories.
6. Wall-mounted door stops.
7. Joints of rigid wall coverings that occur between studs.

3.05 ROOF-RELATED CARPENTRY

A. Coordinate installation of roofing carpentry with deck construction, framing of roof openings, and
roofing assembly installation.
B. Provide redwood curb at all roof openings except where prefabricated curbs are specified and where specifically indicated otherwise. Form corners by alternating lapping side members.

3.06 INSTALLATION OF CONSTRUCTION PANELS

A. Subflooring/Underlayment Combination: Glue and nail to framing; staples are not permitted.
B. Subflooring: Glue and nail to framing; staples are not permitted.
C. Wall Sheathing: Secure with long dimension perpendicular to wall studs, with ends over firm bearing and staggered, using nails, screws, or staples.
D. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches on center on all edges and into studs in field of board.
   1. Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
   2. Install adjacent boards without gaps.
   3. Size and Location: As indicated on drawings.

3.07 SITE APPLIED WOOD TREATMENT

A. Apply preservative treatment compatible with factory applied treatment at site-sawn cuts, complying with manufacturer's instructions.
B. Allow preservative to dry prior to erecting members.

3.08 TOLERANCES

A. Framing Members: 1/4 inch from true position, maximum.
B. Variation from Plane (Other than Floors): 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

3.09 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

3.10 CLEANING

A. Do not leave any wood, shavings, sawdust, etc. on the ground or buried in fill.
B. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION
SECTION 06 17 53
SHOP-FABRICATED WOOD TRUSSES

PART 1 GENERAL

1.01 SECTION INCLUDES
   A. Shop fabricated wood trusses for roof and floor framing.
   B. Bridging, bracing, and anchorage.
   C. Preservative treatment of wood.

1.02 RELATED REQUIREMENTS
   A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
   B. Section 06 10 00 - Rough Carpentry: Installation requirements for miscellaneous framing.
   C. Section 06 10 00 - Rough Carpentry: Material requirements for blocking, bridging, plates, and miscellaneous framing.

1.03 REFERENCE STANDARDS
   A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015.

1.04 SUBMITTALS
   A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
   B. Product Data: Manufacturer's data sheets on plate connectors, bearing plates, and metal bracing components.
   C. Shop Drawings: Show truss configurations, sizes, spacing, size and type of plate connectors, cambers, framed openings, bearing and anchor details, and bridging and bracing conforming with the design load and deflection criteria shown on the Drawings.
      1. Include identification of engineering software used for design.
      2. Provide shop drawings stamped or sealed by design engineer.

1.05 QUALITY ASSURANCE
   A. Design: Trusses shall conform with applicable provisions of the following:
      1. NDS-85 for lumber.
      2. TPI-85 for criteria.
      3. IBC for code compliance.
   C. Designer Qualifications: Perform design by or under direct supervision of a Professional Engineer experienced in design of this Work and licensed in Arizona.

1.06 DELIVERY, STORAGE, AND HANDLING
   A. Handle and erect trusses in accordance with TPI BCSI 1.
   B. Store trusses in vertical position resting on bearing ends.
PART 2 PRODUCTS

2.01 TRUSSES

A. Wood Trusses: Designed and fabricated in accordance with TPI 1 and TPI DSB-89 to achieve structural requirements indicated on Structural Drawings.

2.02 MATERIALS

A. Lumber:
   1. Moisture Content: Between 7 and 9 percent.
   2. Lumber fabricated from old growth timber is not permitted.

B. Steel Connectors: Hot-dipped galvanized steel sheet, ASTM A653/A653M Structural Steel (SS) Grade 33/230, with G90/Z275 coating; die stamped with integral teeth; thickness as indicated.

C. Truss Bridging: Type, size and spacing recommended by truss manufacturer.

2.03 ACCESSORIES

A. Wood Blocking, Bridging, Plates, and Miscellaneous Framing: Softwood lumber, any species, construction grade, 19 percent maximum and 7 percent minimum moisture content.

B. Fasteners: Electrogalvanized steel, type to suit application.

C. Bearing Plates: Electrogalvanized steel.

2.04 WOOD TREATMENT

A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.

B. Preservative Pressure Treatment of Lumber: AWPA U1, Use Category UC3B, Commodity Specification A using waterborne preservative to 0.25 lb/cu ft retention.
   1. Kiln dry after treatment to maximum moisture content of 19 percent.

C. Preservative Pressure Treatment of Plywood: AWPA U1, Use Category UC3B using waterborne preservative to 0.25 lb/cu ft retention.
   1. Kiln dry plywood after treatment to maximum moisture content of 19 percent.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that supports and openings are ready to receive trusses.

3.02 PREPARATION

A. Coordinate placement of bearing items.

3.03 ERECTION

A. Install trusses in accordance with manufacturer's instructions and TPI DSB-89 and TPI BCSI 1; maintain a copy of each TPI document on site until installation is complete.

B. Set members level and plumb, in correct position.

C. Make provisions for erection loads, and for sufficient temporary bracing to maintain structure plumb, and in true alignment until completion of erection and installation of permanent bracing.

D. Do not field cut or alter structural members without approval of Architect.

E. Install permanent bridging and bracing.

F. Install headers and supports to frame openings required.

G. Frame openings between trusses with lumber in accordance with Section 06 10 00.

H. Coordinate placement of decking with work of this section.

I. After erection, touch-up primed surfaces with primer consistent with shop coat.
3.04 TOLERANCES

A. Framing Members: 1/2 inch maximum, from true position.

END OF SECTION
SECTION 06 18 00
GLUED-LAMINATED CONSTRUCTION

PART 1  GENERAL

1.01  SECTION INCLUDES
A. Glue laminated wood beams, purlins, and columns.
B. Preservative treatment of wood.
C. Steel hardware and attachment brackets.

1.02  RELATED REQUIREMENTS
A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

1.03  REFERENCE STANDARDS
F. RIS (GR) - Standard Specifications for Grades of California Redwood Lumber; 2000.

1.04  SUBMITTALS
A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
B. Shop Drawings: Indicate framing system, sizes and spacing of members, loads and cambers, bearing and anchor details, bridging and bracing, framed openings.

1.05  DELIVERY, STORAGE, AND HANDLING
A. Protect members to AITC requirements for individually wrapped for architectural grade members.
B. Leave individual wrapping in place until finishing occurs.

PART 2  PRODUCTS

2.01  MANUFACTURERS
A. Glued-Laminated Structural Units:
   1. Substitutions: See Section 00 63 25.

2.02  GLUED-LAMINATED UNITS
A. Glued-Laminated Units: Fabricate in accordance with AITC 117 Industrial grade.
   1. Verify dimensions and site conditions prior to fabrication.
   2. Cut and fit members accurately to length to achieve tight joint fit.
   3. Fabricate member with camber built in.
   4. Do not splice or join members in locations other than those indicated without permission.
   5. Fabricate steel hardware and connections with joints neatly fitted, welded, and ground smooth.
   6. Welding: Perform welding in accordance with AWS D1.1/D1.1M.
   7. After end trimming, seal with penetrating sealer in accordance with AITC requirements.

2.03  MATERIALS
A. Lumber: Softwood lumber conforming to RIS (GR) grading rules with 12 percent maximum moisture content before fabrication. Design for the following values:
   1. Lumber fabricated from old growth timber is not permitted.
B. Steel Connections and Brackets: ASTM A36/A36M weldable quality, galvanize per ASTM A123/A123M.
C. Laminating Adhesive: Tested for wet/exterior service in accordance with ASTM D2559.

2.04 WOOD TREATMENT
A. Factory-Treated Lumber: Comply with requirements of AWPA U1 - Use Category System for pressure impregnated wood treatments determined by use categories, expected service conditions, and specific applications.
B. Preservative Pressure Treatment:
   1. Manufacturers:
   2. Preservative Pressure Treatment of Glued-Laminated Structural Units: AWPA U1, Use Category UC3B, Commodity Specification F using waterborne preservative to 0.25 lb/cu ft retention.
      a. Kiln dry lumber after treatment and before lamination to maximum moisture content of 19 percent.

2.05 FABRICATION
A. Fabricate glue laminated structural members in accordance with AITC Industrial grade where concealed. Use Architectural Grade where members are exposed to view. Protect beams from damage during installation.
B. Verify dimensions and site conditions prior to fabrication.
C. Cut and fit members accurately to length to achieve tight joint fit.
D. Fabricate member with camber built in (beams only).
E. Do not splice or join members in locations other than those indicated without permission.
F. Fabricate steel hardware and connections with joints neatly fitted, welded, and ground smooth.
G. After end trimming, seal with penetrating sealer in accordance with AITC requirements.

PART 3 EXECUTION
3.01 EXAMINATION
A. Verify that supports are ready to receive units.
B. Verify sufficient end bearing area.

3.02 PREPARATION
A. Coordinate placement of bearing items.

3.03 ERECTION
A. Lift members using protective straps to prevent visible damage.
B. Set structural members level and plumb, in correct positions or sloped where indicated.
C. Provide temporary bracing and anchorage to hold members in place until permanently secured.
D. Fit members together accurately without trimming, cutting, splicing, or other unauthorized modification.

END OF SECTION
SECTION 06 20 00
FINISH CARPENTRY

PART 1  GENERAL

1.01  SECTION INCLUDES
A. Finish carpentry items.
B. Wood door frames.
C. Wood casings and moldings.
D. Hardware and attachment accessories.

1.02  RELATED REQUIREMENTS
A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
B. Section 06 10 00 - Rough Carpentry: Support framing, grounds, and concealed blocking.
C. Section 06 41 00 - Architectural Wood Casework: Shop fabricated custom cabinet work.
D. Section 08 14 16 - Flush Wood Doors.
E. Section 09 91 00 - Painting.

1.03  REFERENCE STANDARDS
A. ANSI A135.4 - American National Standard for Basic Hardboard; 2012.
C. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014.
E. BHMA A156.9 - American National Standard for Cabinet Hardware; 2010.
G. PS 1 - Structural Plywood; 2009.

1.04  SUBMITTALS
A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
B. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
   1. Scale of Drawings: 1-1/2 inch to 1 foot, minimum.
   2. Provide the information required by AWI/AWMAC/WI (AWS).
C. Samples: When requested by Architect, submit two samples of each species of exposed wood to receive transparent finish at the site. Samples shall be 12 inches by 12 inches in size.

1.05  QUALITY ASSURANCE
A. Applicable Standard: Perform work in accordance with AWI "Architectural Woodwork Standards".
   1. Provide Custom Grade when not otherwise indicated.
   2. Affix Quality Grade Stamp to each unit of product (e.g. each case; each panel; each bundle of trim, etc.).
B. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.

1.06  DELIVERY, STORAGE, AND HANDLING
A. Protect work from moisture damage.

PART 2  PRODUCTS

2.01  FINISH CARPENTRY ITEMS
A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS), unless noted otherwise.
B. Interior Woodwork Items:
   1. Moldings, Bases, Casings, and Miscellaneous Trim: MDF or clear white pine; prepare for paint finish.
   2. Stairs, Balustrades, and Handrails: Clear fir; prepare for stained finish.
   3. Loose Shelving: Birch plywood; prepare for paint finish.

2.02 WOOD-BASED COMPONENTS
A. Wood fabricated from old growth timber is not permitted.
B. Provide sustainably harvested wood, certified or labeled as specified in Section 01 60 00 - Product Requirements.

2.03 LUMBER MATERIALS
A. Softwood Lumber: Douglas Fir species, plain sawn, maximum moisture content of 6-8 percent; with flat grain, of quality suitable for transparent finish.
B. Hardwood Lumber: white birch species, to match doors sawn, maximum moisture content of 6 percent; with vertical grain, of quality suitable for transparent finish.
C. Grounds, Blocking and Furring Strips: #2 White Pine, construction grade Douglas Fir or other sound softwood. Fire treated lumber as required by codes or construction type.

2.04 SHEET MATERIALS
A. Softwood Plywood, Not Exposed to View: Any face species, medium density fiberboard core; PS 1 Grade A-B, glue type as recommended for application.
B. Softwood Plywood Exposed to View: Face species as indicated, rotary cut, medium density fiberboard core; PS 1 Grade A-B, glue type as recommended for application.
C. Hardwood Plywood: Face species as indicated, cut as indicated, match as indicated on drawings, medium density fiberboard core; HPVA HP-1, Front Face Grade AA, Back Face Grade 1; glue type as recommended for application.
D. Particleboard: ANSI A208.1; Composed of wood chips, sawdust, or flakes of medium density, made with waterproof resin binders; of grade to suit application; sanded faces.
E. Hardboard: ANSI A135.4; Pressed wood fiber with resin binder, Class 1 - Tempered, 1/4 inch thick, smooth one side (S1S).

2.05 FASTENINGS
A. Adhesive for Purposes Other Than Laminate Installation: Suitable for the purpose; not containing formaldehyde or other volatile organic compounds.
B. Fasteners: Of size and type to suit application; galvanized finish in concealed locations and stainless steel finish in exposed locations.

2.06 ACCESSORIES
A. Shelving: Melamine-coated Particle board with rounded edges.
C. Shelf Standards and Supports: Knape and Vogt #255 and #256, or #87 and #187. White Finish unless otherwise noted on drawings.
D. Base, Moldings and Trim: Medium Density Fiberboard (MDF): Medite II (or Medite FR as applicable) as manufactured by SierraPine, Roseville, CA, 800-676-3339 www.sierrapine.com, complying with the following:
   1. Fabricate from 90% pre-consumer wood residuals
   2. Fabricate without formaldehyde.
   3. Use only in dry locations.
E. Primer: Alkyd primer sealer.
F. Wood Filler: Water base, tinted to match surface finish color.
2.07 HARDWARE
   A. Hardware: Comply with BHMA A156.9.

2.08 WOOD TREATMENT
   A. Factory-Treated Lumber: Comply with requirements of AWPA U1 - Use Category System for pressure impregnated wood treatments determined by use categories, expected service conditions, and specific applications.
   B. Wood Preservative by Pressure Treatment (PT Type): Provide AWPA U1 treatment using waterborne preservative with 0.25 percent retainage.
   C. Redry wood after pressure treatment to maximum _____ percent moisture content.

2.09 FABRICATION
   A. Shop assemble work for delivery to site, permitting passage through building openings.
   B. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

2.10 SHOP FINISHING
   A. Sand work smooth and set exposed nails and screws.
   B. Apply wood filler in exposed nail and screw indentations.
   C. On items to receive transparent finishes, use wood filler that matches surrounding surfaces and is of type recommended for the applicable finish.
   D. Finish work in accordance with AWI/AWMAC/WI (AWS), Section 5 - Finishing for grade specified and as follows:
      1. Transparent:
         b. Sheen: Satin.
      2. Opaque:
         a. System - 9, UV Curable, Acrylated Epoxy, Polyester or Urethane.
         b. Color: As selected by Architect.
         c. Sheen: Satin.

PART 3 EXECUTION
3.01 EXAMINATION
   A. Verify adequacy of backing and support framing.
   B. Verify mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work.

3.02 INSTALLATION
   A. Install work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade indicated.
   B. Set and secure materials and components in place, plumb and level.
   C. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.

3.03 PREPARATION FOR SITE FINISHING
   A. Set exposed fasteners. Apply wood filler in exposed fastener indentations. Sand work smooth.
   B. Before installation, prime paint surfaces of items or assemblies to be in contact with cementitious materials.

3.04 TOLERANCES
   A. Maximum Variation from True Position: 1/16 inch.
B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch.

END OF SECTION
SECTION 06 41 00
ARCHITECTURAL WOOD CASEWORK

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Specially fabricated cabinet units.
B. Cabinet hardware.
C. Factory finishing.
D. Preparation for installing utilities.

1.02 RELATED REQUIREMENTS
A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
B. Section 06 10 00 - Rough Carpentry: Support framing, grounds, and concealed blocking.
C. Section 08 80 00 - Glazing: Glass for casework.
D. Section 12 36 00 - Countertops.

1.03 REFERENCE STANDARDS
A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014.
B. BHMA A156.9 - American National Standard for Cabinet Hardware; 2010.
C. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

1.04 SUBMITTALS
A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
B. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
   1. Scale of Drawings: 1-1/2 inch to 1 foot, minimum.
   2. Provide the information required by AWI/AWMAC/WI (AWS).
C. Samples: Submit actual samples of architectural cabinet construction, minimum 12 inches square, illustrating proposed cabinet, countertop, and shelf unit substrate and finish.
D. Samples: Submit actual sample items of proposed pulls, hinges, shelf standards, and locksets, demonstrating hardware design, quality, and finish.

1.05 QUALITY ASSURANCE
A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.
   1. Accredited participant in the specified certification program prior to the commencement of fabrication and throughout the duration of the project.
B. Quality Certification:
   1. Provide labels or certificates indicating that the installed work complies with AWI/AWMAC/WI (AWS) requirements for grade or grades specified.
   2. Provide designated labels on shop drawings as required by certification program.
   3. Provide designated labels on installed products as required by certification program.
   4. Submit certifications upon completion of installation that verifies this work is in compliance with specified requirements.
   5. Replace, repair, or rework all work for which certification is refused.

1.06 MOCK-UP
A. Provide mock-up of typical base cabinet and wall cabinet, including hardware, finishes, and plumbing accessories.
B. Locate where directed.
C. Mock-up may remain as part of the Work.
1.07 DELIVERY, STORAGE, AND HANDLING
   A. Protect units from moisture damage.

1.08 FIELD CONDITIONS
   A. During and after installation of custom cabinets, maintain temperature and humidity conditions in building spaces at same levels planned for occupancy.

PART 2 PRODUCTS

2.01 CABINETS
   A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS), unless noted otherwise.
   B. Plastic Laminate Faced Cabinets: Custom grade.

2.02 WOOD-BASED COMPONENTS
   A. Wood fabricated from old growth timber is not permitted.
   B. Provide sustainably harvested wood, certified or labeled as specified in Section 01 60 00.

2.03 LAMINATE MATERIALS
   A. Manufacturers:
   B. High Pressure Decorative Laminate (HPDL): NEMA LD 3, types as recommended for specific applications.

2.04 COUNTERTOPS
   A. Countertops are specified in Section 12 36 00.

2.05 ACCESSORIES
   A. Adhesive: Type recommended by fabricator to suit application.
   B. Fasteners: Size and type to suit application.
   C. Bolts, Nuts, Washers, Lags, Pins, and Screws: Of size and type to suit application; galvanized or chrome-plated finish in concealed locations and stainless steel or chrome-plated finish in exposed locations.
   D. Concealed Joint Fasteners: Threaded steel.

2.06 HARDWARE
   A. Hardware: BHMA A156.9, types as recommended by fabricator for quality grade specified. Match Hardware specified in 12 32 13, Manufactured Casework.

2.07 FABRICATION
   A. Assembly: Shop assemble cabinets for delivery to site in units easily handled and to permit passage through building openings.
   B. Edging: Fit shelves, doors, and exposed edges with specified edging. Do not use more than one piece for any single length.
   C. Fitting: When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide matching trim for scribing and site cutting.
   D. Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel arises. Locate counter butt joints minimum 2 feet from sink cut-outs.
   E. Provide cutouts for plumbing fixtures. Verify locations of cutouts from on-site dimensions. Prime paint cut edges.
PART 3 EXECUTION

3.01 EXAMINATION
   A. Verify adequacy of backing and support framing.

3.02 INSTALLATION
   A. Install work in accordance with AWI/AWMAC/WI (AWS) requirements for grade indicated.
   B. Set and secure custom cabinets in place, assuring that they are rigid, plumb, and level.
   C. Use fixture attachments in concealed locations for wall mounted components.
   D. Use concealed joint fasteners to align and secure adjoining cabinet units.
   E. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim for this purpose.
   F. Secure cabinets to floor using appropriate angles and anchorages.
   G. Countersink anchorage devices at exposed locations. Conceal with solid wood plugs of species to match surrounding wood; finish flush with surrounding surfaces.
   H. Site glaze glass materials using the Interior Dry method specified in Section 08 80 00.

3.03 ADJUSTING
   A. Adjust installed work.
   B. Adjust moving or operating parts to function smoothly and correctly.

3.04 CLEANING
   A. Clean casework, counters, shelves, hardware, fittings, and fixtures.

END OF SECTION
SECTION 06 83 16
FIBERGLASS REINFORCED PANELING

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Fiberglass reinforced plastic panels.
B. Trim.

1.02 RELATED SECTIONS
A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

1.03 REFERENCE STANDARDS

1.04 SUBMITTALS
A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.
C. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. Extra Panels: Quantity equal to 10 percent of total installed.

PART 2 PRODUCTS

2.01 MANUFACTURERS
A. Fiberglass Reinforced Plastic Panels:

2.02 PANEL SYSTEMS
A. Wall Panels:
   1. Panel Size: 4 by 8 feet.
   2. Panel Thickness: 0.10 inch.
   5. Attachment Method: Adhesive only, sealant joints, no trim.

2.03 MATERIALS
A. Panels: Fiberglass reinforced plastic (FRP), complying with ASTM D5319.
   1. Surface Burning Characteristics: Maximum flame spread index of 25 and smoke developed index of 450; when system tested in accordance with ASTM E84.
   2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
   3. Scratch Resistance: Barcol hardness score greater than 35, when tested in accordance with ASTM D2583.
   4. Impact Strength: Greater than 6 ft lb force per inch, when tested in accordance with ASTM D256.
B. Trim: Aluminum; color coordinating with panel.
C. Adhesive: Type recommended by panel manufacturer.
D. Sealant: Type recommended by panel manufacturer; white.

PART 3 EXECUTION

3.01 EXAMINATION
A. Verify existing conditions and substrate flatness before starting work.
B. Verify that substrate conditions are ready to receive the work of this section.

3.02 INSTALLATION - WALLS
A. Install panels in accordance with manufacturer's instructions.
B. Cut and drill panels with carbide tipped saw blades, drill bits, or snips.
C. Apply adhesive to the back side of the panel using trowel as recommended by adhesive manufacturer.
D. Apply panels to wall with seams plumb and pattern aligned with adjoining panels.
E. Install panels with manufacturer's recommended gap for panel field and corner joints.
F. Place trim on panel before fastening edges, as required.
G. Fill channels in trim with sealant before attaching to panel.
H. Install trim with adhesive and screws or nails, as required.
I. Seal gaps at floor, ceiling, and between panels with applicable sealant to prevent moisture intrusion.
J. Remove excess sealant after paneling is installed and prior to curing.

END OF SECTION
SECTION 07 21 00
THERMAL INSULATION

PART 1 GENERAL
1.01 SECTION INCLUDES
A. Board insulation at over roof sheathing and exterior wall behind Stucco wall finish.
B. Batt insulation in exterior wall, ceiling, and roof construction.
C. Batt insulation for filling perimeter window and door shim spaces and crevices in exterior wall and roof.

1.02 RELATED REQUIREMENTS
A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
B. Section 03 30 00 - Cast-in-Place Concrete: Field-applied termiticide for concrete slabs and foundations.
C. Section 06 10 00 - Rough Carpentry: Supporting construction for batt insulation.
D. Section 07 27 26 - Fluid Applied Membrane Air Barriers.
E. Section 07 84 00 - Firestopping: Insulation as part of fire-rated through-penetration assemblies.
F. Section 09 21 16 - GYPSUM BOARD ASSEMBLIES: Acoustic insulation inside walls and partitions.

1.03 REFERENCE STANDARDS

1.04 SUBMITTALS
A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.
C. ABAA Field Quality Control Submittals: Submit third-party reports of testing and inspection required by ABAA QAP.
D. ABAA Manufacturer Qualification: Submit documentation of current evaluation of proposed manufacturer and materials.
E. ABAA Installer Qualification: Submit documentation of current contractor accreditation and current installer certification. Keep copies of contractor accreditation and installer certification on site during and after installation. Present on-site documentation upon request.

1.05 QUALITY ASSURANCE
A. Air Barrier Association of America (ABAA) Quality Assurance Program (QAP); www.airbarrier.org/#sle:
   1. Installer Qualification: Use accredited contractor, certified installers, evaluated materials, and third-party field quality control audit.
   2. Manufacturer Qualification: Use evaluated materials from a single manufacturer regularly engaged in air barrier material manufacture. Use secondary materials approved in writing by primary material manufacturer.
1.06 FIELD CONDITIONS
   A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS
   A. Furnish products of one of the following Manufacturers, except as approved by the Architect, subject to compliance with Specification requirements:
      1. Batt and Blanket Insulation:
         a. Johns-Manville  www.jm.com
         b. Owens-Corning Fiberglas Corp.  www.owenscorning.com
         c. Certainteed  www.certainteed.com
      2. Board Insulation:
         a. The Dow Chemical Co.  www.dow.com/styrofoam/na/
         b. Amoco Foam Products Co.  www.bp.com
         c. UCI

2.02 APPLICATIONS
   A. Insulation Over Wood Stud Framed Walls, Continuous: Extruded polystyrene board.
   B. Insulation in Wood Framed Walls: Batt insulation with separate vapor retarder.
   C. Insulation in Wood Framed Ceiling Structure: Batt insulation with separate vapor retarder.
   D. Insulation Over Roof Deck: Polyisocyanurate board.

2.03 FOAM BOARD INSULATION MATERIALS
   A. Extruded Polystyrene (XPS) Board Insulation: Complies with ASTM C578 with either natural skin or cut cell surfaces.
      1. Type: ASTM C578, Type IV.
      2. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.
      3. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
      4. Type and Thermal Resistance, R-value: Type IV, 5.0 (0.88) per 1 inch thickness at 75 degrees F mean temperature.
   B. Polyisocyanurate (ISO) Board Insulation with Facers Both Sides: Rigid cellular foam, complying with ASTM C1289.
      1. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.
      2. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
      3. Board Thickness: 2 inch.

2.04 BATT INSULATION MATERIALS
   A. Where batt insulation is indicated, either glass fiber or mineral fiber batt insulation may be used, at Contractor's option.
   B. Glass Fiber Batt Insulation: Flexible preformed batt or blanket, complying with ASTM C665; friction fit.
      1. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
      2. Smoke Developed Index: 50 or less, when tested in accordance with ASTM E84.
      3. Combustibility: Non-combustible, when tested in accordance with ASTM E136, except for facing, if any.
      5. GREENGUARD Indoor Air Quality Certified
      7. Thickness: 5.5 inch at walls.
      9. Manufacturers:
c. Owens Corning Corporation; EcoTouch PINK FIBERGLAS Insulation: www.ocbuildingspec.com/#sle.

2.05 ACCESSORIES
A. Air Barrier: Specified in Section 07 27 26.
B. Tape: Reinforced polyethylene film with acrylic pressure sensitive adhesive.
   1. Application: Sealing of interior circular penetrations, such as pipes or cables.
   2. Width: Required for application.
C. Insulation Fasteners: Impaling clip of unfinished steel with washer retainer and clips, to be adhered to surface to receive insulation, length to suit insulation thickness and substrate, capable of securely and rigidly fastening insulation in place.
D. Nails or Staples: Steel wire; electroplated or galvanized; type and size to suit application.

PART 3 EXECUTION

3.01 EXAMINATION
A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.
B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

3.02 BOARD INSTALLATION AT EXTERIOR WALLS
A. Install boards horizontally on walls.
B. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

3.03 BOARD INSTALLATION OVER LOW SLOPE ROOF DECK
A. Installation of board insulation over low slope roof deck as specified in Section 07 54 13.
B. Board Installation Over Roof Deck, General:
   1. See applicable roofing specification section for specific board installation requirements.
   2. Fasten insulation to deck in accordance with roofing manufacturer’s written instructions and applicable Factory Mutual requirements.
   3. Do not apply more insulation than can be covered with roofing in same day.

3.04 BATT INSTALLATION
A. Install insulation and vapor retarder in accordance with manufacturer’s instructions.
B. Install in exterior wall and roof spaces WITHOUT GAPS OR VOIDS. Do NOT compress insulation.
C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.
D. Fit insulation tightly in cavities and tightly to exterior side of mechanical and electrical services within the plane of the insulation.
E. At wood framing, place vapor retarder on warm side of insulation by stapling at 6 inches on center. Lap and seal sheet retarder joints over member face.
F. Tape seal tears or cuts in vapor retarder.
G. Extend vapor retarder tightly to full perimeter of adjacent window and door frames and other items interrupting the plane of the membrane. Tape seal in place.

3.05 FIELD QUALITY CONTROL
A. See Section 01 40 00 - Quality Requirements, for additional requirements.
B. Coordination of Air Barrier Association of America (ABAA) Tests and Inspections:
   1. Provide testing and inspection required by ABAA Quality Assurance Program (QAP).
2. Notify in ABAA writing of schedule for air barrier work, and allow adequate time for testing and inspection.
3. Cooperate with ABAA testing agency.
4. Allow access to air barrier work areas and staging.
5. Do not cover air barrier work until tested, inspected, and accepted.

3.06 PROTECTION
   A. Do not permit installed insulation to be damaged prior to its concealment.

END OF SECTION
SECTION 07 27 26
FLUID-APPLIED MEMBRANE AIR BARRIERS

PART 1 - GENERAL

1.01 SUMMARY
A. Section Includes:
   1. Window and door flashing, air and water-resistive barrier membrane system, and
      accessory materials for application to exterior building envelope substrates as indicated on
      the drawings.
B. Related Requirements:
   1. Section 01 30 00- Submittal Procedures.
   2. Section 01 40 00- Testing Laboratory Services.
   3. Section 03 54 00- Cast Underlayment.

1.02 REFERENCES
A. The date of the standard is that in effect as the date of receipt of bids for the project.
B. ASTM International (ASTM):

1.03 ADMINISTRATIVE REQUIREMENTS
A. Pre-Installation Meeting: Convene before the start of installation of air and water-resistive barrier
   system.
   1. Require attendance of parties directly affecting work of this Section, including the Owner’s
      Representative, Contractor, Architect, installing subcontractor, membrane system
      manufacturer’s representative, roofing and foundation waterproofing subcontractors, and
      all subcontractors who have materials penetrating membrane system or finishes covering
      membrane system.
   2. Contractor shall notify Architect at least seven days prior to time for conference.
   3. Contractor shall record minutes of meeting and distribute to attending parties.
   4. Review the following:
      a. Surface preparation.
      b. Substrate condition and pretreatment.
      c. Minimum curing period.
      d. Special details and sheet flashing.
      e. Sequence of construction, responsibilities, and schedule for subsequent operations.
      f. Installation procedures.
      g. Inspection procedures.
      h. Protection and repair procedures.
      i. Review and approval of all glazing applications.

1.04 PERFORMANCE REQUIREMENTS
A. Performance requirements: Comply with the specified performance requirements and
   characteristics as herein specified.
B. Performance description:
   1. The building envelope shall be constructed with a continuous, air and water-resistive
      barrier to control air leakage, avoid condensation in the interior wall assembly and prevent
      water intrusion.
   2. Joints, penetrations and paths of water and air infiltration shall be made watertight and
      airtight.
   3. System shall be capable of withstanding positive and negative combined wind, stack and
      HVAC pressures on the envelope without damage or displacement.
   4. System shall be installed in an airtight and flexible manner, allowing for the relative
      movement of systems due to thermal and moisture variations.

1.05 SUBMITTALS
A. Product data:
1. Submit manufacturer’s product data and installation guidelines, including membrane and accessory material types, technical and test data, composition, descriptions and properties, installation instructions and substrate preparation requirements.

B. Certificates:
   1. Certificates by manufacturer stating that manufacturer and installer meet qualifications as herein specified.

C. VOC Certification: Submit certification that products furnished comply with regulations controlling use of volatile organic compounds (VOC).

1.06 QUALITY ASSURANCE

A. Applicable standards, as referenced herein: ASTM International (ASTM).

B. Manufacturer’s qualifications: Air and water-resistant barrier systems shall be manufactured and marketed by a company with a minimum of five (5) years' experience in the production and sales of air and water-resistant barrier system. Manufacturers proposed for use, but not named in these specifications, shall submit evidence of ability to meet all requirements specified, and include a list of projects of similar design and complexity completed within the past five years.

C. Installer’s qualifications: The installer shall demonstrate qualifications to perform the work of this section by submitting the following:
   1. Verification that the installer completed SWR Institute’s Validated Air Barrier Training and is approved to perform work as herein specified by air and water-resistive barrier system manufacturer.
   2. List of at least three (3) projects completed of similar scope and complexity to this project carried out by the firm and site supervisor.

D. Inspection and testing: Cooperate and coordinate with the Owner's inspection and testing agency. Do not cover installed products or assemblies until they have been inspected, tested and approved.

E. Sole source: Obtain materials within the scope of this specification from a single manufacturer.

F. Regulations: Provide products which comply with all state and local regulations controlling use of volatile organic compounds (VOC).

G. Mock-up:
   1. Prior to installation of the weather and air barrier system a field-constructed mock-up shall be applied to verify details and tie-ins, to demonstrate the required installation.
      a. Construct a typical exterior wall section, 8 feet long and 8 feet wide, incorporating back-up wall, cladding, window, door frame, sill, penetrations, insulation, flashing and any other critical junction.
      b. Allow 72 hours for inspection and testing of mock-up before proceeding with weather and air barrier work.
      c. Coordinate construction of mockups to permit inspection by Architect of air barrier before beginning installation.
      d. Approved, undamaged mock-up must remain as part of the work.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials and products in labeled packages. Store and handle in strict compliance with manufacturer's instructions and recommendations. Protect from damage, weather, excessive temperatures and construction operations. Remove damaged material from site and dispose of in accordance with applicable regulations.

B. Protect air and water-resistant barrier components from freezing and extreme heat.

C. Sequence deliveries to avoid delays, and to minimize on-site storage.

1.08 FIELD CONDITIONS

A. Environmental limitations:
   1. Comply with manufacturer’s written instructions for substrate temperature and moisture content and other conditions affecting performance requirements.
B. Weather conditions:
1. Perform work only when existing and forecasted weather conditions are within the limits established by the manufacturer of the materials used.

C. Proceed with installation only when the substrate construction and preparation work are complete and in condition to receive the membrane system.

D. Do not apply to frozen substrate. Allow adequate time for substrate to thaw, if freezing conditions exist before application.

1.09 WARRANTY
A. Manufacturer's warranty requirements:
1. Submit manufacturer’s 5 year limited warranty stating:
   a. The products have been tested in accordance with national standards for air and water-resistant barriers and passed those tests with effectiveness and durability indicating their suitability for performance as an air and water-resistant barrier system when properly applied.
   b. The products shall be free from defects in material for a period of five years after the substantial completion of the material application.
   c. That the products will not disintegrate and will maintain their integrity over the life of the warranty.

B. Warranty period: Five (5) years from Date of Substantial Completion.

PART 2 - PRODUCTS
2.01 MANUFACTURERS
A. Substitutions: In accordance with Section 00 63 25 - Substitution Request Form.

2.02 MATERIALS
A. Fluid applied air and water-resistant barrier that stops air and water leakage in cavity wall, masonry veneer construction, as well as in stucco, EIFS and most other building wall assemblies.

2.03 PRODUCT: PROSOCO R-GUARD SPRAY WRAP MVP, MANUFACTURED BY PROSOCO, INC., LAWRENCE, KS, (800) 255-4255, WWW.PROSOCO.COM.
A. Subject to compliance with the following physical and performance requirements:
   1. ICC-ES AC 212 Acceptance Criteria for Water-Resistive Coatings Used as Water-Resistive Barriers Over Exterior Sheathing.
   2. ABAA: Air Barrier Association of America Acceptance Criteria for Liquid Applied Membranes.
   3. Comply with national, state and district AIM VOC regulations and less than 30 grams per Liter.
   4. Water vapor transmission: 25 perms when tested in accordance with ASTM E96 (Wet Cup).
   5. Tensile bond: Minimum 15 psi or exceeds strength of substrate when tested in accordance with ASTM C297.
   6. Surface Burning Characteristics: Class A Building Material, when tested in accordance with ASTM E84. Flame Spread: Equal or less than 25, Smoke Developed: Equal or less than 450.
   8. Fluid applied air and water-resistant barrier that combines silicone and polyurethane properties. Single component, Silyl-Terminated-Polymer (STP) that is roller applied to produce a highly durable, seamless, elastomeric weatherproofing membrane on exterior sheathing, CMU back-up walls, and pre-cast concrete. Prevents water and air penetration of the building envelope in weather up to 155 mph winds of a Category 5 hurricane.
B. Subject to compliance with the following physical and performance requirements:
1. Living Building Challenge 2.0/2.1/3.0/3.1 Red List.
2. ICC-ES AC 212 Acceptance Criteria for Water-Resistive Coatings Used as Water Resistant Barriers Over Exterior Sheathing.
4. Comply with national, state and district AIM VOC regulations and less than 30 grams per Liter.
5. Air Leakage of Air Barrier Assemblies: Less than or equal to 0.04 cfm per square foot at 1.57 psf (less than or equal to 0.2 liters s·sq.m. at 75 Pa) when tested in accordance with ASTM E2357.
6. Air Permeance: Less than or equal to 0.004 cfm per square foot (Less than or equal to 0.02 L/s/sq m) when tested in accordance with ASTM E2178.
7. Water vapor transmission: 18 perms when tested in accordance with ASTM E96 (Wet Cup).
8. Total solids: 99 percent.

2.04 FLUID-APPLIED AIR AND WATER-RESISTIVE VAPOR BARRIER THAT STOPS AIR AND WATER LEAKAGE IN CAVITY WALL, MASONRY VENEER CONSTRUCTION, AS WELL AS IN STUCCO, EIFS, AND MOST OTHER BUILDING WALL ASSEMBLIES.

1. Subject to compliance with the following physical and performance requirements:
   a. Comply with national, state and district AIM VOC: less than 50 grams per Liter.
   b. Air Leakage of Air Barrier Assemblies: Less than or equal to 0.04 cfm per square foot at 1.57 psf (less than or equal to 0.2 liters s·sq.m. at 75 Pa) when tested in accordance with ASTM E2357.
   c. Air permeance: Less than or equal to 0.004 cfm per square foot (Less than or equal to 0.02 L/s/sq m) when tested in accordance with ASTM E2178.
   d. Water vapor transmission: 0.063 perms when tested in accordance with ASTM E96 (Dry Cup).
   e. Surface Burning Characteristics: Class A Building Material, when tested in accordance with ASTM E84. Flame Spread: Equal or less than 25, Smoke Developed: Equal or less than 450.
   f. Water resistance: No water infiltration after exposure to 55 cm head of water for 5 (five) hours when tested in accordance with ICC-ES AC 212 AATCC 127.
   g. Fastener sealability: No water infiltration when tested in accordance with ASTM D1970.
   h. Total solids: 62.5 percent.

2.05 LIQUID APPLIED FILL COAT AND SEAM FILLER

A. High modulus, gun-grade, crack and joint filler, adhesive and detailing compound that combines the best silicone and polyurethane properties. The single-component, Silyl-Terminated-Polymer (STP) prepares open joints, seams and cracks before installing primary water and air barrier system to prevent the movement of water and air through building envelopes.
2. Subject to compliance with the following physical and performance requirements:
   a. Living Building Challenge 2.0/2.1/3.0/3.1 Red List.
   b. Comply with national, state and district AIM VOC regulations and be 30 g/L or less.
   c. Water vapor transmission: Minimum 19 perms at 20 mils when tested in accordance with ASTM E-96.
   d. Tensile strength: 70 psi when tested in accordance with ASTM D412.
   e. Elongation at break: Greater than 180 percent when tested in accordance with ASTM D412.
f. Peel strength: Greater than 25 pli when tested in accordance with ASTM D1781.  
g. Total solids: 99 percent.

2.06 **PRODUCT: PROSOCO R-GUARD FASTFLASH MANUFACTURED BY PROSOCO, INC., LAWRENCE, KS, (800) 255-4255, WWW.PROSOCO.COM.**

A. Subject to compliance with the following physical and performance requirements:
   1. Living Building Challenge 2.0/2.1/3.0/3.1 Red List.
   2. AAMA 714-12 Voluntary Specification for Liquid-Applied Flashing Used to Create a Water-Resistive Seal Around Exterior Wall Openings in Buildings.
   3. ICC-ES AC 212 Acceptance Criteria for Water-Resistive Coatings Used as Water-Resistive Barriers Over Exterior Sheathing.
   4. Comply with national, state and district AIM VOC regulations and be 30 g/L or less.
   5. Water vapor transmission: 21 perms when tested in accordance with ASTM E96.
   6. Tensile strength: Greater than 150 psi when tested in accordance with ASTM D412.
   7. Elongation at break: Greater than 350 percent when tested in accordance with ASTM D412.

2.07 **LIQUID-APPLIED FLASHING AND DETAILING MEMBRANE**

A. Gun-grade, spread and tool or roller apply waterproofing, adhesive and detailing compound that combines the best of silicone and polyurethane properties. The single component, Silyl-Terminated-Polymer (STP) produces a highly durable, seamless, elastomeric should treat joints, seams, cracks and provide the flashing membrane in rough openings of structural walls and to counter-flash waterproofing and air barrier components.


2. Subject to compliance with the following physical and performance requirements:
   a. Living Building Challenge 2.0/2.1/3.0/3.1 Red List.
   b. AAMA 714-12 Voluntary Specification for Liquid-Applied Flashing Used to Create a Water-Resistive Seal Around Exterior Wall Openings in Buildings.
   c. ICC-ES AC 212 Acceptance Criteria for Water-Resistive Coatings Used as Water-Resistive Barriers Over Exterior Sheathing.
   d. Comply with national, state and district AIM VOC regulations and be 30 g/L or less.
   e. Water vapor transmission: 21 perms when tested in accordance with ASTM E96.
   f. Tensile strength: Greater than 150 psi when tested in accordance with ASTM D412.
   g. Elongation at break: Greater than 350 percent when tested in accordance with ASTM D412.
   h. Total Solids: 99 percent.
   i. INTERIOR SEALANT FOR WINDOWS AND DOORS

3. High performance, gun-grade waterproofing sealant that combines the silicone and polyurethane properties. Single component, Silyl-Terminated-Polymer (STP) that is that is durable, and stops the movement of moist air through cracks surrounding windows and doors.


4. Subject to compliance with the following physical and performance requirements:
   a. Living Building Challenge 2.0/2.1/3.0/3.1 Red List.
   b. Comply with national, state and district AIM VOC: less than 30 grams per Liter.
   c. Sealant Validation from Sealant Waterproofing & Restoration Institute (SWRI).
   d. Elongation at break: Greater than 1000% when tested in accordance with ASTM D412.
   e. Peel strength: 25 pli when tested in accordance with ASTM C794
   f. Total solids: 98 percent.
5. Backer rod: In deep joints, control sealant depth by installing closed cell backer rod. Diameter of the soft-backer rod should be 25 percent greater than the joint width. Do not puncture backer rod.

2.08 PREFORMED SILICONE SEALANT EXTRUSION

A. Manufacturer’s standard system consisting of pre-cured low modulus elastomeric extrusion that provides a continuous transition and bridges [windows and doors frames at curtain wall] [storefront] [expansion joints] [skylights] [roof] to air barrier materials. Provide continuous Preformed Silicone Sealant Extrusion System that is flexible, durable, designed for high dynamic and thermal movement which is resistant to ultraviolet exposure and weathering.


2. Subject to compliance with the following physical and performance requirements:
   a. Elongation: Minimum 400 percent when tested in accordance to ASTM D412.
   b. Joint Movement Capacity: Minimum 200 percent elongation and minimum 75% compression per ASTM C1518 (ASTM C1523).
   c. Tensile Strength: Minimum 700 psi when tested in accordance with ASTM D412.
   d. Tear Strength: Minimum 200 lb/in when tested in accordance with ASTM D624.
   e. Tear Propagation: Pass testing requirements of ASTM C1518 (ASTM C1523). Movement Class shall exceed 200 percent Elongation and a Tear Class of PT (Knotty Tear).
   f. Shore Hardness A: 50 to 65 when tested in accordance with ASTM D2240.
   g. UV Resistance: No degradation of material when exposed to UV.

PART 3 - EXECUTION

3.01 EXAMINATION AND SURFACE PREPARATION

A. Examine conditions for compliance with system manufacturer’s requirements for installation, and other specific conditions affecting performance of air barrier system.

B. All surfaces must be sound, clean and free of surface oxidation, grease, dirt, excess mortar or other contaminants detrimental to application. Fill or bridge damaged surfaces, voids or gaps larger than one-inch. Fill voids and gaps measuring one-inch or less with liquid applied fill coat and seam filler as necessary to ensure continuity.

1. Surfaces to receive primary fluid applied air and water barrier must be dry or damp, unless approved by air barrier manufacturer. Surfaces to receive (STP) fluid applied accessories must be dry, damp or wet to the touch. Brush away any standing water present before application. STP products will tolerate rain immediately after application.

2. Refer to manufacturer’s product data sheets for requirements for condition of and preparation of substrates.
   a. Surfaces shall be sound and free of voids, spalled areas, loose aggregate and sharp protrusions.
   b. Remove contaminants such as grease, oil and wax from exposed surfaces.
   c. Remove dust, dirt, loose stone and debris.
   d. Use repair materials and methods that are acceptable to manufacturer of the air and water-resistive barrier system.
   e. Refer to manufacturer’s product data sheets and manufacturer’s installation guidelines for additional information on preparing structural walls to receive the primary air and water resistive barrier.

3.02 EXTERIOR SHEATHING:

A. Ensure that sheathing is properly installed with ends, corners and edges properly fastened. Remove and replace damaged sheathing.

B. Mechanical fasteners used to secure sheathing boards or penetrate sheathing boards shall be set flush with sheathing, and spot overdriven fasteners with liquid applied fill coat and seam filler.
C. Seal the cut edges of gypsum wall boards exposed in rough openings for windows and doors at
corners, as recommended by manufacturer.

3.03 FIBER REINFORCED FILL COAT AND SEAM FILLER
   A. General: Comply with weather and air barrier manufacturer’s installation instructions,
temperature limitations, product data and shop drawings.
   B. Apply liquid applied fill coat and seam filler for seams, joints, cracks, gaps, primed rough
gypsum edges at sheathing, rough openings per manufacturer’s written instructions.

3.04 LIQUID APPLIED FLASHING AT WINDOWS, DOORS, OPENINGS AND PENETRATIONS
   A. General: Comply with weather and air barrier manufacturer’s installation instructions,
temperature limitations, product data and shop drawings.
   B. Apply liquid flashing membrane over surfaces to seal and waterproof rough openings per
manufacturer’s written instructions. Spread the wet product to create an opaque, monolithic
flash membrane which surrounds the rough opening and extends 4 to 6 inches over the face
of the structural wall. Apply additional coats as needed to achieve void- and pinhole-free
surface.

3.05 FLUID-APPLIED AIR & WATER-RESISTIVE BARRIER INSTALLATION
   A. General: Comply with weather and air barrier manufacturer’s installation instructions,
temperature limitations, product data and shop drawings.
   B. Apply air and water-resistive barrier to a clean, dry substrate within temperature and weather
limitations per manufacturer’s written instructions.
      1. Apply to recommended thickness.
      2. Allow product to cure and dry.
      3. Inspect membrane before covering. Repair any punctures or damaged areas by applying
additional material.
      4. Back roll as necessary to ensure there are no pinholes, voids or gaps in the membrane.
      5. Apply fluid applied air and water-resistive barrier per manufacturer’s recommendations.

3.06 FLUID-APPLIED FLASHING TRANSITIONS
   A. General: Comply with weather and air barrier manufacturer’s installation instructions,
temperature limitations, product data and shop drawings.
   B. Apply fiber reinforced fill coat and seam filler and liquid flashing membrane as a liquid flashing
membrane to waterproof the transitions in rough opening and between dissimilar materials per
manufacturer’s written instructions.
      1. Fill any voids between the top of the flashing leg and the vertical wall with fiber reinforced
fill coat and seam filler.
      2. Spread the wet liquid flashing membrane to create a monolithic “cap-flash” flashing
membrane per manufacturer’s written instructions.
      3. Apply additional coats as needed to achieve void- and pinhole-free surface.
      4. Allow treated surfaces to skin before installing other wall assembly, waterproofing or air
barrier components.
      5. Apply preformed silicone sealant extrusion to provide a continuous airtight and water-tight
seal between material frame and substrate per manufacturer’s written instructions.
a. Embed material in bead of liquid flashing membrane per manufacturer’s written
   instructions.

3.07 INTERIOR SEALANT FOR WINDOWS AND DOORS INSTALLATION
   A. General: Comply with weather and air barrier manufacturer’s installation instructions,
temperature limitations, product data and shop drawings.
   B. Apply interior waterproofing sealant per manufacturer’s written instructions.
1. Install Backer rod: Compressible, closed cell rod stock as recommended by manufacturer for compatibility with sealant. Install Backer Rod as necessary per manufacturer’s written instructions.
2. Apply interior waterproofing sealant in continuous beads without gaps or air pockets.

END OF SECTION
SECTION 07 42 13
METAL WALL PANELS

PART 1 GENERAL
1.01 SECTION INCLUDES
   A. Concealed fastener single-skin metal wall panels
   B. Accessories including fasteners, perimeter trim and penetration treatments.

1.02 REFERENCES
   A. ASTM International
      2. ASTM A653; Standard Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc Iron Alloy Coated (Galvannealed) by the Hot Dip Process.
      3. ASTM A666; Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
      5. ASTM B209; Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
      7. ASTM C645; Standard Test Method for Nonstructural Steel Framing Members.
      8. ASTM D2244; Standard practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates
      9. ASTM D4214; Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films
      10. ASTM E283; Standard Test Method for determining Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors under Specified Pressure Differences across the Specimen.
   B. German Institute for Standardization (DIN)
      1. DIN EN988; Specifications for zinc and zinc alloy rolled flat products for building.
      2. DIN EN1179; Zinc and Zinc alloys – Primary Zinc.

1.03 SUBMITTALS
   A. Product Data: Submit manufacturer current technical literature for each type of product.
   B. Shop Drawings - Submit detailed drawings showing:
      1. Profile
      2. Gauge of panel
      3. Location, layout and dimensions of panels
      4. Location and type of fasteners
      5. Shape and method of attachment of all trim
      6. Locations and type of sealants
      7. Installation sequence.
      8. Other details as may be required for a weathertight installation
   C. Samples: Provide nominal 3 x 5 inch of each color indicated. Provide panel width by 10 inches long minimum
   D. LEED Submittals:
      1. Material and Resources (MR)
a. Product Certificates for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content.

E. Quality Assurance Submittals
   1. Design Data, Test Reports: Provide manufacturer test reports indicating product compliance with requirements.
   2. Manufacturer Erection Instructions: Provide manufacturer’s written installation instructions including proper material storage, material handling, installation sequence, panel location(s), and attachment methods, details and required trim and accessories.

F. Closeout Submittals
   1. Refer to Section 01 78 00 Closeout Submittals

1.04 ADMINISTRATIVE REQUIREMENTS

A. Pre-installation meeting: Conduct a pre-installation meeting at the job site attended by Owner, Architect, Manufacturer’s Technical Representative, Panel Installer, and Contractors of related trades. Coordinate structural support requirements in relation to wall panel system, installation of any separate air/water barriers, treatment of fenestration, and other requirements specific to the project.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer shall have a minimum of ten (10) years experience in the production of metal wall panels. Manufacturer shall demonstrate past experience with examples of projects of similar type and exposure.

B. Installer Qualifications: Installer shall be authorized by the manufacturer and the work shall be supervised by a person having successfully completed a manufacturer training seminar regarding proper installation of the specified product.

1.06 DELIVERY, STORAGE AND HANDLING

A. Deliver panel materials and components in manufacturer’s original, unopened, undamaged packaging with identification labels intact.

B. Store wall panel materials on dry, level, firm, and clean surface. Elevate one end of bundle to allow moisture run-off, cover and ventilate to allow air to circulate and moisture to escape.

1.07 WARRANTY

A. Refer to Section 01 78 36 Warranties

B. Material Warranty: Standard form in which manufacturer agrees to repair or replace items that fail in materials or workmanship within specified warranty period. The items covered by the warranty include structural performance and finish performance.
   1. Warranty Period: Two (2) years from date of Substantial Completion.

C. Finish Warranty: Standard form in which manufacturer agrees to repair or replace metal panels that evidence deterioration of fluoropolymer finish, including flaking or peeling from approved primed metal substrate, chalk in excess of 8 when tested in accordance with ASTM D4214, Method A, and/or color fading in excess of 5 ??E Hunter units on panels when tested in accordance with ASTM D2244.
   1. Warranty Period: Twenty (20) years from date Substantial Completion, or 20 years and 3 months from the date of shipment from manufacturer’s plant, whichever occurs first.

PART 2 PRODUCTS

2.01 MANUFACTURER

A. Morin; a Kingspan Group Company; 685 Middle Street, Bristol, Connecticut 06010-8416; 1-800-640-9501 (Toll Free); (www.morincorp.com).

B. Basis of Design: “Morin Matrix Series Wall Panels”.

C. Substitution Limitations:
1. Submit written request for approval of substitutions to the Architect [a minimum of [14] days prior to the date for receipt of bids] [Insert time period]. Include the following information:
   a. Name of the materials and description of the proposed substitute.
   b. Drawings, cut sheets, performance and test data.
   c. List of projects similar scope and photographs of existing installations.
   d. Other information necessary for evaluation.
   e. After evaluation by Architect, approval will be issued via addendum. No verbal approval will be given.
   f. Substitutions following award of contract are not allowed except as stipulated in Division 01 – General Requirements.

2.02 PERFORMANCE CRITERIA
   A. Structural Performance: Provide metal wall panel systems designed to resist the following loads. Testing shall be done based on ASTM E1592:
      1. Wind Loads: Determine loads based on the following minimum design wind pressures:
         a. Uniform pressure as indicated on Drawings.
      1) Deflection Limits: Metal wall panel assemblies shall withstand horizontal deflections no greater than L/240 of the span.
   B. Water Penetration under Static Pressure: Provide metal wall panel systems designed to resist penetration of water under static pressure. Testing shall be based on ASTM E331. Wall panels when tested shall have no water leakage at 6 pounds per square foot.
   C. Air Infiltration: Provide metal wall panel assemblies designed to resist air infiltration. Testing shall be done based on ASTM E283. Wall panels when tested shall have a maximum air leakage of 0.01 cfm per square feet of fixed wall area at a minimum static air-pressure differential of 1.57 foot pounds per square foot.

2.03 WALL PANEL MATERIALS
   A. Steel:
      1. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A792, Class AZ50 coating designation, Grade 40.
      2. Gauge: 22

2.04 CONCEALED FASTENER WALL PANELS
   A. Wall Panel Description:
      1. Panel Width: 12 inches.
      2. Profile: MX 1.0, MX 2.0, MX 3.0, and MX 4.0 as indicated on drawings.
      5. Texture: [Smooth]

2.05 INSULATION
   A. Glass-Fiber Board Insulation: ASTM C612, Type IA, unfaced semi rigid insulation. Nominal density of 3 pounds per cubic foot. Size as required for liner panels.

2.06 ACCESSORIES
   A. Wall panel accessories: Provide accessories as required for a complete installation. Accessories shall be as indicated on approved shop drawings and per manufacturer’s approved standard details. Match material and finish of metal wall panels.
      1. Closure Strips:
         a. Closed Cell Closure Strips: Provide minimum 1 inch thick matching metal wall panel profile.
         b. Metal Profile Closure Strips: Shall be fabricated from same gauge, material and finish as metal panel.
            1) Concealed Clips: 18 gauge; Zinc-Coated (Galvanized) Steel Sheet: ASTM A653, G90 coating designation
B. Trim:
   1. Fabricate trim from same material and material thickness as wall panels. Finish to match metal wall panels.
   2. Locations include, but are not limited to the following: Drips, sills, jambs, corners, framed openings, parapet caps, reveals and fillers.

C. Metal Framing:
   2. Hat-Shaped, Rigid Furring Channels:
      a. Gauge: 18 gauge.
      b. Depth: 1/2"

D. Fasteners: Self-tapping screws, bolts, nuts, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads.

2.07 FABRICATION
A. Metal wall panels shall be formed to lap and interconnect with edges of adjacent panels which are then mechanically attached through panel to supports using concealed fasteners.
B. Panels shall be factory formed. Field formed panels are not acceptable.
C. [Trim Accessories: Fabricate steel trim accessories to comply with recommendations outlined in SMACNA's "Architectural Sheet Metal Manual"].
D. [Trim Accessories: Provide manufacturer's standard extruded aluminum trim.]

2.08 FINISHES
A. Steel:
   1. Finish and Color:
      a. Color: As selected by Architect.
      b. Finish System:
      c. 1.0 mil. Fluropolymer (PVDF) Two Coat system: 0.2 mil primer with 0.8 mil Kynar 500 (70 percent) SOLID color coat.

PART 3 EXECUTION
3.01 EXAMINATION
A. Provide field measurements to manufacturer as required to achieve proper fit of the metal wall panels to building envelope. Measurements shall be provided in a timely manner so that there is no impact to construction or manufacturing schedule.
B. Supporting Steel: All structural supports required for installation of panels shall be by others. Support members shall be installed within the following tolerances:
   1. Plus or minus 1/8 inch in 5 feet in any direction along plane of framing.
   2. Plus or minus ¼ inch cumulative in 20 feet in any direction along plane of framing.
   3. Plus or minus ½ inch from framing plane on any elevation.
   4. Plumb or level within 1/8 inch at all changes of transverse for performed corner panel applications.
   5. Verify that bearing support has been provided behind vertical joints of horizontal panel systems and vertical joints of horizontal panel systems. Width of support shall be as recommended by manufacturer.
C. Examine individual panels upon removing from the bundle; notify manufacturer of panel defects. Do not install defective panels.

3.02 PANEL INSTALLATION
A. Installation shall be in accordance with manufacturer's installation guidelines and recommendations.
B. Install panels plumb, level, and true-to-line to dimensions and layout indicated on approved shop drawings.
C. Cutting and fitting of panels shall be neat, square and true. Torch cutting is prohibited.
3.03 TRIM INSTALLATION
   A. Place trim and trim fasteners only as indicated per details on the approved shop drawings.
   B. Apply sealant tape at trim, per manufacturer’s details and approved shop drawings, for weathertight installation.

3.04 SEALANT INSTALLATION FOR EXPOSED JOINTS
   A. Clean and prime surfaces to review exterior exposed sealants in accordance with sealant manufacturer’s recommendations.
   B. Follow sealant manufacturer’s recommendations for joint width-to-depth ratio, application temperature range, size and type of backer rod, and compatibility of materials for adhesion.

3.05 CLEANING AND PROTECTION
   A. Remove protective film immediately after installation.
   B. Touch-up, repair or replace metal panels and trim that have been damaged.
   C. After metal wall panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.

END OF SECTION
SECTION 07 57 00
COATED FOAMED ROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Foamed-in-place insulation.
B. Protective overcoat.

1.02 RELATED REQUIREMENTS
A. Section 06 10 00 - Rough Carpentry: Wood nailers and curbs.
B. Section 07 62 00 - SHEET METAL FLASHING AND TRIM: Perimeter flashings; counter flashings to roof penetrations.
C. Section 07 72 00 - Roof Accessories: Roof-mounted units.

1.03 REFERENCE STANDARDS

1.04 ADMINISTRATIVE REQUIREMENTS
A. Pre-Installation Conference:
   1. Approximately two weeks prior to schedule commencement of roofing installation and associated work, a meeting shall be held at the project site with installers of deck or substrate construction to receive roofing work, installer of rooftop HVAC units and other work in and around roofing which must precede or follow roofing work (including mechanical and sheet metal work as applicable), General Contractor, Architect, Owner, roofing system manufacturer’s representative, and other representatives directly concerned with the performance of the work. Contractor shall prepare minutes of the meeting and furnish copy of record to each party attending. Review foreseeable methods and procedures related to roofing work, including but not necessarily limited to the following:
      a. Tour representative areas of roofing substrates (decks), inspect and discuss condition of substrate, roof drains, curbs, penetrations and other preparatory work performed by other trades.
      b. Review structural loading limitations of existing roof deck construction, and inspect deck for loss of flatness and for required mechanical fastening.
c. Review roofing system requirements (drawings, specifications and other Contract Documents).
d. Review and finalize construction schedule related to roofing work and verify availability of materials, installer's personnel, equipment and facilities needed to make progress and avoid delays.
e. Review required inspection, testing, certifying and material usage accounting procedures.
f. Review weather and forecasted weather conditions, and procedures for coping with unfavorable conditions, including possibility of temporary roofing (if not a mandatory requirement).

2. Notify Architect at least 48 hours prior to starting Work.

3. Contractor shall review materials, details, etc. and submit a report including revised details to Architect. Incorporate revised details approved by Architect in the Project at no additional cost to Owner.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide data on foam insulation and overcoat, physical and chemical properties, preparation of substrate required, product limitations, and cautionary requirements.
C. Certificates:  
   1. Submit notarized Contractor/Applicator certification from polyurethane foam supplier and/or protective coatings manufacturers as evidence of Contractor/applicator qualification and experience. 
   2. Provide manufacturer's representative certification that products approved are products installed on the Project.
D. Provide specimen copy of the applicable warranty for this project, as specified herein.
E. Submit evidence that system constituents are VOC compliant and environmentally safe.
F. Submit evidence that polyurethane foam with HFC 245fa blowing agent is approved in accordance with Montreal Protocol and U.S. EPA non-depleting ozone requirement. Foam must be approved in accordance with UL 723 testing.
G. Shop Drawings: Submit shop drawings indicating drainage pattern, slopes, and depth of foam at drain, cants, crickets and other critical locations.
H. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

A. Qualifications: 
   1. Foam and Coating Manufacturer Qualifications: 5 years of successful installations on which its products have been used in conjunction with sprayed polyurethane foam roofs.
   2. Foam/Coating Contractor Qualifications:  
      a. Prior experience in handling and spraying polyurethane foam of the type specified and possessing a thorough knowledge in the use of the required spray equipment.
      b. Approved by the protective coating manufactured for single component systems and shall qualify for manufacturer's 10 year no leak system warranty.
   3. Applicator Qualifications:  
      a. Trained by the polyurethane foam manufacturer with minimum of 5 years experience in spray application of polyurethane foam roofing with at least 500,000 square feet of applied roof coating.
      b. Individual mechanics shall be workers experienced and regularly engaged in the spray application of polyurethane foam in roofing systems.
B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than 5 years of documented experience.
1.07 REGULATORY REQUIREMENTS
   A. Conform to applicable code for fire resistance ratings of overcoat.
   B. UL 790: Class A Fire Hazard Classification over noncombustible deck or Class B over combustible deck and shall conform to ASTM Test Standards, ICC, and FMG requirements.
   C. Insulation and foam shall have Class A flame spread in accordance with ASTM E108.
   D. Constituent material containers shall be UL labeled in accordance with the system UL follow-up service agreement.

1.08 DELIVERY, STORAGE, AND HANDLING
   A. Packing and Shipping: Deliver materials to site in manufacturer's original unopened packaging with labels intact. Protect finished surfaces with removable wrapping or coating which will not bond when exposed to sunlight.
   B. Storage: Adequately protect against damage while stored at the site.
   C. Handling: Comply with manufacturer's instructions.

1.09 FIELD CONDITIONS
   A. Do not install foam insulation under the following conditions:
      1. When surface temperature is below 40 degrees F or above 130 degrees F.
      2. the dew point is less than 5 degrees F above the surface temperature.
      3. If surface moisture is present.
      4. If wind velocity is above 12 miles per hour, wind screens are required; for wind velocity at or above 25 miles per hour, work shall be suspended.

1.10 WARRANTY
   A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
   B. Provide manufacturer's 10 year full system warranty. Written warranty shall include materials and labor required to repair water leaks in the protective coatings system caused by deterioration resulting from ordinary weather conditions.

PART 2 PRODUCTS
2.01 MANUFACTURERS
   A. Coated Foamed Roofing:
      2. Gaco Western PolyFoam 273 Series.
      3. Permax RT2035, SWD Quick-Shield 125
      4. Bay Systems Bayseal 2.7
      5. Pro-Tech Spray System 2.8

2.02 FOAM INSULATION MATERIALS
   A. Foam Insulation: Sprayed polyurethane foam (SPF) type, closed cell; foamed on-site, using blowing agent of water or non-ozone-depleting gas.
      1. Density: 2.5 lbs/cu ft, nominal, in accordance with ASTM D1622/D1622M.
      2. Tensile Strength: 65 psi, minimum, in accordance with ASTM D1623.
      3. Compressive Strength: 45 psi, minimum, in accordance with ASTM D1621.
      4. Thermal Resistance: R-value of 6.9, minimum, per 1 inch thickness at 75 degrees F mean temperature when tested in accordance with ASTM C518.
      5. Surface Burning Characteristics: Flame spread/Smoke developed index of 25/450, maximum, at 4 inch thick when tested in accordance with ASTM E84.
      6. Thermal Conductivity: When tested in accordance with ASTM C177:
         a. K Factor (ASTM C177): 0.14 BTU/in/hr ft F
      7. Closed Cell Content: 95 percent, determined in accordance with ASTM D6226 or ASTM D2856.
11. Surface Burning Characteristics: Maximum Flame spread index of 25, when tested in accordance with ASTM E84.

2.03 OVERCOAT MATERIALS

A. Protective Coating: Gaco Western A-32 series, KM Foamguard, SWD-1929R, Bay Systems Bayblock and United Coatings Diathon Acrylic Elastomeric Coating acceptable to manufacturer of polyurethane foam insulation and as follows:
1. 100% acrylic elastomer coating which combines high solid emulsion polymers and non-migrating fire retardants for superior durability, weather-proofing, ultraviolet resistance, and fire resistance. The combined cured basecoat/topcoat protective coating shall have the following properties:
   a. Tensile Strength (ASTM D412): 225 psi minimum @ 75 degrees F.
   b. Elongation (ASTM D412): 200% minimum @ 75 degrees F.
   c. Water Vapor Permeance: 0.06 perms, maximum, when tested in accordance with ASTM E96/E96M.
   d. Hardness (ASTM D 2240): 65 to 75 Shore A
   e. Temperature Limits for Normal Service Conditions: -0 degrees F to 200 degrees F
2. The fire retardant chemicals shall be permanently locked into the cured coating.
3. Substitute fluid-applied waterproofing materials such as cementitious coating, asphalt, moisture-cured urethanes, hypalons, acrylics and butyls are not considered acceptable substitute materials.
4. SRI (Solar Reflective Index) Aged: 100 min Color: white.

B. Granules: Washed, screened and sized Lucas #10 Fire White or RTC Permax White Granules specifically for use in the specified system.

2.04 ACCESSORIES

A. Spray Foam Cant Strip: Spray polyurethane foam (SPF) insulation, applied at interruptions and penetrations through roof surface and providing 45 degree slope transition to roof surface.
B. Sealant: Type required or recommended by roofing manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Schedule work after all penetrations through roof are complete and perimeter conditions are ready to receive roof system.
B. Verify that deck surface is smooth and dry and deck joints do not exceed 1/8 inch.
C. Verify that wood substrate moisture content does not exceed 18 percent measured in accordance with ASTM standards; no depressions or splinters exist. Verify flatness and tight joints of wood decking. Sheathing shall be exterior grade not less than 1/2 inch thick. nailed firmly in place.
D. Commencement of Work will be construed as acceptance of subsurfaces.
E. Coordination: Coordinate with other work which affects, connects with, or will be concealed by this Work

3.02 PREPARATION - WOOD DECK

A. Deck must meet building code requirements for resistance to wind uplift.
B. Plywood shall contain no more than 18% water, as measured in accordance with ASTM Standards. Plywood shall be exterior grade not less than 1/2 inch thick. nailed firmly in place.
C. Surfaces shall be primed with an exterior-grade primer, as recommended by manufacturer.
   1. Application shall be at the rate of approximately 1/2 gallon per 100 square feet.
   2. Primer shall not be applied to wet decking materials.
D. Plywood joints in excess of 1/4 inch shall be taped or filled by others with a suitable sealant material, prior to application of polyurethane foam.

E. Deck shall be free of loose dirt, grease, oil or other contaminants prior to priming or foam application. Remove loose dirt or debris by use of compressed air, vacuum or broom. No washing shall be permitted.

F. Tongue & Groove Sheathing or Planking: Due to the frequency of joints, possibility of variable openings and effects of aging and shrinking, these surfaces must be overlaid with a minimum of 1/4 inch thick exterior grade plywood or other suitable covering with a minimum 1" thickness.

G. On existing roofs which are noted to have existing roofing removed, provide one layer ¼" thick Georgia Pacific DensDeck as required to provide UL Class A assembly in accordance with UL 790 standard or ASTM E 108 standard.

3.03 INSULATION INSTALLATION

A. Polyurethane Foam:

B. Liquid components of the sprayed-on polyurethane foam shall be maintained, metered and sprayed under conditions prescribed by the manufacturer of the material and the manufacturer of the spray equipment.

C. Spray in a manner to achieve a full and proper spray pattern. Foam shall be applied in minimum 1/2 inch thick passes to achieve the specified thickness.

D. Apply in multiple passes only in as many squares each day as can be completed to the full specified thickness on the same day. Before resuming spraying operation on the next day, inspect the exposed leading edge of the foam for possible surface moisture. Foam edge shall be considered dry when there is no indication of moisture when blotted with an absorptive material.

E. Surface texture and quality: Cured polyurethane foam shall range from a smoother to a heavy "orange peel" finish. Textures described as "popcorn" or "tree bark" or surfaces which exhibit crevices, voids and widespread defects are not acceptable.

F. There shall be no soft or spongy areas or areas with hard or brittle strings or improperly proportioned material.

G. Tapered areas of varying thickness shall be as indicated on Drawings.

H. Protective Coating:

1. Preparation:
   a. The polyurethane foam surface and adjacent surfaces to be coated shall be completely free of degraded foam, foam overspray, grease, oil, dirt or other contaminants which will interfere with proper coating adhesion.
   b. Surface shall be completely dry and frost-free before coating.
   c. Any physical damage to the polyurethane foam shall be repaired before coating application commences.
   d. Oxidized polyurethane foam shall be repaired or replaced.
   e. Where foam surface has been sanded, planed or trimmed and the skin removed, such areas shall be given an additional application of base coat immediately after exposure and prior to applying normal base coat to entire area.

2. Waterproofing and Protection System:
      1) Spray apply base coat of elastomeric membrane over polyurethane foam insulation at a rate to achieve 12 mil in one application (approximately 1-1/4 gallons per 100 square feet).
      2) Spray apply intermediate application of elastomeric membrane to achieve 12 mil in one application (approximately 1-1/4 gallons per 100 square feet).
      3) Spray apply final application of elastomeric membrane to achieve 12 mil in one application (approximately 1-1/4 gallons per 100 square feet).
4) Total dry thickness of elastomeric membrane, exclusive of granules, shall be an average of 36 mils.
5) Spray or roll a fluid applied flashing over foam insulation at parapet walls and other vertical surfaces in 3 applications at a rate of 1-1/4 gallons per 100 square feet per application (2 base coats and 1 top coat); shall be an average of 36 mils.
   b. Granules: Broadcast into final fluid membrane coat at a rate of 30 pounds per 100 square feet.
   c. No traffic shall be permitted on completed roof surface for a minimum of 3 days.
3. Protective coating shall extend up and over polyurethane foam on vent pipes, parapets and other penetrations and shall be terminated a minimum of 3 inches above the foam creating a self-terminated flashing.
4. During coating application, the film thickness applied each day shall be measured by the applicator and recorded on the Daily Quality Control Report Form.
5. Surfaces shall be free from voids, pinholes, blisters.
6. If, due to unforeseen conditions, the polyurethane foam remains uncoated for more than 72 hours, the uncoated foam must be inspected by the Architect prior to coating.
   a. Should oxidation of the polyurethane foam occur, the foam surface shall be brushed with a stiff broom or mechanically scarfed and sanded.
   b. A minimum 1/2 inch pass of foam shall be applied over the prepared surface to reseal the surface.

I. Place insulation to 2.5 inch thickness; plus 1/4 inch, minus zero.

3.04 OVERCOAT INSTALLATION
   A. Install overcoat in accordance with manufacturer’s instructions.
   B. Prepare and seal penetrations through roof with sealant.
   C. Apply overcoat in three coats to a total dry film thickness of 36 mils minimum.
   D. Extend overcoat to cover foam insulation and extend 2 inches above foam termination on protrusions to a self terminating, water tight seal.
   E. Apply roof surface granules at a rate of 30 lbs per 100 sq ft.

3.05 FIELD QUALITY CONTROL
   A. Inspections by Roofing Manufacturer’s Representative:
      1. The manufacturer’s representative for the materials used on this project shall make inspections as outlined by the manufacturer as required to provide the specified warranty.
      2. In addition to the inspections required for the warranty, the following inspections shall be required:
         a. Preliminary deck inspection.
         b. One unannounced spot inspection.
         c. Final inspection.
   B. Core Sampling:
      1. The Owner reserves the right to take core samples to determine if the polyurethane foam meets the minimum density as specified and is properly bonded to the substrate.
      2. Location of core samples shall be as directed by the Owner.
      3. Core samples, if required, shall be cut by the Contractor prior to application of the protective coating and after exothermic heat is gone.
      4. Costs associated with the cutting of core samples, and repairs of cut-out sections shall be borne by the Contractor.
      5. Costs associated with testing the in-place density shall be paid for by the Owner. Tests shall be performed by an independent laboratory in accordance with ASTM D 1622.

3.06 CLEANING
   A. Remove excess insulation or overcoat from finished surfaces.
   B. In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning advice and conform to their documented instructions.
C. Repair or replace defaced or disfigured finishes caused by work of this section.

3.07 PROTECTION
   A. Ensure roof surface is free of traffic for minimum three days after overcoat application.

END OF SECTION
SECTION 07 62 00
SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Fabricated sheet metal items, including flashings and counterflashings.
B. Sealants for joints within sheet metal fabrications.

1.02 RELATED REQUIREMENTS
A. Section 06 10 00 - Rough Carpentry: Wood nailers for sheet metal work.
B. Section 07 57 00 - Coated Foam Roofing.
C. Section 07 72 00 - Roof Accessories: Manufactured metal roof curbs.
D. Section 07 92 00 - Joint Sealants: Sealing non-lap joints between sheet metal fabrications and adjacent construction.

1.03 REFERENCE STANDARDS
B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015.

1.04 SUBMITTALS
A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
B. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.
C. Samples: Submit two samples 2 inch square minimum in size illustrating metal finish color.

1.05 QUALITY ASSURANCE
A. Perform work in accordance with SMACNA (ASMM) requirements and standard details, except as otherwise indicated.
B. Comply with The NRCA Roofing and Waterproofing Manual installation details.
C. Comply with ANSI/SPRI, ES I-98.
D. Performance Requirements: Designed and installed to withstand Wind Zone 2 wind pressures in compliance with FMG Loss Prevention Data Sheet 1-49.

1.06 DELIVERY, STORAGE, AND HANDLING
A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
B. Prevent contact with materials that could cause discoloration or staining.

PART 2 PRODUCTS

2.01 SHEET MATERIALS
A. Galvanized Steel: ASTM A653/A653M, with G90/Z275 zinc coating; minimum 24 gage, (0.0239 inch) thick base metal.
B. Pre-Finished Galvanized Steel: ASTM A653/A653M, with G90/Z275 zinc coating; minimum 0.02 inch thick base metal, shop pre-coated with Kynar coating as described below:
1. Full strength Kynar 500/Hylar 5000 Fluorocarbon coating, applied by the Manufacturer on a continuous coil coating line, with top side dry film thickness of 0.70 to 0.90 mil over 0.25 to 0.35 mil prime coat, to provide a total dry film thickness of 0.95 to 1.25 mil.

2. Bottom side: Coated with primer with a dry film thickness of 0.25 mil.

3. Finish: Conform to all tests for adhesion flexibility, and longevity as specified by the Kynar 500 finish supplier.

4. Strippable film: Liquid applied to top side of painted coil to protect finish during fabrication, shipping and field handling.

5. Color: As shown on drawings

C. Aluminum: ASTM B209 (ASTM B209M); 20 gage, (0.032 inch) thick; anodized finish of color as selected.

1. Clear Anodized Finish: AAMA 611 AA-M12C22A41 Class I clear anodic coating not less than 0.7 mils thick.

2.02 ACCESSORIES

A. Reglets and Counterflashings: Fry Reglet Corporation, Type STX at stucco, Type SM at masonry and Concrete, or fabricated as indicated on Drawings. Provide prefabricated inside and outside reglet and counterflashing corners.

B. Fasteners: Galvanized steel with EPDM washers.

C. Sealant as specified in Section 07 92 00

2.03 FABRICATION

A. Form sections true to shape, accurate in size, square, and free from distortion or defects.

B. Form pieces in longest possible lengths.

C. Hem exposed edges on underside 1/2 inch; miter and seam corners.

D. Form material with flat lock seams, except where otherwise indicated; at moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.

E. Fabricate corners from one piece with minimum 18 inch long legs; seam for rigidity, seal with sealant.

F. Where prefabricated counterflashing and reglet system is used, form upper edge of counterflashing with an approved snap lock flange to engage reglet receiver and to provide a spring action at bottom edge against built-up flashing.

2.04 ACCESSORIES

A. Fasteners: Galvanized steel, with soft neoprene washers.

B. Primer: Zinc chromate type.

C. Concealed Sealants: Non-curing butyl sealant.

D. Exposed Sealants: ASTM C920; elastomeric sealant, with minimum movement capability as recommended by manufacturer for substrates to be sealed; color to match adjacent material.

E. Plastic Cement: ASTM D4586/D4586M, Type I.

F. Reglets: Surface mounted type, galvanized steel; face and ends covered with plastic tape.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.

B. Verify roofing termination and base flashings are in place, sealed, and secure.

3.02 PREPARATION

A. Install starter and edge strips, and cleats before starting installation.

B. Install surface mounted reglets true to lines and levels, and seal top of reglets with sealant.
C. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil.

3.03 INSTALLATION

A. Installation shall conform to NRCA and SMACNA manuals

B. Expansion Seams: Maintain a watertight installation at expansion seams. Locate expansion seams as shown or if not shown, at the following maximum spacing for each general flashing use:
   1. Flashing, expansion joints, gravel stops, and trim: At 10 foot (3000mm) intervals, 24 inches (600mm) on each side of corners and intersections.
   2. Sealant-type expansion joints: Where sealant-filled expansion joints are used, embed the hooked flanges of the joint members not less than 1 inch (25mm) into the sealant. Form joints to completely conceal the sealant. When ambient temperature is moderate at the time of installation (40 to 70 degrees F.) (4 to 21 degrees C.), set joint members for 50 percent movement either way. Adjust setting proportionately for installation at higher ambient temperatures. Do not install sealant type joints at temperatures below 40 degrees F. (4 degrees C.) Installation of sealant is specified in Section 07 92 00.

C. Where dissimilar materials abut, provide proper separation or protection to minimize the possibility of galvanic action.

D. Soldering:
   1. Solder joints at corner fabrications.
   2. Except where other methods of joining are indicated or specified, solder joints and connections of Sheet Metal Work.
   3. Remove grease and dirt from metal surfaces to be joined.
   4. Remove flux residue by scrubbing, neutralizing with ammonia or a 5 to 10 percent solution of washing soda, followed by a clear water rinse.
   5. Assemble parts and solder using regular non-corrosive resin flux. Heat metal thoroughly to completely sweat solder through full contact area.

E. Sealed Joints: Form nonexpansion, but movable joints in metal with flat lapped seams to accommodate elastomeric sealant to comply with SMACNA Standards. Fill joint with sealant and form metal to completely conceal sealant.
   1. Seal joints at copings and at other movable, non-expansion type joints.

F. Reglets: Install reglets in masonry, concrete or stucco to receive flashings.

G. Counterflashing:
   1. Provide metal counterflashing at top edges of built-up base flashings and at other locations indicated.
   2. Lap end joints a minimum of 3 inches (75mm). Do not solder or weld joints. Make flashing continuous at angles. Counterflashing shall overlap base flashing a minimum of 4 inches (100mm), unless otherwise indicated.
   3. Where counterflashing terminates in reglets, fasten flashing with lead wedges every 12 inches (300mm). Fill reglets continuously with synthetic rubber type sealant.

H. Copings:
   1. Cover top of parapet walls where indicated with 24 gauge (0.50mm) galvanized metal coping formed to design shown. Before applying metal, cover top of wall or wood blocking with polyethylene.
   2. Extend front edge of coping covering down over the lock into a previously placed continuous edge strip. Secure edge strips with nails spaced 12 inches (300mm) apart.
   3. Join rear edge of coping covering to adjacent flashings as indicated.

I. Secure flashings in place using concealed fasteners, and use exposed fasteners only where permitted.

3.04 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for field inspection requirements.
B. Inspection will involve surveillance of work during installation to ascertain compliance with specified requirements.

END OF SECTION
SECTION 07 72 00
ROOF ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Roof hatches.
B. Non-penetrating pedestals.

1.02 RELATED REQUIREMENTS
A. Section 06 10 00 - Rough Carpentry - Redwood Roof Curbs.
B. Section 07 62 00 - SHEET METAL FLASHING AND TRIM: Roof accessory items fabricated from sheet metal.

1.03 REFERENCE STANDARDS

1.04 SUBMITTALS
A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
B. Product Data: Manufacturer's data sheets on each product to be used.
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.
   4. Maintenance requirements.
C. Shop Drawings: Submit detailed layout developed for this project and provide dimensioned location and number for each type of roof accessory.
D. Warranty Documentation:
   1. Submit manufacturer warranty.
   2. Ensure that forms have been completed in Owner's name and registered with manufacturer.

1.05 DELIVERY, STORAGE, AND HANDLING
A. Store products in manufacturer's unopened packaging until ready for installation.
B. Store products under cover and elevated above grade.

1.06 WARRANTY
A. Correct defective Work within a five year period after Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS
A. Furnish products of one of the following Manufacturers, except as approved by the Architect, subject to compliance with Specifications requirements:
   3. Babcock-Davis Div., Cierra Products www.babcockdavis.com
2.02 MANUFACTURED UNITS
   A. Roof Hatch: nystrom TypeRS-20, or as approved. www.bilco.com Galvanized steel, 14 gauge cover and curb, 22 gauge cover liner. 1 inch thick rigid insulation in curb and cover, 12 inch high curb.
      1. Provide heavy duty padlock hasp.
      2. Provide vandal resistant features as available.
      3. Finish: Red-oxide primer. Paint finish in accordance with Section 09 91 00.
   B. Equipment Supports: Pate Style es-1 monolithic construction, heavy gauge galvanized steel, continuous mitered and welded corner seams, integral base plate, factory installed 2 inch x 4 inch(50 x 100mm) wood nailer, and heavy gauge galvanized steel counterflashing.
   C. Pipe Curb Assemblies: Pate Style pca-1, with curb constructed of heavy gauge galvanized steel with continuous welded corner seams, factory installed wood nailer insulated with 1-1/2 inch (38mm) thick rigid fiberglass board insulation, cover of acrylic clad ABS thermoplastic, including graduated step PVC, boots, adjustable stainless steel clamps and cap fastening screws. Each assembly shall include curb, cap, boots and clamps. See Drawings for size and quantity of pipe penetrations.

2.03 NON-PENETRATING ROOFTOP SUPPORTS/ASSEMBLIES
   A. Non-Penetrating Rooftop Support/Assemblies: Manufacturer-engineered and factory-fabricated, with pedestal bases that rest on top of roofing membrane, and not requiring any attachment to roof structure and not penetrating roofing assembly.
      1. Design Loadings and Configurations: As required by applicable codes.
      2. Height: Provide minimum clearance of 6 inches under supported items to top of roofing.
      3. Support Spacing and Base Sizes: As required to distribute load sufficiently to prevent indentation of roofing assembly.
      4. Steel Components: Stainless steel, or carbon steel hot-dip galvanized after fabrication in accordance with ASTM A123/A123M.
      5. Hardware, Bolts, Nuts, and Washers: Stainless steel, or carbon steel hot-dip galvanized after fabrication in accordance with ASTM A153/A153M.
   B. Pipe Supports: Provide attachment fixtures complying with MSS SP-58 and as indicated.
   C. Non-Penetrating Pedestals: Steel pedestals with square, round, or rectangular bases.
      2. Base Sizes: As required to distribute load sufficiently to prevent indentation of roofing assembly.
      3. Steel Components: Stainless steel, or carbon steel hot-dip galvanized after fabrication in accordance with ASTM A123/A123M.

PART 3 EXECUTION
3.01 EXAMINATION
   A. Do not begin installation until substrates have been properly prepared.
   B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION
   A. Clean surfaces thoroughly prior to installation.
   B. Prepare surfaces using methods recommended by manufacturer for achieving acceptable results for applicable substrate under project conditions.

3.03 INSTALLATION
   A. Install in accordance with manufacturer's instructions, in manner that maintains roofing system weather-tight integrity.

3.04 CLEANING
   A. Clean installed work to like-new condition.
3.05 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION
SECTION 07 84 00
FIRESTOPPING

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Firestopping of all joints and penetrations in fire resistance rated and smoke resistant assemblies, whether indicated on drawings or not, and other openings indicated.

1.02 RELATED REQUIREMENTS
A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
B. Section 01 70 00 - Execution and Closeout Requirements: Cutting and patching.
C. Section 09 21 16 - GYPSUM BOARD ASSEMBLIES: Gypsum wallboard fireproofing.

1.03 REFERENCE STANDARDS
C. ASTM E2174 - Standard Practice for On-Site Inspection of Installed Firestops; 2014.
F. ITS (DIR) - Directory of Listed Products; current edition.
H. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; current edition.

1.04 SUBMITTALS
A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide data on product characteristics, performance ratings, and limitations.
C. Sustainable Design Submittal: Submit VOC content documentation for all non-preformed materials.

1.05 QUALITY ASSURANCE
A. Fire Testing: Provide firestopping assemblies of designs that provide the scheduled fire ratings when tested in accordance with methods indicated.
   1. Listing in UL (FRD), FM (AG), or ITS (DIR) will be considered as constituting an acceptable test report.
   2. Valid evaluation report published by ICC Evaluation Service, Inc. (ICC-ES) at www.icc-es.org will be considered as constituting an acceptable test report.
B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.06 MOCK-UP
A. Install one firestopping assembly representative of each fire rating design required on project.
   1. Where one design may be used for different penetrating items or in different wall constructions, install one assembly for each different combination.
B. Obtain approval of authorities having jurisdiction (AHJ) before proceeding.
C. If accepted, mock-up will represent minimum standard for the Work.
D. If accepted, mock-up may remain as part of the Work. Remove and replace mock-ups not accepted.

1.07 FIELD CONDITIONS
A. Conform to firestopping manufacturer’s recommendations for temperature and conditions during and after installation; maintain minimum temperature before, during, and for three days after installation of materials.

PART 2 PRODUCTS
2.01 MANUFACTURERS
A. Firestopping Manufacturers:
   1. 3M Fire Protection Products: www.3m.com/firestop.

2.02 MATERIALS
A. Materials: Do not use asbestos, halogens and/or materials with volatile components after curing.
B. Volatile Organic Compound (VOC) Content: Provide products having VOC content lower than that required by SCAQMD 1168.
C. Mold and Mildew Resistance: Provide firestopping materials with mold and mildew resistance rating of zero(0) in accordance with ASTM G21.
D. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Provide type of materials as required for tested firestopping assembly.
E. Fire Ratings: 1 hour and 2 hour. Refer to drawings for required systems and ratings.

2.03 FIRESTOPPING ASSEMBLY REQUIREMENTS
A. Floor-to-Floor, Wall-to-Wall, and Wall-to-Floor Joints, Except Perimeter, Where Both Are Fire-Rated: Use system that has been tested according to ASTM E1966 or UL 2079 to have fire resistance F Rating equal to required fire rating of the assembly in which the joint occurs.
B. Through Penetration Firestopping: Use system that has been tested according to ASTM E814 to have fire resistance F Rating equal to required fire rating of penetrated assembly.

2.04 FIRESTOPPING FOR FLOOR-TO-FLOOR, WALL-TO-FLOOR, AND WALL-TO-WALL JOINTS
A. Gypsum Board Walls:
   1. Wall to Wall Joints That Have Not Been Tested For Movement Capabilities (Static):
      a. 1 Hour Construction: UL System WW-S-0063; Specified Technologies Inc. SpeedFlex TTG Track Top Gasket.
   2. Wall to Wall Joints That Have Movement Capabilities (Dynamic):
      a. 1 Hour Construction: UL System WW-D-0067; Hilti CP 606 Flexible Firestop Sealant.

2.05 FIRESTOPPING PENETRATIONS THROUGH FRAMED FLOORS
A. Metallic Pipe, Conduit, and Tubing Penetrations in Framed Floors:
   1. 1 Hour Construction: UL System F-C-1053; Specified Technologies Inc. WF300 Intumescent Firestop Caulk (for wood frame construction).
B. Non-Metallic Pipe, Conduit or Tubing in Framed Floors:
   1. 1 Hour Construction: UL System F-C-2014; Specified Technologies Inc. WF300 Intumescent Firestop Caulk (for wood frame construction).

2.06 FIRESTOPPING PENETRATIONS THROUGH GYPSUM BOARD WALLS
A. Blank Openings:
   1. 1 Hour Construction: UL System W-L-3334; Hilti CP 653 Speed Sleeve.
B. Penetrations By:
   1. Multiple Penetrations in Large Openings:
1. 1 Hour Construction: UL System W-L-1408; Hilti FS-ONE MAX Intumescent Firestop Sealant.

2. Uninsulated Metallic Pipe, Conduit, and Tubing:
   a. 1 Hour Construction: UL System W-L-1054; Hilti FS-ONE MAX Intumescent Firestop Sealant.

3. Uninsulated Non-Metallic Pipe, Conduit, and Tubing:
   a. 1 Hour Construction: UL System W-L-2078; Hilti CP 643N/644 Firestop Collar.

4. Electrical Cables Not In Conduit:
   a. 1 Hour Construction: UL System W-L-3024; Specified Technologies Inc. SSP Firestop Putty.

5. Insulated Pipes:
   a. 1 Hour Construction: UL System W-L-5028; Hilti FS-ONE MAX Intumescent Firestop Sealant.

6. HVAC Ducts, Insulated:
   a. 1 Hour Construction: UL System W-L-7164; Specified Technologies Inc. FyreFlange HVAC Firestop Angle.
   b. 1 Hour Construction: UL System W-L-7156; Hilti FS-ONE MAX Intumescent Firestop Sealant.

2.07 FIRESTOPPING SYSTEMS
   A. Firestopping: Any material meeting requirements.
   1. Fire Ratings: Use any system listed by UL or tested in accordance with ASTM E814 that has F Rating equal to fire rating of penetrated assembly and minimum T Rating Equal to F Rating and that meets all other specified requirements.
   2. Fire Ratings: See drawings for required systems and ratings.

PART 3 EXECUTION

3.01 EXAMINATION
   A. Verify openings are ready to receive the work of this section.

3.02 PREPARATION
   A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other materials that could adversely affect bond of firestopping material.
   B. Remove incompatible materials that could adversely affect bond.
   C. Install backing materials to prevent liquid material from leakage.

3.03 INSTALLATION
   A. Install materials in manner described in fire test report and in accordance with manufacturer's instructions, completely closing openings.
   B. Do not cover installed firestopping until inspected by authorities having jurisdiction.
   C. Install labeling required by code.

3.04 FIELD QUALITY CONTROL
   A. Independent Testing Agency: Inspection agency employed and paid by Owner, will examine penetration firestopping in accordance with ASTM E2174, and ASTM E2393.
   B. Repair or replace penetration firestopping and joints at locations where inspection results indicate firestopping or joints do not meet specified requirements.

3.05 CLEANING
   A. Clean adjacent surfaces of firestopping materials.

3.06 PROTECTION
   A. Protect adjacent surfaces from damage by material installation.

END OF SECTION
SECTION 07 92 00
JOINT SEALANTS

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Nonsag gunnable joint sealants.
B. Self-leveling pourable joint sealants.
C. Joint backings and accessories.

1.02 RELATED REQUIREMENTS
A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions: Additional requirements for sealants and primers.
B. Section 07 84 00 - Firestopping: Firestopping sealants.
C. Section 08 71 00 - Door Hardware: Setting exterior door thresholds in sealant.
D. Section 08 80 00 - Glazing: Glazing sealants and accessories.
E. Section 09 21 16 - GYPSUM BOARD ASSEMBLIES: Sealing acoustical and sound-rated walls and ceilings.
F. Section 09 30 00 - Tiling: Sealant between tile and plumbing fixtures and at junctions with other materials and changes in plane.

1.03 REFERENCE STANDARDS
H. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; current edition.

1.04 SUBMITTALS
A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
B. Product Data for Sealants: Submit manufacturer's technical data sheets for each product to be used, that includes the following.
   1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
   2. List of backing materials approved for use with the specific product.
   3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
   4. Substrates the product should not be used on.
   5. Sample product warranty.
C. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.
D. Sustainable Design Documentation: For sealants and primers, submit VOC content and emissions documentation as specified in Section 01 61 16.
1.05 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing the work of this section and with at least three years of documented experience.

B. Field Adhesion Testing: Perform preconstruction adhesion testing for each type of sealant and substrate as follows:
   1. Arrange for manufacturer’s field technical representative to be present during testing.
   2. Install sealant in test joints in minimum 60 inch lengths.
   3. Test joints by standard field adhesion hand pull test.
   4. For joints with dissimilar substrates, test adhesion to each substrate separately as recommended by sealant manufacturer.
   5. Conduct number of field adhesion tests for each type of sealant and each type of substrate as follows:
      a. Not less than 10 tests for the first 1,000 feet of installed sealant and 1 test for each additional 1,000 feet of sealant installed, or 1 test per floor per elevation.
   6. Document results of field adhesion tests and record results in field adhesion test log.
   7. Include in log data on pull distance used to test each joint sealant.
   8. Include data on joints where material connected with pull portion of sealant failed to adhere to joint substrate or tore cohesively.
   9. Inspect joints and record data for the following:
      a. Complete fill.
      b. No voids.
      c. Joint dimensions matching those of manufacturer’s recommended details.
   10. For sealants that fail adhesively, retest until satisfactory adhesion is obtained.
   11. Do not install joint sealants that fail to adhere to joint substrates during testing.
   12. Repair sealant test areas by removing damaged materials and applying sealant to test area using same procedure used to originally install the sealant.

C. Stain Testing: Perform Stain testing of natural stone, masonry and other porous substrates proposed for use in the Work. Obtain actual samples of materials proposed for use and test to determine if permanent discoloration of porous surfaces will occur from direct contact with sealants. Perform stain testing in conformance with ASTM C1248 and as follows:
   1. Arrange for manufacturer’s field technical representative and Architect to be present during examination of test results.
   2. Cut substrate to provide flat surface for application of sealant.
   3. Separate substrate materials by removable shims to create 1/2 x 1/2 x 3 inch joint.
   4. Fill joint with scheduled sealant, tool, and allow to cure for 21 days at room temperature.
   5. After 21 day curing, remove shims, compress joint to 50 percent of original joint width to 1/4 inch, and place in an oven at 158 degrees F. for 14 days.
   6. After 14 days in oven, remove and allow sample to cool to room temperature.
   7. Examine sample to determine presence of discoloration or change in appearance in any way to exposed surfaces.
   8. After visual inspection, cut sample in half to determine presence of discoloration or change in appearance in any way into the sample itself at the adhesive bond line and presence of bleeding into the area around the adhesive bond line.
   9. Document results of stain tests and record results in stain test log.
   10. Do not install sealants that show evidence of staining substrates.

D. Field Color and Workmanship Samples: Caulk a section of joint as directed, under job conditions, at least 7 days prior to start of work for review by Architect. When approved, sample shall be used as a standard of comparison for remainder of work.

1.06 WARRANTY

A. Provide warranty, in writing and signed jointly by the installer and sealant manufacturer, to replace sealants which fail at no additional cost to the Owner because of loss of cohesion or adhesion, or do not cure, and which fail to achieve air-tight and water-tight seal as follows:
1. Sealant Type "B": 5 years.
2. Sealant Types "A1" and "A2": 20 years.

B. Warranty: Include coverage for installed sealants and accessories that fail to achieve watertight seal, exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Non-Sag Sealants: Permits application in joints on vertical surfaces without sagging or slumping.

B. Self-Leveling Sealants: Pourable or self-leveling sealant that has sufficient flow to form a smooth, level surface when applied in a horizontal joint.

2.02 JOINT SEALANT APPLICATIONS

A. Scope:
   1. Exterior Joints: Seal open joints, whether or not the joint is indicated on drawings, unless specifically indicated not to be sealed. Exterior joints to be sealed include, but are not limited to, the following items.
      a. Wall expansion and control joints.
      b. Joints between door, window, and other frames and adjacent construction.
      c. Joints between different exposed materials.
      d. Openings below ledge angles in masonry.
      e. Other joints indicated below.
   2. Interior Joints: Do not seal interior joints unless specifically indicated to be sealed. Interior joints to be sealed include, but are not limited to, the following items.
      a. Joints between door, window, and other frames and adjacent construction.
      b. In sound-rated wall and ceiling assemblies, gaps at electrical outlets, wiring devices, piping, and other openings; between wall/ceiling and other construction; and other flanking sound paths.
      c. Other joints indicated below.
   3. Do not seal the following types of joints.
      a. Joints indicated to be treated with manufactured expansion joint cover or some other type of sealing device.
      b. Joints where sealant is specified to be provided by manufacturer of product to be sealed.
      c. Joints where installation of sealant is specified in another section.

B. Interior Wet Areas: Bathrooms, restrooms, kitchens, food service areas, and food processing areas; fixtures in wet areas include plumbing fixtures, food service equipment, countertops, cabinets, and other similar items.

C. Sound-Rated Assemblies: Walls and ceilings identified as "STC-rated", "sound-rated", or "acoustical".
2.03 JOINT SEALANTS - GENERAL

A. Sealants and Primers: Provide products having lower volatile organic compound (VOC) content than indicated in SCAQMD 1168.

B. Single Source Responsibility for Joint Sealer Materials:

C. Obtain joint sealer materials from a single manufacturer for each different product required.
   1. The following requirement is due to incompatibility problems experienced with different products which come in contact with each other at locations such as windowwalls. For example, Tremco urethane sealants and Dow silicone sealants are NOT compatible.
   2. If sealants from separate manufacturers must be used and could come in contact with each other, provide written certification from every manufacturer involved that the sealants are compatible and will adhere to each other.

D. Sealants, primers, back-up materials, preformed joint fillers, bond breakers and related materials shall be compatible with adjoining materials.

2.04 NONSAG JOINT SEALANTS

A. Type A-1 - Non-Staining Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
   1. Movement Capability: Plus 100 percent, minus 50 percent, minimum.
   2. Non-Staining To Porous Stone: Non-staining to light-colored natural stone when tested in accordance with ASTM C1248.
   3. Dirt Pick-Up: Reduced dirt pick-up compared to other silicone sealants.
   4. Service Temperature Range: Minus 65 to 180 degrees F.

B. Type A-2 - Non-Staining Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
   1. Movement Capability: Plus and minus 50 percent, minimum.
   2. Non-Staining To Porous Stone: Non-staining to light-colored natural stone when tested in accordance with ASTM C1248.
   3. Dirt Pick-Up: Reduced dirt pick-up compared to other silicone sealants.
   4. Service Temperature Range: Minus 65 to 180 degrees F.
   5. Products:

C. Type D - Mildew-Resistant Silicone Sealant: ASTM C920, Grade NS, Uses M and A; single component, mildew resistant; not expected to withstand continuous water immersion or traffic.
   2. Manufacturers:
      b. Dow Corning 786.
      c. Tremco Tremsil 200.

D. Type C - Polyurethane Sealant for Continuous Water Immersion: ASTM C920, Grade NS, Uses M and A; single or multicomponent; explicitly approved by manufacturer for continuous water immersion; suitable for traffic exposure when recessed below traffic surface.
   1. Movement Capability: Plus and minus 35 percent, minimum.
   2. Color: Match adjacent finished surfaces.
   3. Service Temperature Range: Minus 40 to 180 degrees F.
   4. Manufacturers:
b. Sonneborn NP-1.
c. Pecora 345.

E. Type E - Acrylic Emulsion Latex: Water-based; ASTM C834, single component, non-staining, non-bleeding, non-sagging; not intended for exterior use. Acoustic Sealant
   1. Color: To be selected by Architect from manufacturer’s standard range.
   2. Manufacturers:

2.05 SELF-LEVELING SEALANTS
A. Self-Leveling Silicone Sealant: ASTM C920, Grade P, Uses M and A; single or multi-component, explicitly approved by manufacturer for traffic exposure when recessed below traffic surface; not expected to withstand continuous water immersion.
   1. Movement Capability: Plus 100 percent, minus 50 percent, minimum.
   2. Hardness Range: 0 to 15, Shore A, when tested in accordance with ASTM C661.
   4. Manufacturers:

   2. Hardness Range: 30 to 35, Shore A, when tested in accordance with ASTM C661.

C. Type B - Self-Leveling Polyurethane Sealant for Continuous Water Immersion: Polyurethane; ASTM C920, Grade P, Uses M and A; single or multi-component; explicitly approved by manufacturer for traffic exposure and continuous water immersion.
   2. Hardness Range: 35 to 55, Shore A, when tested in accordance with ASTM C661.
   3. Color: To be selected by Architect from manufacturer’s standard range.
   4. Manufacturers:

2.06 ACCESSORIES
A. Backer Rod: Cylindrical cellular foam rod with surface that sealant will not adhere to, compatible with specific sealant used, and recommended by backing and sealant manufacturers for specific application.
   1. Type for Joints Not Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type O - Open Cell Polyurethane.
   2. Type for Joints Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type B - Bi-Cellular Polyethylene.
   3. Open Cell: 40 to 50 percent larger in diameter than joint width.
   4. Closed Cell and Bi-Cellular: 25 to 33 percent larger in diameter than joint width.

B. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.

C. Masking Tape: Self-adhesive, nonabsorbent, non-staining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.

D. Joint Cleaner: Non-corrosive and non-staining type, type recommended by sealant manufacturer; compatible with joint forming materials.
E. Primers: Type recommended by sealant manufacturer to suit application; non-staining.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

A. Verify that joints are ready to receive work.
B. Verify that backing materials are compatible with sealants.
C. Verify that backer rods are of the correct size.

**3.02 PREPARATION**

A. Remove loose materials and foreign matter that could impair adhesion of sealant.
B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.
C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.
D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.
E. Concrete Floor Joints That Will Be Exposed in Completed Work: Test joint filler in inconspicuous area to verify that it does not stain or discolor slab.

**3.03 INSTALLATION**

A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
B. Perform installation in accordance with ASTM C1193.
C. Perform acoustical sealant application work in accordance with ASTM C919.
D. Install bond breaker backing tape where backer rod cannot be used.
E. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.
F. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.
G. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.
H. Concrete Floor Joint Filler: After full cure, shave joint filler flush with top of concrete slab.

**3.04 FIELD QUALITY CONTROL**

A. Perform field quality control inspection/testing as specified in PART 1 under QUALITY ASSURANCE article.
B. Remove and replace failed portions of sealants using same materials and procedures as indicated for original installation.

**3.05 SCHEDULE**

A. Expansion and Control Joints:
   1. Masonry, concrete to concrete, stucco, steel and wood: Type "B".
   2. Glass (except insulating glass or special coated glass), aluminum, E.I.F.S., Natural Stone, and plastics: Type "A-1".
   3. Glass (including insulating glass or special coated glass), aluminum and plastics: Type "A-2".
B. Non-expanding Joints:
   1. Glass (except insulating glass or special coated glass), aluminum, E.I.F.S., Natural Stone, and plastics: Type "A-1".
   2. Glass (including insulating glass or special coated glass), aluminum and plastics: Type "A-2".
   3. Concrete to concrete, stucco, masonry, aluminum, steel, and wood: Type "C".
C. Mechanical (ductwork and air conditioning): Type "C".
D. Plumbing Fixtures (around toilet, bath, kitchen fixtures, and food service equipment): Type "D".
E. Acoustical (acoustical applications where sealant is required): Type "E".

END OF SECTION
SECTION 08 14 16
FLUSH WOOD DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Flush wood doors; flush configuration; non-rated.

1.02 RELATED REQUIREMENTS
A. Section 06 20 00 - Finish Carpentry: Wood door frames.
B. Section 08 71 00 - Door Hardware.

1.03 REFERENCE STANDARDS
B. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014.

1.04 SUBMITTALS
A. See Contract Conditions for Submittal Procedures
B. Product Data: Indicate door core materials and construction; veneer species, type and characteristics.
C. Shop Drawings: Show doors and frames, elevations, sizes, types, swings, undercuts, beveling, blocking for hardware, factory machining, factory finishing, cutouts for glazing and other details.
D. Certificate: Submit labels and certificates required by quality assurance and quality control programs.
E. Specimen warranty.
F. Samples: Submit two samples of door veneer, minimum 2x2 inch in size illustrating wood grain, stain color, and sheen.
G. Warranty, executed in Owner's name.

1.05 QUALITY ASSURANCE
A. Maintain one copy of the specified door quality standard on site for review during installation and finishing.
B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section, with not less than three years of documented experience.
   1. Accredited participant in the specified certification program prior to the commencement of fabrication and throughout the duration of the project.
C. Quality Certification: Comply with AWI (QCP) woodwork association quality certification service/program in accordance with requirements for work specified in this section.
   1. Provide labels or certificates indicating that the installed work complies with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade or grades specified.
   2. Provide designated labels on shop drawings as required by certification program.
   3. Provide designated labels on installed products as required by certification program.
   4. Submit certifications upon completion of installation that verifies this work is in compliance with specified requirements.

1.06 DELIVERY, STORAGE, AND HANDLING
A. Package, deliver and store doors in accordance with specified quality standard.
B. Accept doors on site in manufacturer's packaging. Inspect for damage.
C. Protect doors with resilient packaging sealed with heat shrunk plastic. Do not store in damp or wet areas; or in areas where sunlight might bleach veneer. Seal top and bottom edges with tinted sealer if stored more than one week. Break seal on site to permit ventilation.

1.07 WARRANTY
A. See Contract Conditions for Closeout Submittals.
B. Interior Doors: Provide manufacturer's warranty for interior solid core and mineral core for the life of the installation.
C. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, and telegraphing core construction.

PART 2 PRODUCTS
2.01 MANUFACTURERS
A. Wood Veneer Faced Doors:

2.02 DOORS AND PANELS
A. Doors: Refer to drawings for locations and additional requirements.
   1. Quality Level: Custom Grade, Heavy Duty performance, in accordance with AWI/AWMAC/WI (AWS).
B. Interior Doors: 1-3/4 inches thick unless otherwise indicated; flush construction.
   1. Provide solid core doors at all locations.

2.03 DOOR AND PANEL CORES
A. Non-Rated Solid Core and 20 Minute Rated Doors: Type particleboard core (PC), plies and faces as indicated.
B. Hollow Core Doors: Type - Standard (FSHC); plies and faces as indicated above.

2.04 DOOR FACINGS
A. Veneer Facing for Transparent Finish: white birch, veneer grade in accordance with quality standard indicated, plain sliced (flat cut), with book match between leaves of veneer, running match of spliced veneer leaves assembled on door or panel face.
   1. Vertical Edges: Any option allowed by quality standard for grade.

2.05 ACCESSORIES
A. Glazed Openings:
   1. Glazing: Full Lite, 1/4 inch glass.

2.06 DOOR CONSTRUCTION
A. Fabricate doors in accordance with door quality standard specified.
B. Cores Constructed with stiles and rails:
   1. Provide solid blocks at lock edge for hardware reinforcement.
C. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.
D. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.
E. Provide edge clearances in accordance with the quality standard specified.

2.07 FACTORY FINISHING - WOOD VENEER DOORS
A. Finish work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 5 - Finishing for grade specified and as follows:
   1. Transparent:
b. Sheen: Satin.

PART 3 EXECUTION

3.01 EXAMINATION
   A. Verify existing conditions before starting work.
   B. Verify that opening sizes and tolerances are acceptable.
   C. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

3.02 INSTALLATION
   A. Install doors in accordance with manufacturer's instructions and specified quality standard.
   B. Factory-Finished Doors: Do not field cut or trim; if fit or clearance is not correct, replace door.
   C. Use machine tools to cut or drill for hardware.
   D. Coordinate installation of doors with installation of frames and hardware.

3.03 TOLERANCES
   A. Conform to specified quality standard for fit and clearance tolerances.
   B. Conform to specified quality standard for telegraphing, warp, and squareness.

3.04 ADJUSTING
   A. Adjust doors for smooth and balanced door movement.
   B. Adjust closers for full closure.

3.05 SCHEDULE
   A. Refer to Door and Frame Schedule appended to this section.

END OF SECTION
SECTION 08 16 00
COMPOSITE DOORS

PART 1 GENERAL

1.01 SUBMITTALS
A. Shop Drawings: Submit Drawings showing schedule of door sizes and types, door details and elevations. Note discrepancies between the Drawings and door schedules, and the requirements of regulatory and testing agencies.
B. Product Data: Submit Manufacturer's data showing door construction.
C. Samples: Before fabrication, submit sample of each type of door to be furnished, showing face, edge, core construction and factory finish for each type specified.

1.02 QUALITY ASSURANCE
A. Coordination: Contractor shall be responsible for coordinating and obtaining necessary information from Hardware and Metal Frame Manufacturers. Door Manufacturer shall be responsible for coordinating necessary information received by Contractor from Hardware and Metal Frame Manufacturers in order that doors shall be properly prepared to receive hinges and hardware. Contractor shall provide door supplier with approved frame schedule, hardware schedule, and hardware templates. Furnish to door supplier 60 days prior to desired delivery date of doors.

1.03 DELIVERY, STORAGE AND HANDLING
A. Prior to delivery, provide protection compatible with finish specified for door edges and faces.
B. Delivery:
   1. Deliver doors to the jobsite only when proper storage site is available.
   2. Store doors in an area having controlled temperature and humidity as recommended by the door manufacturer.
   3. Store doors flat on factory pallets, or three full 2 x 4's, one centered and the other two 12 inches from each end. Do not stack doors on end, or on their vertical edge.
   4. Protect doors from construction activity, dirt, and exposure to sunlight.
C. Handling:
   1. Always handle doors with clean hands or gloves.
   2. Do not drag doors across one another.
   3. Maintain factory packaging or other means of protection on doors, until date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS
A. Doors shall be products of one of the following Manufacturers:
   1. Entry Door Model: S100 as manufactured by Therma-Tru  www.thermatru.com
   2. Or approved alternate.

2.02 ENTRY DOORS
A. Cores: Foamed-in-place polyurethane, CFC-free, density 2.0 pcf minimum, K-factor of 0.15.
B. Edges:
   1. Vertical and top edges to be machinable kiln-dried pine, primed to match color of faces, lock edge reinforced with laminated veneer lumber core, lockset area reinforced with solid blocking for hardware backup.
   2. Door bottom edge to be moisture-proof and decay-proof composite.
C. Face: 1/16 inch thick, fiberglass-reinforced thermoset composite, surface lightly textures with 80-grit brushing to accept paint. Color: white.
D. Decorative panels: Molded, fiberglass-reinforced composite, surface lightly textured with 80-grit brushing to accept paint.

F. Hinges, strikes: finish to match hardware, screws plated and finished to match hardware. Hinges - 4” x 4” x .098”. Strikes – adjustable to permit 3/16 inch in-out adjustment of door in frame.

2.03 FRAMES
A. 5/4 kiln-dried white pine, profiled with ½ inch stop. Frame depth to match wall construction with minimum depth 4 9/16 inches.
B. Sill: as scheduled.

2.04 FIELD FINISHING
A. Use Therma-Tru Stain Kit. Color to be selected by Architect from full range of standard colors.

PART 3 EXECUTION
3.01 EXAMINATION
A. Examine door frames to assure that jambs are true and plumb. Correct frames which are not true and plumb before doors are hung.

3.02 INSTALLATION
A. Doors shall be hung true and plumb with standard bevel and with uniform 3/32 inch clearance at jambs and head, and 1/2 inch bottom clearance, unless otherwise required. Mortise, drill or otherwise prepare doors for finish hardware specified in Section 08 71 00, Finish Hardware. Pilot drill screw and bolt holes.
B. Doors that are cut or planed for fitting shall be immediately resealed per manufacturer’s instructions. Doors shall operate freely without sticking or binding, without hinge-bound conditions and with hardware installed, properly adjusted and functioning.
C. Field Finish: Provide as specified in Section 09 91 00 and in accordance with Door Manufacturer's written instructions.

3.03 CLEANING
A. During the course of the Work and on completion of the Work, remove excess materials, equipment and debris and dispose of away from premises. Leave Work in clean condition.
SECTION 08 31 00
ACCESS DOORS AND PANELS

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Wall access door and frame units.
B. Ceiling access door and frame units.

1.02 RELATED REQUIREMENTS
A. Section 09 91 00 - Painting.

1.03 REFERENCE STANDARDS

1.04 SUBMITTALS
A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide sizes, types, finishes, hardware, scheduled locations, and details of adjoining work.

PART 2 PRODUCTS

2.01 ACCESS DOORS AND PANELS ASSEMBLIES
A. Wall-Mounted Units:
   1. Material: Steel.
   2. Size: 12 inch by 12 inch.
   3. Door/Panel: Hinged, standard duty, with tool-operated spring or cam lock and no handle.
   5. Gypsum Board Mounting Criteria: Provide drywall bead frame with door surface flush with wall surface.
B. Wall-Mounted Units in Wet Areas:
   1. Material: Steel, hot-dipped zinc, or zinc-aluminum-alloy coated.
   2. Size: 12 inch by 12 inch.
   3. Door/Panel: Hinged, standard duty, with tool-operated spring or cam lock and no handle.
C. Fire-Rated Wall-Mounted Units:
   1. Wall Fire-Rating: As indicated on drawings.
D. Ceiling-Mounted Units:
   1. Size - Lay-In Grid Ceilings: To match module of ceiling grid.
   2. Size - Other Ceilings: 12 inch by 12 inch.
   3. Door/Panel: Hinged, standard duty, with tool-operated spring or cam lock and no handle.
E. Fire-Rated Ceiling-Mounted Units:
   4. Door/Panel: Hinged, standard duty, with tool-operated spring or cam lock and no handle.

2.02 WALL AND CEILING MOUNTED UNITS
A. Manufacturers:
      a. Non-Rated Access Panels:
         1) Drywall Walls and Ceilings: Babcock-Davis B-RW recessed access panel with concealed pivoting rod hinge.
2) Tile Walls, Etc.: Babcock-Davis B-NT access pane
3) Acoustical Tile: Babcock-Davis B-RA access panel

4. Nystrom Building Products.

PART 3 EXECUTION

3.01 EXAMINATION
   A. Verify that rough openings are correctly sized and located.

3.02 INSTALLATION
   A. Install units in accordance with manufacturer's instructions.
   B. Install frames plumb and level in openings, and secure units rigidly in place.
   C. Position units to provide convenient access to concealed equipment when necessary.

END OF SECTION
SECTION 08 36 13
SECTIONAL DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Overhead sectional doors, manually operated.
B. Operating hardware and supports.

1.02 RELATED REQUIREMENTS
A. Section 06 10 00 - Rough Carpentry: Rough wood framing for door opening.
B. Section 08 71 00 - Door Hardware: Lock cylinders.

1.03 REFERENCE STANDARDS

1.04 SUBMITTALS
A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
B. Shop Drawings: Indicate opening dimensions and required tolerances, connection details, anchorage spacing, hardware locations, and installation details.
C. Product Data: Show component construction, anchorage method, and hardware.
D. Manufacturer's Installation Instructions: Include any special procedures required by project conditions.
E. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE
A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of experience.

1.06 WARRANTY
A. See Section 01 78 00 - Closeout Submittals for warranty requirements.
B. Correct defective Work within a five year period after Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS
A. Sectional Doors - Basis of Design: Clopay Modern Flush, Model No. 4309, with (1) elongated window on each of the top 2 sections, on the right hand side of the section.
B. Other Acceptable Manufacturers:
1. Overhead Door Corp.
2. Ceco/Windsor Door

2.02 STEEL DOOR COMPONENTS
A. Steel Doors: Flush steel, insulated; standard lift operating style with track and hardware; complying with DASMA 102, Commercial application.
   1. Door Nominal Thickness: 2 inches thick.
   2. Exterior Finish: Factory finished with acrylic baked enamel; Ultra-Grain Cypress Medium color.
B. Door Panels: Steel construction; outer steel sheet of 26 gage, ___ inch minimum thickness, grooved profile; inner steel sheet of 26 gage, ___ inch minimum thickness, flat profile; core
reinforcement ___ inch sheet steel roll formed to channel shape, rabbeted weather joints at meeting rails; expanded polystyrene (EPS) insulation.

C. Door Panels: Steel construction; outer steel sheet of [26] gage minimum thickness, [grooved] profile; inner steel sheet of [26] gage minimum thickness, flat profile; rabbeted weather joints at meeting rails; expanded polystyrene (EPS) insulation.

2.03 DOOR COMPONENTS

A. Track: Rolled galvanized steel, 0.090 inch minimum thickness; 2 inch wide, continuous one piece per side; galvanized steel mounting brackets 1/4 inch thick.

B. Hinge and Roller Assemblies: Heavy duty hinges and adjustable roller holders of galvanized steel; floating hardened steel bearing rollers, located at top and bottom of each panel, each side.

C. Lift Mechanism: Torsion spring on cross head shaft, with braided galvanized steel lifting cables.

D. Sill Weatherstripping: Resilient hollow rubber strip, one piece; fitted to bottom of door panel, full length contact.

E. Jamb Weatherstripping: Roll formed steel section full height of jamb, fitted with resilient weatherstripping, placed in moderate contact with door panels.

F. Head Weatherstripping: EPDM rubber seal, one piece full length.

G. Panel Joint Weatherstripping: Neoprene foam seal, one piece full length.

H. Lock: Inside center mounted, adjustable keeper, spring activated latch bar with feature to retain in locked or retracted position; interior and exterior handle.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that wall openings are ready to receive work and opening dimensions and tolerances are within specified limits.

3.02 INSTALLATION

A. Install door unit assembly in accordance with manufacturer's instructions.

B. Anchor assembly to wall construction and building framing without distortion or stress.

C. Securely brace door tracks suspended from structure. Secure tracks to structural members only.

D. Fit and align door assembly including hardware.

3.03 TOLERANCES

A. Maximum Variation from Plumb: 1/16 inch.

B. Maximum Variation from Level: 1/16 inch.

C. Longitudinal or Diagonal Warp: Plus or minus 1/8 inch from 10 ft straight edge.

D. Maintain dimensional tolerances and alignment with adjacent work.

3.04 ADJUSTING

A. Adjust door assembly for smooth operation and full contact with weatherstripping.

3.05 CLEANING

A. Clean doors and frames and glazing.

B. Remove temporary labels and visible markings.

3.06 PROTECTION

A. Protect installed products from damage until Date of Substantial Completion.
B. Do not permit construction traffic through overhead door openings after adjustment and cleaning.

END OF SECTION
SECTION 08 51 13
ALUMINUM WINDOWS

PART 1  GENERAL

1.01  SECTION INCLUDES
A. Extruded aluminum windows with fixed sash and operating sash.
B. Factory glazing.
C. Operating hardware.
D. Insect screens.

1.02  RELATED REQUIREMENTS
A. Section 06 10 00 - Rough Carpentry: Rough opening framing.
B. Section 06 10 00 - Rough Carpentry: Wood perimeter shims.
C. Section 07 25 00 - Weather Barriers: Sealing frame to weather barrier installed on adjacent construction.
D. Section 07 92 00 - Joint Sealants: Sealing joints between window frames and adjacent construction.

1.03  REFERENCE STANDARDS
A. AAMA CW-10 - Care and Handling of Architectural Aluminum From Shop to Site; 2015.

1.04  SUBMITTALS
A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide component dimensions and information on glass and glazing.
C. Shop Drawings: Indicate opening dimensions, elevations of different types, framed opening tolerances, method for achieving air and vapor barrier seal to adjacent construction, anchorage locations, and installation requirements.
D. Samples: Submit two samples, 12 by 12 inch in size illustrating typical corner construction, accessories, and finishes.
E. Grade Substantiation: Prior to submitting shop drawings or starting fabrication, submit one of the following showing compliance with specified grade:
   1. Evidence of AAMA Certification.
   2. Evidence of WDMA Certification.
   3. Evidence of CSA Certification.
   4. Test report(s) by independent testing agency itemizing compliance and acceptable to authorities having jurisdiction.
F. Manufacturer's Qualification Statement.
G. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.05  QUALITY ASSURANCE
A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years of documented experience.
B. Single Source Responsibility:
   1. Fixed and Operable windows, including finishes, used for this project shall be provided through one source from a single manufacturer.
C. Energy Conservation: Windows to be Energy Star rated and meet 2012 IECC requirements for SHGC of 0.25 maximum and a minimum U-factor of 0.65 for operable fenestration.

1.06 DELIVERY, STORAGE, AND HANDLING
A. Comply with requirements of AAMA CW-10.
B. Protect finished surfaces with wrapping paper or strippable coating during installation. Do not use adhesive papers or sprayed coatings that bond to substrate when exposed to sunlight or weather.

1.07 WARRANTY
A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
B. Provide 10 year manufacturer warranty against failure of glass seal on insulating glass units, including interpane dusting or misting. Include provision for replacement of failed units.
C. Provide 10 year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking.

PART 2 PRODUCTS
2.01 BASIS OF DESIGN - LC PERFORMANCE CLASS WINDOWS
A. Grade: AAMA/WDMA/CSA 101/L.S.2/A440 having Performance Class of LC, and Performance Grade at least as high as specified design pressure.
B. Fixed Windows.
C. Horizontal Sliding; with Matching Fixed Units:
D. Sliding Glass Doors .
   2. Locking Hardware.
   3. Weatherstripping.
E. Other Manufacturers: Provide either the product identified as "Basis of Design" or an equivalent product of another manufacturer.
F. Substitutions: See Section 01 60 00 - Product Requirements.
   1. For any product not identified as "Basis of Design", submit information as specified for substitutions.

2.02 WINDOWS
A. Aluminum Windows: Extruded aluminum frame and sash, factory fabricated, factory finished, with operating hardware, related flashings, and anchorage and attachment devices.
   1. Frame Depth: 3-1/2 inches.
   2. Fabrication: Joints and corners flush, hairline, and weatherproof, accurately fitted and secured; prepared to receive anchors; fasteners and attachments concealed from view; reinforced as required for operating hardware and imposed loads.
   3. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.
   4. Movement: Accommodate movement between window and perimeter framing and deflection of lintel, without damage to components or deterioration of seals.
   5. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.
B. Performance Requirements: Provide products that comply with the following:
C. Fixed, Non-Operable Type:
1. Glazing: Double; clear; low-e.
2. Exterior Finish: Dark Bronze.

D. Horizontal Sliding Type:
   2. Provide screens.
   3. Glazing: Double; clear; transparent.

2.03 MATERIALS
   A. Extruded Aluminum: ASTM B221 (ASTM B221M), 6063 alloy, T6 temper.

2.04 HARDWARE
   A. Operator: Lever action handle fitted to projecting sash arms with limit stops.
   B. Window Opening Control Devices (WOCD): Provide operable window sash hardware that limits openings to only allow passage of 4 inch diameter rigid sphere or less, and are easily releasable to fully open without use of keys, tools, or special knowledge.
   C. Bottom Rollers: Stainless steel, adjustable.
   D. Limit Stops: Resilient rubber.

PART 3 EXECUTION

3.01 EXAMINATION
   A. Verify that wall openings and adjoining air and vapor seal materials are ready to receive aluminum windows.

3.02 INSTALLATION
   A. Install windows in accordance with manufacturer's instructions.
   B. Attach window frame and shims to perimeter opening to accommodate construction tolerances and other irregularities.
   C. Align window plumb and level, free of warp or twist. Maintain dimensional tolerances and alignment with adjacent work.
   D. Install sill and sill end angles.
   E. Set sill members and sill flashing in continuous bead of sealant.
   F. Provide thermal isolation where components penetrate or disrupt building insulation. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
   G. Install operating hardware not pre-installed by manufacturer.

3.03 TOLERANCES
   A. Maximum Variation from Level or Plumb: 1/16 inches every 3 ft non-cumulative or 1/8 inches per 10 ft, whichever is less.

3.04 ADJUSTING
   A. Adjust hardware for smooth operation and secure weathertight closure.

3.05 CLEANING
   A. Remove protective material from factory finished aluminum surfaces.
   B. Remove excess glazing sealant by moderate use of mineral spirits or other solvent acceptable to sealant and window manufacturer.

END OF SECTION
SECTION 08 71 00
FINISH HARDWARE

GENERAL

1.01 SUMMARY
A. SECTION INCLUDES
   1. Finish hardware for doors.
   2. Electronic hardware.
   3. Thresholds & weatherstripping
   4. Keying System
   5. Templates
   6. Hardware schedule

1.02 RELATED SECTIONS
A. 08 14 16 - Flush Wood Doors.
B. 08 16 00 - Composite Doors.
C. 08 36 13 - Sectional Doors

1.03 REFERENCES
A. Publications of agencies and organizations listed below form a part of this specification section to the extent referenced.
   1. DHI - Recommended Locations for Builders’ Hardware.
   4. UL - Building Material Directory.
   5. DHI - Door and Hardware Institute
   6. WHI - Warnock Hersey
   7. BHMA - Builders Hardware Manufacturers Association
   8. ANSI - American National Standards Institute

1.04 SUBMITTALS
A. Schedules: Submit detailed finish hardware schedule and product data in accordance with section 01 30 00.
   1. Furnish a typewritten schedule in DHI vertical format complete with catalog cuts. Schedule shall be complete, including type, manufacturers name and number, and finish of each item required. Include complete schedule of keying system.
B. Samples: If requested, submit sample of each type of finish hardware proposed for the project. If approved, samples may be used on project.
C. Templates: Furnish templates required for fabrication of hollow metal doors and frames, aluminum and glass doors, or other items related to hardware

1.05 QUALITY ASSURANCE
A. Supplier: Hardware supplier shall have a minimum of three years experience in supplying hardware for projects of this size and scope and shall have in his employ a certified Architectural Hardware Consultant (AHC) to prepare submittals and coordinate proper preparation for and installation of hardware. The hardware supplier also needs to be a stocking distributor of the manufactured products that are being supplied for the project and in good standings with the factory.
B. Substitutions: Manufacturers and model numbers listed are to establish a standard of quality. Similar items of approved manufacturers that are equal in design, function and quality will be accepted upon prior approval by the architect, and provided required data and physical samples are submitted in accordance with Section 01 20 00.
C. Regulatory requirements: Conform to code requirements applicable to fire rated doors and frames and to accessibility for the physically handicapped.

1.06 DELIVERY, STORAGE AND HANDLING
A. Package each item of hardware in original containers and mark each to correspond with heading numbers on the hardware schedule.
B. Include necessary instructions, templates, drawings and fasteners for proper installation.
C. Store off the floor in a clean dry area out of the way of work in progress

1.07 WARRANTY
A. Provide warranty of hardware items for one year.
   1. Provide a Five-year warranty for door Closers.
   2. Provide a Two-year warranty for door Lever locks.
   3. Provide a Three-year warranty for door Exit devices.

PART 2 - PRODUCTS
2.01 MANUFACTURERS
A. Catalog numbers of manufacturers listed in the first column have been used to establish the quality required. Manufacturers listed in the other columns are acceptable, other manufactures to be prior approved by architect.

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<thead>
<tr>
<th>Hinges</th>
<th>Ives</th>
<th>Bommer</th>
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<tr>
<td>Locks</td>
<td>Schlage</td>
<td>Falcon</td>
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<td>Closers</td>
<td>LCN</td>
<td>Falcon</td>
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<td>Flat goods</td>
<td>Ives</td>
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<td>Exit Device</td>
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<td>Falcon</td>
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</table>

2.02 MATERIALS
A. Screws and Fasteners: Furnish all exposed fasteners to match item being secured. Make all fasteners of the same material as item being fastened except provide stainless steel or brass for securing aluminum items.
B. Hinges:
   1. Full mortise template hinges, ball bearing type.
   2. Non-removable pin and heavy weight at exterior doors.
   3. Furnish quantity of hinges as follows:
      a. Doors to 60" high: 2 hinges
      b. Doors over 60" to 90" high: 3 hinges
      c. Doors over 90" to 120": 4 hinges
   4. Furnish hinge sizes as follows:
      a. For 1 3/4" doors to 30" wide: 4.5" x 4.5"
      b. For 1 3/4" doors over 30" wide: 5 x 4.5"
      c. Width of hinges adjusted to clear adjacent trim.
C. Locksets and Latches
   1. Bored type locksets complying with ANSI 156.2 Series 4000 Grade 1.
   2. Provide 2 3/4" backsets unless job conditions dictate otherwise.
   3. Provide strikes with extended lip where required to protect trim from damage by latchbolt.
   4. Schlage F series BRW levers specified as the standard of quality.
D. Exit Devices
1. All to be U.L. approved for casualty. All fire doors to be equipped with rated exit devices meeting fire label requirements.
2. Provide all exit devices from one manufacturer.
3. Falcon 25 series specified as the standard of quality.
4. Provide cylinders as required by exit device for proper operation

E. Door Closers
1. Bodies to be close grained malleable iron or aluminum with three separate control valves, including backcheck, ANSI Grade 2.
2. Closers to match adjacent hardware.
3. Provide all closers with thru bolts.
4. All closers to comply with Americans with Disabilities Act requirements.
5. Falcon SC61 Series specified as the standard of quality.

F. Kick Plates
1. Provide .050 x 10” high x 2” less than door width for single doors and 1” less than door width for pairs.
2. Ives 8400 series specified as the standard of quality.

G. Push Plates
1. Provide .050 x 6” x 16” push plates unless conditions dictate otherwise.
2. Ives 8200 series specified as the standard of quality.

H. Pull Plates
1. Provide .050 x 4” x 16” plate with 10” c/c pull.
2. Ives 8303 series specified as the standard of quality.

I. Flush Bolts
1. Manual flush bolts equal to Ives FB458 with 12” rods.
2. Provide extension rods where conditions dictate.

J. Door Stops
1. Wall stops shall be used whenever possible. Use dome type floor stops where wall stops cannot be used.
2. Ives WS401/402-70 specified as the standard of quality.

K. Silencers
1. Provide 3 for each single door and 2 for each pair of doors. Not required on door having seals.

L. Thresholds and Weather stripping as listed in hardware sets.

2.03 FINISHES
A. Provide matching finishes for hardware items at each door opening to the greatest extent possible, except as otherwise indicated.

B. Provide finishes which comply with those established by BHMA listed in "Materials and Finishes Standard 1301".

C. Finishes for this project are as follows;
   1. Hinges 619
   2. Locksets 619
   3. Exit Devices 626
   4. Flat Goods 630
   5. Stops 630
   6. Closers 689

2.04 KEYING
A. Key all locks into new master key system in accordance with owner’s instructions.
PART 3 EXECUTION

3.01 EXAMINATION
   A. Examine doors, frames and related items for conditions that would prevent proper application of finish hardware. Do not proceed until defects have been corrected.

3.02 INSTALLATION
   A. Install each item in accordance with manufacturer’s instructions and recommendations. Set units level, plumb and true to line and location. Do not install surface mounted items until finishes have been completed on substrate.

3.03 ADJUST AND CLEAN
   A. At final completion hardware shall be left clean and free from disfigurement. Make a final adjustment to closers and other items of hardware. Where hardware is found defective repair, or replace or otherwise correct as required.

3.04 HARDWARE SETS - NOTE THAT HARDWARE SETS ARE FOR BOTH UNIT 1 & UNIT 2
   A. While the following hardware sets are intended to cover all doors, and establish a type and standard of quality, it is the responsibility of the hardware supplier to examine the plans and specifications and furnish proper hardware for all openings. The hardware supplier shall review the entire specification versus the door schedule and notify the architect of any errors, inconsistencies, or omissions during the bid period.

HARDWARE GROUP NO. 01
FOR USE ON MARK/DOOR #(S):

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<tr>
<th>QTY</th>
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<tr>
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<td>F60 CEN BRW</td>
<td>619 SCH</td>
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<td>WALL STOP WS401/402CVX</td>
<td>619 IVE</td>
<td></td>
<td></td>
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<td>WEATHERSTRIP 8303AA</td>
<td>628 ZER</td>
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<tr>
<td>1 EA</td>
<td>DR BOTTOM/SWEEP AS REQUIRED</td>
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<td>1 EA</td>
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UNIT ENTRY USE 111A DOOR BOTTOM. FLEX PATIO ENTRY USE 39A SWEEP

HARDWARE GROUP NO. 02
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GARAGE DOOR TO UNIT

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POWDER/BATHROOM/BEDROOM

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CLOSET/PANTRY

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MASTER CLOSET/MASTER BATH/POWDER

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FINISH HARDWARE Construction Documents | 17022 08 71 00-5 August 24, 2018

Phoenix Arizona
| 2 EA | SLIDING DR HW | SD10-SIZE AS REQ TOP MOUNT | 619 | SCH |
| 2 EA | BTB PULL     | PR 8102HD 6"                 | 619 | IVE |

TWO DOOR BARN DOOR SET

**HARDWARE GROUP NO. BF01**

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TWO DOOR BIFOLD SET

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FOUR DOOR BIFOLD SET

**HARDWARE GROUP NO. BP01**

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BY PASS CLOSET

**HARDWARE GROUP NO. OH01**

FOR USE ON MARK/DOOR #(#S):

| QTY  | 115               | 215             |

EACH TO HAVE:

ALL HARDWARE BY OVERHEAD DOOR SUPPLIER

**HARDWARE GROUP NO. SL01**

FOR USE ON MARK/DOOR #(#S):
EACH TO HAVE:
ALL HARDWARE BY ALUM SLIDING DOOR SUPPLIER

END OF SECTION
SECTION 09 21 16
GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Performance criteria for gypsum board assemblies.
B. Acoustic insulation.
C. Gypsum wallboard.
D. Joint treatment and accessories.
E. Textured finish system.

1.02 RELATED REQUIREMENTS
A. Section 06 10 00 - Rough Carpentry: Building framing and sheathing.
B. Section 06 10 00 - Rough Carpentry: Wood blocking product and execution requirements.
C. Section 07 21 00 - Thermal Insulation: Acoustic insulation.
D. Section 07 25 00 - Weather Barriers: Water-resistive barrier over sheathing.
E. Section 07 84 00 - Firestopping: Top-of-wall assemblies at fire rated walls.
F. Section 07 92 00 - Joint Sealants: Sealing acoustical gaps in construction other than gypsum board or plaster work.
G. Section 09 30 00 - Tiling: Tile backing board.

1.03 REFERENCE STANDARDS
G. ASTM E413 - Classification for Rating Sound Insulation; 2010.

1.04 SUBMITTALS
A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide data on metal framing, gypsum board, accessories, and joint finishing system.

1.05 QUALITY ASSURANCE
A. Copies of Documents at Site: Maintain at the project site a copy of each referenced document that prescribes execution requirements.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES
A. Provide completed assemblies complying with ASTM C840 and GA-216.
B. Interior Partitions, Indicated as Acoustic: Provide completed assemblies with the following characteristics:
   1. Acoustic Attenuation: STC as indicated calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.

C. Fire Rated Assemblies: Provide completed assemblies with the following characteristics:
   1. Fire Rated Partitions: per drawings; 1 hour rating.
   2. Fire Rated Ceilings and Soffits: One (1) hour fire rating.
   3. Fire Rated Shaft Walls: UL listed assembly No._____; 1 hour rating.
   4. UL Assembly Numbers: Provide construction equivalent to that listed for the particular assembly in the current UL (FRD).

2.02 BOARD MATERIALS

A. Manufacturers - Gypsum-Based Board:
   7. NO FOREIGN PRODUCED GYPSUM-BASED BOARD IS ALLOWED.

B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
   1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
   2. At Assemblies Indicated with Fire-Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
   3. Thickness:
      c. Multi-Layer Assemblies: Thicknesses as indicated on drawings.

2.03 ACCESSORIES

A. Acoustic Insulation: ASTM C665; preformed glass fiber, friction fit type, unfaced. Thickness: to fully fill cavity inch.

B. Acoustic Sealant: Acrylic emulsion latex or water-based elastomeric sealant; do not use solvent-based non-curing butyl sealant.

C. Finishing Accessories: ASTM C1047, galvanized steel, rolled zinc, or rigid plastic, unless noted otherwise.
   1. Types: As detailed or required for finished appearance.

D. Beads, Joint Accessories, and Other Trim: ASTM C1047, rigid plastic, galvanized steel, or rolled zinc, unless noted otherwise.
   1. Rigid Corner Beads: Rounded/Bull-nose, for 90 degree outside corners and archways.

E. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.

F. Textured Finish Materials: Latex-based compound; plain.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that project conditions are appropriate for work of this section to commence.

3.02 ACOUSTIC ACCESSORIES INSTALLATION

A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.

B. Acoustic Sealant: Install in accordance with manufacturer's instructions.
3.03 BOARD INSTALLATION
   A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.
   B. Fire-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.

3.04 INSTALLATION OF TRIM AND ACCESSORIES
   A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.
   B. Corner Beads: Install at external corners, using longest practical lengths.
   C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials.

3.05 JOINT TREATMENT
   A. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
      1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
      2. Level 1: Fire rated wall areas above finished ceilings, whether or not accessible in the completed construction.
   B. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
      1. Feather coats of joint compound so that camber is maximum 1/32 inch.
      2. Taping, filling, and sanding is not required at surfaces behind adhesive applied ceramic tile and fixed cabinetry.

3.06 TEXTURE FINISH
   A. Apply finish texture coating by means of spraying apparatus in accordance with manufacturer's instructions and to match approved sample.

3.07 TOLERANCES
   A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

END OF SECTION
SECTION 09 24 53
ONE-COAT STUCCO SYSTEM

PART 1  GENERAL

1.01  SUBMITTALS

A. Product Data: Provide Manufacturer's data on stucco materials, and installation instructions.
B. Samples: Submit Manufacturer's samples of available colors and textures. Submit sample of specified color and texture.

1.02  QUALITY ASSURANCE

A. Stucco system shall be installed by an applicator approved by the Manufacturer.
B. Mock-up Panel: Prior to installation of Stucco Work, provide 4 x 4 foot sample mock-up panel using materials specified for final Work. Construct sample as directed, and of full thickness. Demonstrate the proposed range of color, texture and workmanship to be expected in the completed Work. Obtain Architect's acceptance of visual qualities of the sample panel.

1.03  DELIVERY, STORAGE AND HANDLING

A. Packing and Shipping: Deliver materials to site in Manufacturer's original unopened packaging with labels intact.
B. Storage: Adequately protect against damage while stored at the site.
C. Handling: Comply with Manufacturer's instructions.

1.04  JOB CONDITIONS

A. Installer must examine surfaces to receive the stucco system and shall notify the Contractor in writing of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions have been corrected in a manner acceptable to the installer.
B. Protect adjacent surfaces from damage during installation of stucco system.
C. Stucco systems are applied at ambient air temperatures from 43 degrees F. to 120 degrees F..
D. Do not apply to frozen surfaces or surfaces containing frost.

PART 2  PRODUCTS

2.01  MANUFACTURER


2.02  MATERIALS (STUCCO PRODUCTS)

A. Western 1-Kote Concentrate.
B. Sand must be clean and free from deleterious amounts of silt, loam, soluble salts, clay and organic matter. Sampling and testing must comply with ASTM C897.
C. Water shall be clean, fresh, suitable for domestic consumption and free from such amounts of mineral and organic substances as would affect the stucco.

2.03  MATERIALS (LATH PRODUCTS)

A. Weather Resistive Barrier: Breather typ asphalt saturated paper, water vapor permeable.
B. Insulation Board: Dow, minimum 1” thick, 4-sided, tongue and groove rigid insulation board with a nominal density of 1.0 lb. per cubic foot. Class 1 flame rating and smoke density less than 450.
C. Lath: Minimum 20 gauge, 1 inch galvanized steel wire fabric or 3.4 pounds/square yard expanded metal lath fabricated from copper bearing steel and painted, or zinc alloy. Lath must be self furred when applied over all substrates except polystyrene insulation board. Self furring lath must have sufficient clearance between the wire and substrate to allow embedment in the Base Coat. All lath and lath attachments shall be of corrosion resistant materials.
D. Accessories: Coordinate depth of accessories with thickness and number of coats required. All trims to be either fabricated from galvanized metal, zinc coated, or plastic.
   1. Corner Reinforcement: Pre-formed corners with expanded flanges having either small nose or radius corners or expanded metal lath reinforcement extending minimum of 3 inches in either direction for large radius corners.
   2. Casing Beads: Pre-formed “J” trim for stucco terminations. Perforated for weep screed when required.
   3. Control Joints: One piece “V” or “J” profile trim with expanded flanges when required.
   4. Expansion Joints: Two piece, adjustable width slip joint or pair casing beads installed back to back to allow for excessive movement between dissimilar substrates.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of Conditions:
   1. Examine subsurfaces and supports to receive Work and report detrimental conditions in writing, with a copy to Architect. Commencement of Work will be construed as acceptance of subsurfaces.
   2. Verify, before proceeding with this Work, that required inspections of existing conditions have been completed.

B. Coordination with other Work: Coordinate with other work and trades which affect, connect with, or will be concealed by this Work.

3.02 LATH INSTALLATION

A. Weather Resistive Barrier: Install weather resistive barrier directly to framing using adhesive or other approved method to hold in place. Lap sides and ends a minimum of 1-1/2 inches.

B. Insulation Board: Rigid insulation shall be applied directly over weather resistive barrier and studs. The insulation boards shall be placed horizontally with tongues upward to prevent water penetration. All vertical butt joints must be tight, staggered and occur on studs. The insulation boards shall be temporarily held in place with galvanized staples, roofing nails, or self tapping screws.

C. Lath: Over insulation board, install lath beginning at bottom of wall and apply with long dimension across supports. Lap sides and ends a minimum of 1-1/2 inches. Make end laps of lath only over supports and stagger end laps in adjacent courses. Bend lath around all corners, both internal and external, or provide additional reinforcing lath.

D. Fastening: Fasten lath through sheathing and into steel studs using No. 8 x 1-5/8", Type S Wafer Head Screws installed a minimum of 6 inches on center, and penetrating a minimum of 1/4 inch into the steel stud.

E. Accessories:
   1. Install corner beads or corner reinforcement at all external corners.
   2. Install casing beads where stucco stops and at all stucco terminations.
   3. Install weep screed at base.
   4. Install control joints at corners of doors, windows or wall openings, and in the stucco field to create panels no larger than 144 square feet. Distance between control joints should not exceed 12 feet in any direction.
   5. Install expansion joints where dissimilar substrates meet and at structural expansion joints.

3.03 STUCCO APPLICATION

A. Proportioning and Application: Mix in accordance with ICC report #1607.

B. Application of Base Coat: Apply by hand trowel or machine spray to a minimum thickness of 3/8 inch. Bring surface to a true and even plane using rod or darby as required for desired finish. Float surface to remove irregularities and leave ready to receive finish coat. Follow manufacturer’s recommendations regarding hydration after application to ensure proper curing.
C. Application of Finish: Follow instructions of finish coat manufacturer shall be sufficient to achieve the texture specified. When applying the finish, plan Work so that the entire wall can be completed at one time in order to eliminate joining lines. If not practical, use a corner, door or window as a breaking point.

3.04 ADJUST AND REPAIR
A. Upon completion, point-up stucco around trim and other locations where stucco meets dissimilar materials.
B. Cut out and patch damaged stucco.
C. Match patch of damaged stucco to existing Work in form, texture and color.

3.05 CLEANING
A. During the course of the Work and on completion, remove and dispose of excess materials, equipment and debris away from premises. Leave Work in clean condition.

END OF SECTION
SECTION 09 30 00
TILING

PART 1 GENERAL
1.01 SECTION INCLUDES
A. Tile for floor applications.
B. Tile for wall applications.
C. Coated glass mat backer board as tile substrate.
D. Ceramic accessories.
E. Non-ceramic trim.

1.02 RELATED REQUIREMENTS
A. Section 03 54 00 - Cast Underlayment.
B. Section 07 92 00 - Joint Sealants: Sealing joints between tile work and adjacent construction and fixtures.

1.03 REFERENCE STANDARDS
D. ANSI A108.4 - American National Standard Specifications for Installation of Ceramic Tile with Organic Adhesives or Water Cleanable Tile-Setting Epoxy Adhesive; 2009 (Revised).
M. ANSI A118.4 - American National Standard Specifications for Modified Dry-Set Cement Mortar; 2012 (Revised).


1.04 SUBMITTALS
A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.

C. Provide minimum 6x6 in sample of each product to be installed

D. Provide full range of grout color samples for selection

1.05 DELIVERY, STORAGE, AND HANDLING
A. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.

1.06 FIELD CONDITIONS
A. Do not install solvent-based products.

B. Maintain ambient and substrate temperature of 50 degrees F during installation of mortar materials.

PART 2 PRODUCTS

2.01 TILE
A. Manufacturers: All products of each type by the same manufacturer.

B. Glazed Wall Tile: ANSI A137.1, standard grade.
   1. Size: 2 by 1 inch, nominal.
   2. Color(s): As indicated on drawings.

C. Porcelain Tile: ANSI A137.1, standard grade.
   1. Moisture Absorption: 0 to 0.5 percent as tested in accordance with ASTM C373.
   2. Size: 12 by 12 or as indicated on drawings inch, nominal.
   3. Thickness: 3/8 inch.
   4. Edges: Cushioned.
   6. Color(s): Fog.

2.02 TRIM AND ACCESSORIES
A. Ceramic Accessories: Glazed finish, same color and finish as adjacent field tile; same manufacturer as tile.

B. Non-Ceramic Trim: Satin natural anodized extruded aluminum, style and dimensions to suit application, for setting using tile mortar or adhesive.
   1. Applications:
      a. Open edges of wall tile.
      b. Open edges of floor tile.
2.03 SETTING MATERIALS
A. Latex-Portland Cement Mortar Bond Coat: 1 or 1.
   1. Products:
      a. Kerabond/Keralastic as manufactured by MAPEI Corporation. Dry-Set mortar conforming with per ANSI A118.1-2005 with liquid flexible additive to produce a polymer modified mortar conforming to ANSI A118.4-2005.

2.04 GROUTS
A. Manufacturers:
   1. Mapei.
   2. Custom Building Products.
B. High Performance Polymer Modified Grout: ANSI A118.7 polymer modified cement grout.
   1. Applications: Use this type of grout where indicated and where no other type of grout is indicated.
   2. Use sanded grout for joints 1/8 inch wide and larger; use unsanded grout for joints less than 1/8 inch wide.
   3. Color(s): As selected by Architect from manufacturer's full line.

2.05 ACCESSORY MATERIALS
A. Crack Isolation Membrane: 1.8 mm thick self bonding, polypropylene.
   1. Crack Buster by Custom Building Products <www.custombuildingproducts.com>. The following is a proprietary system that provides a "non-force conductive bond" between the substate and the tile. This system is purported by the manufacturer to provide a system equivalent to a sand cushion. Delete the following if one of the lesser expensive methods allowed by TCA and ANSI are specified (polyethylene sheeting or asphalt-saturated felt)
   2. Dal-Tile CIS or Nobleseal CIS, 30 mil CPE with non-woven spun bond polyester fabric laminated to both sides. Adhesive for application of membrane shall be compatible with substrate
B. Waterproof Membrane: Provide one of the following:
   1. PRP 315 two-component synthetic polymer anti-fracture and waterproofing membrane and as manufactured by Mapei Corporation, meeting ANSI A118.10-2005, trowel-applied
   2. Schluter KERDI sheet waterproofing membrane
   3. Other sheet waterproofing membrane meeting IPC and so labeled and acceptable to Architect
C. Backer Board: Coated glass mat type complying with ASTM C1178/C1178M; inorganic fiberglass mat on both surfaces and integral acrylic coating vapor retarder.
D. Mesh Tape: 2 inch wide self-adhesive fiberglass mesh tape.

PART 3 EXECUTION
3.01 EXAMINATION
A. Verify that sub-floor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive tile.
B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive tile.
C. Verify that sub-floor surfaces are dust-free and free of substances that could impair bonding of setting materials to sub-floor surfaces.
D. Verify that required floor-mounted utilities are in correct location.
3.02 PREPARATION
   A. Protect surrounding work from damage.
   B. Vacuum clean surfaces and damp clean.
   C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.
   D. Install backer board in accordance with ANSI A108.11 and board manufacturer's instructions. Tape joints and corners, cover with skim coat of setting material to a feather edge.
   E. Prepare substrate surfaces for adhesive installation in accordance with adhesive manufacturer's instructions.

3.03 INSTALLATION - GENERAL
   A. Install tile, thresholds, and stair treads and grout in accordance with applicable requirements of ANSI A108.1a through ANSI A108.13, manufacturer's instructions, and TCNA (HB) recommendations.
   B. Lay tile to pattern indicated. Do not interrupt tile pattern through openings.
   C. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.
   D. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make grout joints without voids, cracks, excess mortar or excess grout, or too little grout.
   E. Form internal angles square and external angles bullnosed.
   F. Install ceramic accessories rigidly in prepared openings.
   G. Install non-ceramic trim in accordance with manufacturer's instructions.
   H. Sound tile after setting. Replace hollow sounding units.
   I. Keep control and expansion joints free of mortar, grout, and adhesive.
   J. Prior to grouting, allow installation to completely cure; minimum of 48 hours.
   K. Grout tile joints unless otherwise indicated. Use standard grout unless otherwise indicated.
   L. At changes in plane and tile-to-tile control joints, use tile sealant instead of grout, with either bond breaker tape or backer rod as appropriate to prevent three-sided bonding.

3.04 INSTALLATION - FLOORS - THIN-SET METHODS
   A. Over interior concrete substrates, install in accordance with TCNA (HB) Method F113, dry-set or latex-Portland cement bond coat, with standard grout, unless otherwise indicated.
      1. Use uncoupling membrane under all tile unless other underlayment is indicated.
      2. Where waterproofing membrane is indicated, install in accordance with TCNA (HB) Method F122, with latex-Portland cement grout.
   B. Over wood substrates, install in accordance with TCNA (HB) Method F142, with standard grout, unless otherwise indicated.

3.05 INSTALLATION - WALL TILE
   A. Over coated glass mat backer board on studs, install in accordance with TCNA (HB) Method W245.

3.06 CLEANING
   A. Clean tile and grout surfaces.

3.07 PROTECTION
   A. Do not permit traffic over finished floor surface for 4 days after installation.

END OF SECTION
SECTION 09 30 50
TILE SETTING MATERIALS AND ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES
   A. Finishing and edge-protection profiles for walls and countertops.
   B. Setting materials: adhesives, mortars, grouts, and sealants.
   C. Waterproofing Membrane. ADD ALTERNATE at Master Bathroom.
   D. Floor drain, with integrated bonding flange. ADD ALTERNATE at Master Bathroom.

1.02 RELATED SECTIONS
   A. Section 03 30 00 - Cast-in-Place Concrete.
   B. Section 06 10 00 - Rough Carpentry.
   C. Section 07 92 00 - Joint Sealants.
   D. Section 09 21 16 - Gypsum Board Assemblies.
   E. Section 09 30 00 - Tiling.

1.03 REFERENCES
   A. CSA B79-08: Floor, Area, and Shower Drains, and Cleanouts for Residential Construction.

1.04 SUBMITTALS
   A. Submit under provisions of Section 01 30 00.
      1. Product Data: Manufacturer's data sheets on each product to be used, including: Preparation instructions and recommendations.
      2. Storage and handling requirements and recommendations.
      3. Installation methods.
   B. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) long, representing actual product, color, and finish.
   C. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

1.05 QUALITY ASSURANCE
   A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum ten years experience.
   B. Installer Qualifications: Company specializing in performing the work of this section with minimum five years experience.
   C. Source Limitations for Setting Materials and Accessories: Obtain product of a uniform quality for each application condition from a single manufacturer.
   D. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
      1. Finish areas designated by Architect.
      2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
      3. Refinish mock-up area as required to produce acceptable work.
   E. Preinstallation Conference: Conduct conference at the Project site.
1. Convene one week prior to commencing work of this section.
2. Require attendance of installation material manufacturer, tile supplier, tile installer and installers of related work. Review installation procedures and coordination required with related work.
3. Meeting agenda includes but is not limited to:
   a. Surface preparation.
   b. Tile and installation material compatibility.
   c. Edge protection, transition and pre-fabricated movement joint profiles.
   d. Waterproofing techniques.
   e. Crack isolation techniques.

1.06 DELIVERY, STORAGE, AND HANDLING
   A. Store products in manufacturer's unopened packaging until ready for installation.
   B. Protect materials from exposure to moisture. Do not deliver until after wet work is complete and dry.
   C. Store materials in a dry, warm, ventilated weathertight location.

1.07 PROJECT CONDITIONS
   A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.08 COORDINATION
   A. Coordinate Work with other operations and installation of floor finish materials to avoid damage to installed materials.

PART 2 PRODUCTS

2.01 MANUFACTURERS
   A. Acceptable Manufacturer: Schluter Systems, L.P., 194 Pleasant Ridge Road, Plattsburgh, NY 12901-5841. ASD. Tel: (800) 472-4588. Fax (800) 477-9783. E-mail: specassist@schluter.com. Web: www.schluter.com.
   B. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00.

2.02 FINISHING AND EDGE-PROTECTION PROFILES FOR WALLS AND COUNTERTOPS
   A. Schluter-DESIGNBASE - SL
      1. Description: Anodized Aluminum Baseboard profile comprised of a symmetrically-rounded top, flat exposed face, and 5/16 inch (8 mm) radius lower section.
      2. Corners:
         a. Provide with matching inside corners.
      3. Material and Finish:
         a. AE - Satin Anodized Aluminum.
         b. AEEB - Anodized Aluminum with Brushed Stainless Steel appearance
         c. MBW - Matte White color-Coated Aluminum.
            1) Height:
            2) Height as required.

2.03 SETTING MATERIALS
   A. Installation methods as specified in Section 09 30 00 - Tiling.

2.04 WATERPROOFING MEMBRANE
   A. Schluter-KERDI
      1. Description: 0.008 inch (0.2 mm) thick, orange polyethylene membrane, with polypropylene fleece laminated on both sides, which is listed by cUPC to meet or exceed requirements of the "American national standard specifications for load bearing, bonded, waterproof membranes for thin-set ceramic tile and dimension stone installation A118.10 and is listed by cUPC, and is evaluated by ICC-ES (see Report No. ESR-2467).
2. Corners and seals:
   a. Provide matching preformed inside corners.
   b. Provide matching preformed pipe seals.
   c. Provide matching preformed mixing valve seals.

2.05 FLOOR DRAIN WITH INTEGRATED BONDING FLANGE
A. Schluter-KERDI-DRAIN, Stainless Steel:
   1. Description: stainless steel floor drain 9-27/32 inch (250 mm) diameter integrated bonding flange with 3 inch (75 mm) no-hub outlet, and grate assembly. Grate assembly includes stainless steel grate, height adjustment collar, and lateral adjustment ring with trapezoid perforations.
   2. Drain listed by UPC to meet requirements of "International Association of Plumbing and Mechanical Officials Interim Guide Criteria for Floor Drain with Integrated Bonding Flange" (IGC 195), listed by CSA to meet requirements of the Canadian Standards Association standard, "Floor, Area, and Shower Drains, and Cleanouts for Residential Construction" (CSA B79), Drain detail as referenced in method B422 and B422C of the Tile Council of North America Handbook for Ceramic Tile Installation.
   3. Drain Housing Material:
      a. Stainless Steel.
   4. Grate Material and Finish:
      a. ATGB - Brushed Nickel Anodized Aluminum.
   5. Nominal Grate Size:
      a. 4 inch (100 mm) by 4 inch (100 mm) square.
   6. Drain Outlet:
      a. 2 inch (50 mm) outlet.

2.06 PREFABRICATED SHOWER COMPONENTS
A. Schluter-KERDI-SHOWER-ST
   1. Description: trapezoid-imprinted, prefabricated, sloped tiled shower tray base, made of 2.75 lb/ft3 (44 kg/m3) density, self-extinguishing (HF-1 rating per UL-94) expanded polystyrene, with 12-5/16 inch (313 mm) diameter removable recessed section with 1/8 inch (3 mm) wide ribs on top and channels on the underside.
   2. Size:
      a. ST-81/152 - 32 inch by 60 inch by 1-3/4 inch (810 mm by 1520 mm by 44mm).
B. Schluter-KERDI-BOARD-SC
   1. Description: Prefabricated waterproof Shower Curb, constructed of rigid extruded polystyrene foam building element panel, with reinforcement material and polypropylene fleece webbing laminated on both sides for thin-set ceramic tile and dimension stone Installations.
   2. Size:
      a. KBSC 115 150 1220 - 48 inch by 6 inch by 4-1/2 inch (122 cm by 150 mm by 115 mm).

PART 3 EXECUTION
3.01 EXAMINATION
A. Do not begin installation until substrates have been properly prepared.
B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
C. PREPARATION
   1. Clean surfaces thoroughly prior to installation.
   2. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
D. INSTALLATION
   1. Install in accordance with manufacturer's instructions.
E. PROTECTION
   1. Protect installed products until completion of project.
   2. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION
SECTION 09 65 00
RESILIENT FLOORING

PART 1 GENERAL
1.01 SECTION INCLUDES
A. Resilient tile flooring.
B. Resilient base.
C. Installation accessories.

1.02 RELATED REQUIREMENTS
A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

1.03 REFERENCE STANDARDS

1.04 SUBMITTALS
A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.
C. Verification Samples: Submit two samples, minimum 6 x 6 inch in size illustrating color and pattern for each resilient flooring product specified and each rubber base
D. Maintenance Materials: Furnish the following for Owner’s use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements, for additional provisions.
   2. Extra Flooring Material: 500 square feet or nearest even boxed quantity of each type and color.
   3. Extra Wall Base: 200 linear feet or nearest even boxed quantity of each type and color.

1.05 DELIVERY, STORAGE, AND HANDLING
A. Upon receipt, immediately remove any shrink-wrap and check materials for damage and the correct style, color, quantity and run numbers.
B. Store all materials off of the floor in an acclimatized, weather-tight space.
C. Maintain temperature in storage area between 55 degrees F and 90 degrees F.
D. Do not double stack pallets.

1.06 FIELD CONDITIONS
A. Store materials for not less than 48 hours prior to installation in area of installation at a temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.
PART 2 PRODUCTS

2.01 TILE FLOORING
A. Vinyl Tile: Surface-decorated, with wear layer.
   1. Basis of design is Shaw Property Solutions, Uncommon Ground 4 with 6 mil wear layer
   2. Minimum Requirements: Comply with ASTM F1700, of Class corresponding to type specified.
   3. Critical Radiant Flux (CRF): Minimum 0.45 watt per square centimeter, when tested in accordance with ASTM E 648 or NFPA 253.
   4. Mold and Microbial Resistance: Highly resistant when tested in accordance with ASTM D6329; certified in accordance with UL 2824.
   5. SHAW 200 TPS Adhesive. Tile and all installation materials and adhesives must meet VOC Content Limits: As specified in Section 01 6116.
   6. Flooring must be Greenguard certified
   8. Total Thickness: 20 mil.
   10. 7 Year limited warranty

2.02 RESILIENT BASE
A. Resilient Base (at Commercial): ASTM F1861, Type TS rubber, vulcanized thermoset; top set Style B, Cove.
   1. Manufacturers:
      a. Roppe Corp: www.roppe.com
   2. Height: 3 inch.
   3. Thickness: 0.125 inch.
   5. Color: 100 Black.

2.03 ACCESSORIES
A. Subfloor Filler: White premix latex; type recommended by adhesive material manufacturer.
B. Primers, Adhesives, and Seam Sealer: Waterproof; types recommended by flooring manufacturer.
   1. VOC Content Limits: As specified in Section 01 61 16.
C. Moldings, Transition and Edge Strips: Same material as flooring.

PART 3 EXECUTION

3.01 EXAMINATION
A. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.

3.02 PREPARATION
A. Remove sub-floor ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with sub-floor filler to achieve smooth, flat, hard surface.
B. Prohibit traffic until filler is fully cured.

3.03 INSTALLATION - GENERAL
A. Starting installation constitutes acceptance of sub-floor conditions.
B. Install in accordance with manufacturer's written instructions.
C. Spread only enough adhesive to permit installation of materials before initial set.
D. Fit joints and butt seams tightly.
E. Set flooring in place, press with heavy roller to attain full adhesion.
F. Where type of floor finish, pattern, or color are different on opposite sides of door, terminate flooring under centerline of door.

G. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated.

H. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.

3.04 INSTALLATION - SOUND CONTROL UNDERLAYMENT
   A. Install in accordance with underlayment manufacturer's instructions.

3.05 INSTALLATION - TILE FLOORING
   A. Mix tile from container to ensure shade variations are consistent when tile is placed, unless otherwise indicated in manufacturer's installation instructions.
   B. Install square tile to ashlar pattern. Allow minimum 1/2 full size tile width at room or area perimeter.

3.06 INSTALLATION - RESILIENT BASE
   A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches between joints.
   B. Install base on solid backing. Bond tightly to wall and floor surfaces.

3.07 CLEANING
   A. Remove excess adhesive from floor, base, and wall surfaces without damage.
   B. Clean in accordance with manufacturer's written instructions.

3.08 PROTECTION
   A. Prohibit traffic on resilient flooring for 48 hours after installation.

END OF SECTION
SECTION 09 91 00
PAINTING

PART 1  GENERAL

1.01 SUMMARY

A. Section Includes: Painting as specified and as noted on Drawings. Surfaces requiring finishing and left unfinished by the requirements of other Sections shall be painted or finished as part of the Work of this Section.

1.02 DEFINITIONS

A. Touch-Up: Painting of items missed by painter at no additional cost to Owner.
B. Re-Paint: Repairs to paint work for damages caused by other trades.

1.03 SUBMITTALS

A. Product Data: Submit schedule of manufacturers of products required for the Work, together with specifications recommended by each manufacturer.
B. Samples: Submit samples of each type of finish specified.
   1. Architect will furnish Contractor a color schedule of colors selected either from manufacturer's stock colors or specially requested color mixes before Work is begun.
   2. Submit two 8 inch x 10 inch samples of each color, including the correct sheen and texture, on heavy cardboard or masonry. Submit sealer and stain finishes on material of the same quality and species of wood on which that particular finish shall be used. Rejected samples shall be resubmitted until approved.
   3. Samples shall be submitted at least 30 days prior to the start of painting work. Label and identify each sample as to location and application. Upon submittal of color samples, minor variations or changes in color selection may be requested by the Architect and new samples ordered, until final color approval.

1.04 QUALITY ASSURANCE

A. Standards: Preparation, application and workmanship shall be in accordance with manufacturer's recommendations and applicable provisions of the following:
   1. Painting and Decorating Contractors of America (PDCA) "Painting Specification Manual" and "Standards".
      a. PDCA P1-92, "Touch-Up Painting and Damage Repair - Financial Responsibility:" A properly painted surface shall be as defined in this Standard.
      b. PDCA P2-92, "Third Party Inspection Qualifications and Responsibilities."
      c. PDCA P3-93, "Designation of Paint Colors."
      d. PDCA P4-94, "Responsibilities for Inspection and Acceptance of Surfaces Prior to Painting and Decorating."
      e. PDCA P5-94, "Benchmark Sample Procedures for Paint and Other Decorative Coating Systems."
   2. Gypsum Association - GA210, "Gypsum Board for Walls and Ceilings."

1.05 DELIVERY, STORAGE, AND HANDLING

A. Packing and Shipping: Deliver materials to site in manufacturer's sealed containers, legends and labels, intact.
B. Storage:
   1. Adequately protect against damage while stored at site.
   2. In no case shall the amount or method of materials stored exceed the amount permitted or the manner allowed by local ordinances, state laws, or fire underwriter regulations.
1.06 PROJECT/SITE CONDITIONS
A. Environmental Requirements: Do not apply exterior paint in damp or rainy weather or until after the surface has dried thoroughly from the effects of such weather.
   1. Do not apply varnish or paint when temperature is below 50 degrees F.. Avoid painting surfaces exposed to hot sunlight.
   2. During interior application, maintain minimum temperature of 65 degrees F. unless otherwise directed by Architect or manufacturer's printed instructions. Hold temperature as constant as possible.
   3. Provide adequate ventilation at all times so the humidity cannot rise above the dew point of the coldest surface to be painted.
   4. Moisture-containing surfaces, such as concrete, stucco and cement plaster shall have a moisture content of less than 8 percent as measured by moisture meter. Remove surface salt deposits prior to painting. Verify that pH is neutral, or within acceptable limits of Paint Manufacturer. Paint after thoroughly cured.

1.07 MAINTENANCE
A. Extra Materials: Upon completion of the Work, furnish Owner with one fresh gallon of each type and color of paint and finish used on this Project. Label containers with manufacturer's name, batch, color, shelf life, instructions, and cautions.

PART 2 PRODUCTS
2.01 MANUFACTURERS
A. Furnish products of one of the following manufacturers, except as otherwise approved by Architect, subject to compliance with specification requirements.
   1. Dunn-Edwards Corporation www.dunnedwards.com
   2. The Sherwin Williams Company www.sherwin-williams.com
   4. Benjamin Moore www.benjaminmoore.com
   5. Tnemec www.tnemec.com
   B. B.
   C. Low-Emitting Materials: All interior paint finishes must be Zero VOC products. Other interior products that do not have Zero VOC options must not exceed the VOC content limits listed in the May 1993 edition of the Green Seal Standard GS-11, Paints.

2.02 MATERIALS
A. Provide materials in accordance with the systems specified at the end of Part 3 of this Specification and as applicable to project. Contractor shall provide either waterborne or solventborne products at contractor's option and as follows:
   1. Waterborne:
      a. Provide where low odor and fast dry are desired.
      b. Non-blocking materials shall be used for doors, door jambs, railings and other locations subject to handling, or where surfaces will come into contact with other painted surfaces or belongings.
   2. Solventborne:
      a. Provide where harder finish is required (such as "wet" areas) and odor will not create problems with occupants.
      b. These products shall not be used where color retention is a concern. Verify with Architect.
   3. Materials used shall comply with applicable Federal and local air pollution regulations, lead content laws, and current VOC requirements. If products listed systems specified at the end of Part 3 of this Specification are not in compliance with regulations, laws, or requirements, Contractor shall notify Architect and shall provide information regarding substitute products.
B. Basic painting materials such as linseed oil, shellac, turpentine, thinners, driers, and other similar products, shall be of highest quality, made by reputable, recognized manufacturers, and have identifying labels on containers. Paint materials shall be factory fresh.

C. Alternate materials submitted for prior approval shall have qualities and materials equal to the other listed manufacturer's scheduled, top of the line, first quality products. Materials selected for coating systems for each type of surface shall be the products of a single manufacturer.

D. Standard Gloss Range: Provide paints in accordance with the following MPI standard ranges as measured in accordance with ASTM D523-08, and as indicated on the drawings:

1. MPI Gloss and Sheen Standards
   
2. Gloss Level 1 - traditional matte finish - flat max. 5 units, and max. 10 units
3. Gloss Level 2 - high side sheen velvet-like finish max. 10 units, and 10-35 units
4. Gloss Level 3 - traditional ‘eggshell-like’ finish 10-25 units, and 10-35 units
5. Gloss Level 4 - ‘satin-like’ finish 20-35 units, and min. 35 units
6. Gloss Level 5 - traditional semi-gloss 35-70 units
7. Gloss Level 6 - traditional gloss 70-85 units
8. Gloss Level 7 - a high gloss more than 85 units

E. Paints shall be ready mixed except for field catalyzed coatings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of Conditions: Examine subsurfaces to receive Work and report in writing with a copy to Architect, conditions detrimental to Work. Commencement of Work will be construed as acceptance of subsurfaces.

3.02 PROTECTION

A. Before painting, remove hardware, accessories, electrical plates, lighting fixtures and similar items and protect.

1. Provide “Wet-Paint” signs and other barricades and protections as required to protect adjacent surfaces and work of other trades, whether being painted or not.
2. Mask permanent labels.
3. Provide, distribute, and maintain a sufficient supply of clean drop cloths and other protective coverings.
4. Protect foliage and other exterior finished surfaces from contact with cleaning materials and thoroughly flush with water after contact.
5. On completion of each space, replace above items.

3.03 SURFACE PREPARATION

A. General:

1. Surfaces requiring painting or finishing shall be thoroughly dry and cured, free of dirt, dust, rust, stains, scale, mildew, wax, grease, oil, deteriorated substrates, bond-breakers, efflorescence and other foreign matter detrimental to the coating’s adhesion and performance. Repair voids, cracks, nicks and other surface defects with appropriate patching material. Finish flush with surrounding surfaces and match adjacent finish texture.
2. Spot prime marred or damaged shop coats on metal surfaces with appropriate metal primer.
3. Determine moisture content of plaster, stucco, cementitious materials, wood and other moisture-holding materials by use of a reliable electronic moisture meter.
4. Determine alkalinity of plaster, stucco and other cementitious materials by performing appropriate tests.
5. Do not paint surfaces where moisture content or alkalinity exceeds that which is allowed by paint manufacturer.

B. Existing Surfaces:
1. Clean, sand, patch, repair and prepare existing surfaces to be painted so that such existing finished surfaces are indistinguishable from new surfaces.
2. Surfaces which cannot be prepared or painted as specified shall be immediately brought to the attention of the Architect in writing.
3. Remove loose peeling and checked paint.
4. Remove mildew by washing the surface with a commercially available mildew killer/remover.
5. Remove efflorescence by wire brushing, power brushing or washing. Thoroughly rinse surfaces wire brushed. After removal of efflorescence, wash the surface with a commercially available cleaner acceptable to the manufacturer of the substrate.
6. Remove existing wallcovering and wash the surface to remove paste residue. Seal surface before making any surface repairs.
7. Dull and roughen glossy surfaces to obtain proper adhesion by either sanding, washing with a tri-sodium phosphate solution, or treating with a liquid deglossing compound.
8. Overlap and feather edge spot-primed areas.

C. Wood:
1. Sandpaper to smooth and even surface and then dust off. After primer or stain coat has been applied, thoroughly fill nail holes and other surface imperfections with putty tinted with primer or stain to match wood color. Sand woodwork between coats to a smooth surface. Cover knots and sap streaks with a thin coat of shellac, or seal with a suitable stain blocking sealer.
2. Finish door and window edges after final fitting. Finish interior of cabinets in the same manner as the exterior unless otherwise specified. Seal interior of drawers unless otherwise specified.
3. Backpriming:
   a. Backprime exterior woodwork, which is to receive paint finish, with exterior primer paint.
   b. Backprime interior woodwork, which is to receive paint or enamel finish, with enamel undercoater paint.
   c. Backprime interior and exterior woodwork, which is to receive stain and/or varnish finish with VOC compliant varnish acceptable to the Architect.
4. Where existing stained surfaces are indicated to be coated with a transparent stain, test apply stain to small area where directed by Architect and obtain Architects approval of color.

D. Steel and Iron:
1. Remove grease, oil, mill scale, rust and rust scale and touch-up chipped or abraded places on items that have been shop coated. Remove and reprime incompatible or damaged shop applied primers. Comply with the Steel Structures Painting Council's (SSPC) recommendations for cleaning of uncoated steel and iron surfaces.
2. When area will be exposed to view, sandpaper the entire primed area smooth, feather the edge of surrounding undamaged prime coat and spot prime in a manner to eliminate evidence of repair.
3. Where steel or iron at existing Work have a heavy coating of scale, remove by sand blasting, sanding, descaling, grinding or wire brushing, as necessary, to produce a satisfactory surface for painting.

E. Galvanized Metal and Aluminum:
1. Thoroughly clean by wiping surfaces with a non-hydrocarbon solvent that will not leave an oily residue. Apply surface conditioner or vinyl-wash pretreatment as required for proper adhesion if required by paint manufacturer. Prime galvanized metal with galvanized iron primer as recommended by paint manufacturer. A test sample of the complete painting system should be applied and checked for adhesion before final painting begins.
2. Clean visible portions of throats of galvanized steel ductwork with solvent; wipe dry with clean rags and paint flat black.
F. Concrete:
   1. The method of surface preparation shall be at Contractor's discretion, provided the results are satisfactory to the Architect, and the method is in compliance with applicable codes and requirements.
   2. Clean and prepare surfaces of tilt-up precast concrete wall panels to be painted by power washing surface to remove all efflorescence, chalk, dust, dirt, grease, oils and release agents.
   3. Repair surfaces to be painted prior to application of prime and finish coat(s). Apply a tinted primer to the substrate to help identify surface imperfections. After the primer has thoroughly dried, patch, fill and repair surface imperfections to match and flush-out with adjacent finish texture and profile.
   4. Before first paint coat is applied, spot prime nails and other exposed metal occurring in the surfaces with a rust inhibitive primer as recommended by paint manufacturer.

G. Plaster and Gypsum Board Surfaces:
   1. Fill cracks, holes or imperfections with compatible patching material and smooth off to match adjoining surfaces. Before painting, surfaces shall be first tested for dryness with a moisture testing device.
   2. Apply no paint or sealer on gypsum board or plaster when the moisture content exceeds 8 percent. Test sufficient areas in each space and as often as necessary to determine if the surface has the proper moisture content for painting. If the moisture content is between 8 percent and 12 percent, prime with alkali resistant primer.
   3. If 8 percent or less, prime with specified primer. Remove the dry salt deposits from plaster surfaces by brushing with a stiff brush before painting.

H. Acoustical Surfaces (Lay-in acoustical ceiling panels, acoustical wall panels, etc.):
   1. Thoroughly vacuum clean surfaces to remove dust and debris from acoustical surface pores. Use a soft brush attachment that will not damage or loosen acoustical surface.
   2. Seal surface stains with a suitable stain blocking sealer that will not fill pores of acoustical surface.

3.04 WORKMANSHIP
   A. Apply products to achieve paint manufacturer's printed specifications for dry mil thickness
   B. Apply each coat of paint evenly and comply with manufacturer's drying time before applying subsequent coats.
   C. Finished work shall be uniform, match approved color, texture and coverage, and free from runs, sags, clogging or excessive flooding. Make edges of paint adjoining other materials or colors sharp and clean, without overlapping. Where varnishes or enamel is used, lightly sand, dust and clean undercoats to obtain a smooth finish coat. Sand carefully between each coat of finish on smooth surfaces for good adhesion of subsequent coats.
   D. Where clear finishes are required, ensure tinted fillers match wood. Work fillers well into the grain before set. Wipe excess from the surface.
   E. Where specific mil thicknesses are required, check thickness by the following methods:
      1. Over ferrous metal - Elecometer Film Gauge
      2. Other surfaces - Tooke Dry Mil Inspection Gauge

3.05 APPLICATION
   A. The number of coats scheduled is the minimum number of coats required. Additional coat(s) shall be applied, at no additional cost to the Owner, to completely hide base material, provide uniform color and to produce satisfactory finish results.
   B. Apply coatings without thinning except as specifically required by label directions, or required by these specifications. In such cases, thinning shall be the minimum reduction permitted.
   C. Priming will not be required on items delivered with prime or shop coats, unless otherwise specified. Touch up prime coats applied by others as required to ensure an even primed surface before applying finish coat.
D. Block Fillers: Provide level of block fill as scheduled to conform with the following PDCA Industry Standard P12 Level of Block Filler:

1. Level 1 - Economy fill: One coat applied with equipment specified by the coating manufacturer. This level reduces the quantity of paint required for succeeding paint coats. It reduces some irregularities in masonry profile depth. It is normal that voids will remain, depending on the porosity and profile depth of the block. The block filler shall be applied at the spreading rate recommended by the manufacturer. This level is normally used in spaces that are not occupied by the public and in stairways of high rise buildings.

2. Level 2 - Standard fill: One coat applied with equipment specified by the coating manufacturer. Backrolling will be performed as necessary to attempt to fill deep irregularities. Masonry profile depth will be slightly reduced. Joints will be visible as tooled. Number of voids will be minimized, but voids may remain depending on the porosity of the block. A maximum of ten voids per square foot of surface area shall be deemed to be acceptable. The block filler shall be applied at the spreading rate recommended by the manufacturer. This level is normally used in finished areas that are occupied by the public.

3. Level 3 - Premium fill: One or multiple coats of high performance block filler manufactured to be applied at a high dry film build. Block filler shall be backrolled to eliminate voids and reduce the majority of the masonry profile depth. This system, with an appropriate paint finishing system, produces a surface that is easier to clean to meet health regulations. Exterior use of this level of block filler, with an appropriate paint finishing system, will reduce water intrusion at exterior walls.

E. Plumbing, Mechanical and Electrical:

1. Exterior and interior exposed water, gas, waste piping, sprinkler piping, conduit, lighting and electrical panels, telephone terminal boxes, galvanized ducts and insulated ducts, shall be painted in areas other than mechanical rooms, unless otherwise scheduled.

2. Paint exposed unfinished fixtures, metal ducts, switch boxes, control panels, devices, starters, junction boxes, vents, drains, and other similar items, as directed by Architect.

F. Spray paint prime coated (not pre-finished) grilles and registers with enamel or lacquer to match walls and ceilings. Paint materials shall not sag, run or bind movable parts of grilles, registers, louvers, baffles and other similar items.

1. Throats of ducts shall be given one coat of flat black paint, wherever visibility of the interior of the duct is allowed through registers or other similar items. At fiber lined duct, use black latex paint.

2. Examine the Mechanical and Electrical Drawings and Specifications to determine the amount of exposed work to be painted.

G. Paint exposed surfaces of every member, paint items inaccessible after installation before installation, if required to be painted. Paint all exposed surfaces of overhead roof or floor structures, including deck, except where specifically indicated not to be painted.

H. Edges, tops, and bottoms of wood doors shall be sealed and finished with the same finish as the door faces, to meet door manufacturer's warranty requirements. Verify edge color with Architect as different colors may be selected for each face.

I. Paint items fitted with finish hardware after hardware has been temporarily removed.

J. Heating and other equipment on or adjacent to walls or surfaces scheduled for painting, shall be disconnected, using workmen skilled in appropriate trades and moved temporarily to permit painting of surface. Following completion of painting, replace and reconnect items.

K. Each succeeding pigmented coat shall be distinguishably lighter than the previous coat. Tint prime and undercoats to a color similar to finish coat. Each coat of material applied must be inspected and approved by the Architect before the application of the succeeding specified coat; otherwise no credit for the concealed coat will be given, and the Contractor shall assume the responsibility to recoat work in question. Contractor shall notify the Architect when each coat is completed.
L. Brush, wipe or roll stain in 2 coat application. Avoid lap marks by maintaining "wet-edge" continually being merged with existing liquid coverage and stop only at natural edges, turns and breaking places.

M. Do not paint over Underwriters' Laboratory labels, fusible links, exposed sprinkler heads and other similar items.

N. Paint piping, electrical or other equipment, conduit, vents and other similar items, on roof or other exterior locations as directed by Architect.

O. Finish closets and the interior of cabinets with same color as adjoining rooms, unless otherwise specified. Finish other surfaces same as nearest or adjoining surfaces, unless otherwise shown or scheduled.

P. Paint surface of walls which will be concealed by cabinets and other items mounted on or attached to walls.

3.06 ADJUSTING

A. At completion, do touch-up and re-paint work and leave finish surfaces in good condition.

3.07 CLEANING

A. During the course of the Work, remove misplaced paint and stain spots or spills. Leave Work in clean condition acceptable to Architect.

B. Remove oily rags and waste daily, taking precaution to prevent fire.

3.08 SCHEDULES

A. Color Schedule:
   1. Architect will provide a complete schedule of colors. Colors may be selected from various manufacturer's color palettes. Manufacturer supplying paint shall match these colors. Contractor shall prepare duplicate set of samples of treatments for major surfaces. If a specific surface or item receiving a paint finish does not have a specific color indicated or selected by the Architect, obtain clarification from the Architect. Do not assume the confirmation of the same color on the adjacent surfaces.
   2. Final coat of paint shall not be applied until colors have been approved by the Architect.

B. Finishing of the following listed items and materials will not be required and shall be protected:
   1. Stainless Steel, brass, bronze, copper, monel, chromium, anodized aluminum; specially finished articles such as porcelain enamel, plastic coated fabrics, and baked enamel, unless otherwise indicated.
   2. Finished products such as ceramic tile, glass, brick, resilient flooring and acoustical tiles, board and metal tees.
   3. Pre-finished products such as wood folding partitions and doors, wood classroom and laboratory casework, bleachers and elevator cabs.

3.09 EXTERIOR PAINT FINISHES

A. System 101 (Ferrous Metals): Apply to exposed steel such as beams and column connectors, metal doors and frames, grilles, light fixture standards in parking areas, metal handrails, sectional and coiling doors, canopy overhangs and other exposed miscellaneous ferrous metals that are not pre-finished.
   1. 1st Coat: Ferrous Metal Primer (Red or White color as applicable to finish coats).
      a. Dunn-Edwards Bloc-Rust Premium Int./Ext. Rust Preventative Metal Primer (BRPR00).
      b. Sherwin Williams Pro-Cryl Universal Acrylic Primer (B66-310 Series).
      c. PPG Paints: Pitt Tech Plus DTM Acrylic Primer 4020.
   2. 2nd Coat: Same material as 3rd coat in accordance with manufacturer's recommendations.
   3. 3rd Coat:
3. PPG Paints: Sun Proof 100% Acrylic Exterior Semi-Gloss 78-45XI.

B. System 102 (Galvanized Metals): Apply to exposed galvanized metal such as copings, louvers and metal flashings.
   1. Clean metal to remove foreign matter or any coating applied by the metal manufacturer. Apply Surface Conditioner or Vinyl Wash Pretreatment (if required by paint manufacturer).
   2. 1st Coat: Galvanized Metal Primer.
      a. Dunn-Edwards Ultrashield Galvanized Metal Primer (ULGM00).
      c. PPG Paints: Pitt Tech Plus DTM Acrylic Primer 4020.
   3. 2nd Coat: Same material as 3rd coat as recommended by manufacturer.
   4. 3rd Coat:
      a. Flat: Paint, Flat - Waterborne (100% Acrylic) unless noted otherwise.
         1) Dunn-Edwards Spartashield 100% Acrylic Ext. Flat Paint (SSHL10).
         2) Sherwin Williams A74 SOLO Flat.
         3) PPG Paints: Sun Proof 100% Acrylic Exterior Flat 72-45XI Series.

C. System 103 (Aluminum): Apply to exterior louvers and other miscellaneous exposed exterior unfinished aluminum surfaces.
   1. Clean metal to remove foreign matter or any coating applied by the metal manufacturer. Apply Surface Conditioner or Vinyl Wash Pretreatment.
   2. 1st Coat: Aluminum Primer.
      a. Dunn-Edwards Ultrashield Galvanized Metal Primer (ULGM00).
      c. PPG Paints: Pitt Tech Plus DTM Acrylic Primer 4020.
   3. 2nd Coat: Same material as 3rd coat as recommended by manufacturer.
   4. 3rd Coat:
         2) Sherwin Williams A76 SOLO Semi-Gloss.
         3) PPG Paints: Sun Proof 100% Acrylic Exterior Semi-Gloss 78-45XI.

D. System 105 (Concrete and Stucco): Apply to exterior cementitious surfaces as indicated or noted, including tilt-up precast concrete. Precast concrete lintels, beams, caps, sills, etc. at exterior of buildings shall not be painted, unless specifically noted. Roller apply 2nd or 3rd coat.
   1. 1st Coat: Concrete and Masonry Primer.
      a. Dunn-Edwards Eff-Stop Select Int./Ext. Masonry Primer/Sealer (ESSL00).
      b. Sherwin Williams (waterborne) Loxon Concrete Masonry Primer A24W08300.
      c. PPG Paints: Perma-Crete Alkali Resistant Primer 4-603XI.
   2. 2nd Coat: Same material as 3rd coat as recommended by manufacturer.
   3. 3rd Coat:
      a. Flat: Paint, Flat - Waterborne (100% Acrylic) unless noted otherwise. One of the coats shall be roller applied.
         1) Dunn-Edwards Acri-Build 100% Acrylic Ext. Flat Paint (ACBL10).
         2) Sherwin Williams Duracraft Acrylic Latex Flat, C01W00251.
         3) PPG Paints: Speedhide Exterior 100% Acrylic Flat 6-610XI.

3.10 INTERIOR PAINT FINISHES

A. System 201 (Ferrous Metals): Apply to exposed metals such as steel doors, hollow metal frames, metal beam saddles, columns, grilles and registers, stair and hand railings, ladders, and other exposed miscellaneous metals.
   1. 1st Coat: Ferrous Metal Primer (Red or White color as applicable to finish coats).
b. Sherwin Williams Pro-Cryl Universal Acrylic Primer (B66-310 Series).
c. PPG Paints: Pitt Tech Plus DTM Acrylic Primer 4020
2. 2nd Coat: Same material as 3rd Coat as recommended by manufacturer.
3. 3rd Coat:
      2) Sherwin Williams Promar 400 Zero VOC Eggshell, B20W04651.
      3) PPG Paints Zero VOC: Speedhide zero Interior Latex Eggshell 6-4310XI.
B. System 203 (Interior Wood Finish - Flat): Apply to plywood telephone backing boards and other miscellaneous softwood as noted, specified or scheduled.
   1. 1st Coat: Enamel Undercoater/Primer.
      c. PPG Paints Zero VOC: Speedhide zero Interior Latex Primer 6-4900XI.
   2. 2nd and 3rd Coat: Flat Paint, - Waterborne (Vinyl Acrylic)
      b. Sherwin Williams Promar 400 Zero VOC Flat, B30W04651.
      c. PPG Paints Zero VOC: Speedhide zero Interior Latex Flat 6-4110XI.
C. System 204 (Galvanized Metals): Apply to exposed galvanized metal.
   1. Clean metal to remove foreign matter or any coating applied by the metal manufacturer. Apply Surface Conditioner or Vinyl Wash Pretreatment (if required by paint manufacturer)
   2. 1st Coat: Galvanized Metal Primer
      c. PPG Paints: Pitt Tech Plus DTM Acrylic Primer 4020.
   3. 2nd and 3rd Coats:
      a. Eggshell: Enamel, Eggshell
         2) Sherwin Williams Promar 400 Zero VOC Eggshell, B20W04651.
         3) PPG Paints Zero VOC: Speedhide zero Interior Latex Eggshell 6-4310XI.
D. System 205 (Aluminum): Apply to interior louvers and other miscellaneous exposed unfinished aluminum surfaces.
   1. Clean metal to remove foreign matter or any coating applied by the metal manufacturer. Apply Surface Conditioner or Vinyl Wash Pretreatment.
   2. 1st Coat: Aluminum Primer
      c. PPG Paints: Pitt Tech Plus DTM Acrylic Primer 4020.
   3. 2nd and 3rd Coats:
      a. Eggshell: Enamel, Eggshell
         2) Sherwin Williams Promar 400 Zero VOC Eggshell, B20W04651.
         3) PPG Paints Zero VOC: Speedhide zero Interior Latex Eggshell 6-4310XI.
E. System 206 (Gypsum Board, Plaster and Concrete - Wet Areas): Apply to gypsum board, plaster and concrete surfaces in toilet rooms, janitor rooms, kitchens, and other areas as scheduled.
   1. 1st Coat: Enamel Undercoater - Water-based, unless noted otherwise.
      c. PPG Paints: Seal Grip Acrylic Universal Primer 17-921XI.
   2. 2nd and 3rd Coats:
         1) Dunn-Edwards Enduracat Pre-Catalyzed Acrylic Epoxy Semi-Gloss (ENPX50).
         2) Sherwin Williams Pro Industrial Zero VOC water based Epoxy B73W00311/B73V00300.
         3) PPG Paints: Pitt Glaze WB1 Pre-Catalyzed Acrylic Epoxy Semi-Gloss 16-510.

F. System 207 (Gypsum Board, Plaster and Concrete - Non-Wet Areas): Apply to gypsum board, plaster and concrete except for wet areas.
   1. 1st Coat: Waterborne Primer/Sealer - Gypsum Board.
      a. Dunn-Edwards Spartazero Zero VOC products are self-priming over gypsum board. Specify same product as 2nd and 3rd Coat.
      b. Sherwin Williams High Build Primer Surfacer, B28W8601
      c. PPG Paints Zero VOC: Speedhide zero Interior Latex Primer Sealer 6-4900XI.
   2. 1st Coat: Waterborne Primer/Sealer - Plaster and Concrete.
      b. Sherwin Williams Loxon Concrete Masonry primer, A24W8601.
      c. PPG Paints: Perma-Crete Alkali Resistant Primer 4-603XI.
   3. 2nd and 3rd Coat:
      a. Eggshell: Enamel, Eggshell
         2) Sherwin Williams Promar 400 Zero VOC Egshel, B20W04651.
         3) PPG Paints Zero VOC: Speedhide zero Interior Latex Eggshell 6-4310XI.

END OF SECTION
SECTION 10 28 00
TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 GENERAL
1.01 SECTION INCLUDES
A. Residential toilet, shower, and bath accessories.

1.02 REFERENCE STANDARDS
B. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.

1.03 ADMINISTRATIVE REQUIREMENTS
A. Coordinate the work with the placement of internal wall reinforcement, concealed ceiling supports, and reinforcement of toilet partitions to receive anchor attachments.

PART 2 PRODUCTS
2.01 MANUFACTURERS
A. Residential Toilet, Shower, and Bath Accessories:
   1. As scheduled below.

2.02 MATERIALS
A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
B. Keys: Provide 2 keys for each accessory to Owner; master key lockable accessories.
C. Stainless Steel Sheet: ASTM A666, Type 304.
D. Stainless Steel Tubing: ASTM A269/A269M, Grade TP304 or TP316.
E. Mirror Glass: Tempered safety glass, ASTM C1048; and ASTM C1036 Type I, Class 1, Quality Q2, with silvering as required.
F. Adhesive: Two component epoxy type, waterproof.
G. Fasteners, Screws, and Bolts: Hot dip galvanized; tamper-proof; security type.

2.03 FINISHES
A. Stainless Steel: Satin finish, unless otherwise noted.
B. Chrome/Nickel Plating: ASTM B456, SC 2, polished finish, unless otherwise noted.

2.04 RESIDENTIAL TOILET, SHOWER, AND BATH ACCESSORIES
B. Medicine Cabinet: Aluminum with white powder coat finish, glass shelves, door, hinge, and mirror frame, reversible type, recessed mounted.
   1. Shelves: Adjustable, glass; provide 2 shelves.
   2. Door: Fitted with continuous piano-type hinge, shock-absorbing spring-and-rod door stop, magnetized catch, right-hand swing.
   3. Products:
C. Towel Bar: Round tubular bar; round mounting posts, concealed attachment.
1. Mounting Post Material: Die cast zinc alloy; bright polished finish.
2. Bar Material: Die cast; bright polished finish.
4. Products:
   a. Hillyard MY2718 and MY2724 by Moen.

D. Towel Ring:
   1. Hillyard MY2786 by Moen

PART 3 EXECUTION

3.01 EXAMINATION
   A. Verify existing conditions before starting work.
   B. Verify exact location of accessories for installation.

3.02 PREPARATION
   A. Deliver inserts and rough-in frames to site for timely installation.
   B. Provide templates and rough-in measurements as required.

3.03 INSTALLATION
   A. Install accessories in accordance with manufacturers’ instructions in locations indicated on the drawings.
   B. Install plumb and level, securely and rigidly anchored to substrate.
   C. Mounting Heights: As required by accessibility regulations, unless otherwise indicated.
      1. Grab Bars: As indicated on drawings.

3.04 PROTECTION
   A. Protect installed accessories from damage due to subsequent construction operations.

END OF SECTION
SECTION 10 55 00
POSTAL SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Central mail delivery boxes.

1.02 RELATED REQUIREMENTS
A. Section 03 30 00 - Cast-in-Place Concrete: Concrete pedestal and anchor bolts for mail box.
B. Section 05 50 00 - Metal Fabrications: Fabricated metal pedestal and anchor bolts for mail box.

1.03 REFERENCE STANDARDS

1.04 SUBMITTALS
A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide manufacturer's specifications and descriptive literature, installation instructions, maintenance information, and current USPS approval documentation.
C. Shop Drawings: Indicate plans for each unit or groups of units, front elevations with compartment layout and model number, overall dimensions, rough-in opening sizes, construction and anchorage details.

PART 2 PRODUCTS

2.01 CENTRAL MAIL DELIVERY BOXES
A. Manufacturers:
B. Cluster Box Units (CBU): Pedestal-mounted, mail receptacle with weather-resistant cabinet for outdoor installation; front-loading, double-column design.
   1. Two Units: 20 customer compartments (3 inch high), 2 outgoing mail receptacle, and 1-13 3/8H and 2-9 7/8H parcel compartments.
      a. Florence Manufacturing Company; Model 1570-8 and 1570-12.

2.02 COMPONENTS
A. Locking - Front Loading Master Door: Three-point latching mechanism with USPS master lock furnished and installed by postmaster.
B. Locking - Customer Compartment Doors: USPS approved cam lock, 3 keys each lock.
C. Locking - Parcel Compartment Doors: Double-lock arrangement with USPS approved cam lock for customer access, and USPS master lock furnished and installed by postmaster.
D. Pedestals: Standard aluminum pedestal with rubber mounting pad designed to meet USPS and height requirements of ADA Standards.
E. Identification - Customer and Parcel Compartments: Sequential numerical or alphabetic characters, top to bottom, left to right; factory-installed, receive approval for numbering with USPS prior to Manufacture
   1. Engraved characters, 3/4 inch high, with black fill.

PART 3 EXECUTION

3.01 EXAMINATION
A. Verify that concrete base and anchor bolts are ready to receive pedestal-mounted units.
B. Do not begin installation until unacceptable conditions are corrected.
3.02 INSTALLATION

A. Install postal specialties in accordance with approved shop drawings, manufacturer's instructions, and USPS requirements.

B. Adjust and lubricate door hardware to operate properly.

END OF SECTION
SECTION 11 30 13
RESIDENTIAL APPLIANCES

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Kitchen appliances.
B. Laundry appliances.

1.02 RELATED REQUIREMENTS
A. Section 26 05 83 - Wiring Connections: Electrical connections for appliances.

1.03 REFERENCE STANDARDS

1.04 SUBMITTALS
A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
B. Product Data: Manufacturer's data indicating dimensions, capacity, and operating features of each piece of residential equipment specified.
C. Copies of Warranties: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

PART 2 PRODUCTS

2.01 KITCHEN APPLIANCES
A. Provide Equipment that is Energy Star Rated when applicable
B. Color: Black finish for Dwelling units and Stainless Steel finish for commercial space appliances unless noted otherwise
C. Refrigerator (all units), GE Model GTE18ETHWW: Free-standing, top-mounted freezer, and frost-free.
   1. Capacity: Total minimum storage of 18 cubic ft; minimum 15 percent freezer capacity.
   2. Features: Include glass shelves, automatic icemaker, and light in freezer compartment.
   3. Exterior Finish: Porcelain enameled steel, color as indicated.
D. Range (all units/Kitchenette), JB450DFWW: Electric, free-standing, with plug-in heating elements and removable drip pans.
   1. Size: 30 inches wide.
   2. Oven: Self-cleaning with electronic ignition.
   5. Features: Include storage drawer, oven door window, and oven light.
E. Cooking Exhaust (ADA Unit Only with wall mounted, ADA accessible switch), GE Model#: JVX3300JWW: Range hood.
   1. Size: 30 inches wide.
   2. Fan: Two-speed, 500 cfm
   3. Exhaust: Rectangular, vented to exterior.
   4. Features: Include cooktop light, night light, backdraft damper, and removable grease filter.
   5. Exterior Finish: Painted steel, color as indicated.
F. Microwave (All other), GE Model # JVM3160DFWW: Over-the-range.
   1. Capacity: 1.5 cubic ft.
   3. Features: Include turntable, cooktop light, night light, 2-speed exhaust fan, built-in trim kit, and undercabinet mounting kit.
G. Waste Disposer: Standard type, overload protection, direct wired, dishwasher connection, drain elbow, drain connector, and sound reduction features.
1. Power: 1/2 HP. (3/4 HP at community kitchen)
2. Capacity: Large.
3. Height: 14-1/2 inch.
4. Depth: 8-1/2 inch.
5. Controls: Wall switch.
6. Voltage: 115 volts, 60 Hz, 4amps.

H. Dishwasher (All Other), GE Model#: GLDT690JWW: Undercounter.
   2. Wash Levels: per specified model.
   3. Features: Include rinse aid dispenser, optional no-heat dry, optional water temperature boost, adjustable upper rack, and adjustable lower rack.
   4. Finish: Porcelain enameled steel, color as indicated.

2.02 LAUNDRY APPLIANCES
   B. Clothes Washer, GE Model # GFWR430HWW: Front-loading.
      1. Finish: Painted steel with porcelain enamel top, color white.
   C. Clothes Dryer, GE Model # DSKP333ECWW: Electric, See Drawings.
      1. Finish: Painted steel, color white.

PART 3 EXECUTION
3.01 EXAMINATION
   A. Verify utility rough-ins are provided and correctly located.

3.02 INSTALLATION
   A. Install in accordance with manufacturer’s instructions.

3.03 ADJUSTING
   A. Adjust equipment to provide efficient operation.

3.04 CLEANING
   A. Remove packing materials from equipment and properly discard.
   B. Wash and clean equipment.

END OF SECTION
SECTION 12 21 16
VERTICAL LOUVER BLINDS

PART 1 GENERAL
1.01 SECTION INCLUDES
   A. Vertical louver blinds at all sliding doors and adjacent fixed glazing.

1.02 RELATED REQUIREMENTS
   A. Section 06 10 00 - Rough Carpentry: Concealed wood blocking for attachment of headrail brackets.

1.03 REFERENCE STANDARDS
   A. WCMA A100.1 - Safety of Corded Window Covering Products; Current Edition, Including All Revisions.

1.04 SUBMITTALS
   A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
   B. Certification: Provide certification that product complies with WCMA A100.1.

1.05 QUALITY ASSURANCE
   A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
   B. Installer Qualifications: Company specializing in performing work of this type with minimum 5 years of documented experience.

PART 2 PRODUCTS
2.01 MANUFACTURERS
   A. Vertical Louver Blinds:

2.02 BLINDS AND BLIND COMPONENTS
   A. Vertical Louver Blinds: Horizontal travel, vertical vane louver units complete with tracks, pivot and traversing mechanisms, and accessories, as follows:
      1. Vanes: PVC vanes of the size indicated.
      3. Direction of Travel: As indicated on the drawings.
      5. Cord and Chain Operation: Comply with WCMA A100.1.
   B. Tracks: Channel tracks as required for type of operation, extruded aluminum with clear anodized finish, with end caps.
      1. Vane Rotation: Chain driven direct rotation by activating tilt gear within end cap assembly in turn actuating tilt rod and worm-and-spur gears in carrier trucks.
      2. Operating Components: Internally mounted heavy-duty extruded aluminum tilt rod, vane carriers, and other components required for proper performance and designed for smooth, quiet, trouble free operation.
      3. Pivot Mechanism: Geared for synchronous 180 degrees rotation of vanes and type of operation indicated.
      4. Vane Carriers: Metal carriers with ball-bearing wheels or thermoplastic trucks, equipped with linkages or other devices to ensure positive spacing of vanes.
      5. Tilt Chain: Nickel plated brass beaded ball chain, minimum 1/8 inch diameter; locate at drawback side of units as indicated.
   C. PVC Vanes: Integrally colored, extruded PVC; flat, 2 inches (50mm) wide.
1. Flammability: Comply with NFPA 701.
2. Texture: Smooth.

D. Brackets and Mounting Hardware: As recommended by manufacturer for the mounting configuration and span indicated; provide manufacturer’s standard L-bracket with clip for outside mounting and clip only for inside mounting.

2.03 FABRICATION

A. Field measure finished openings prior to ordering or fabrication.
B. Fabricate blinds to fit openings within specified tolerances.
   1. Vertical Dimensions: Fill openings from head to sill with 1/2 inch space between bottom of vanes and finish floor.
   2. Horizontal Dimensions - Inside Mounting: Fill openings from jamb to jamb.
C. Dimensional Tolerances: Fabricate blinds to within plus/minus 1/8 inch of intended dimensions.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not start installation before openings are finished and all finishes have been completed; do not install until painting is completed.
B. Field measure finished openings prior to ordering or fabrication.

3.02 PREPARATION

A. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
B. Coordinate the work with window installation and placement of concealed blocking to support blinds.

3.03 INSTALLATION

A. Install in accordance with manufacturer’s instructions using mounting style as indicated.
B. Installation Tolerances:
   1. Maximum Offset From Level: 1/16 inch.
C. Adjust blinds for smooth operation.
D. Replace blinds that exceed specified dimensional tolerances at no extra cost to Owner.

3.04 CLEANING

A. Clean installed work to like-new condition.

3.05 PROTECTION

A. Protect installed products until completion of project.
B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION
SECTION 12 32 13
MANUFACTURED CASEWORK

PART 1
GENERAL

1.01 SUMMARY
A. Section Includes: Manufactured casework, including base cabinets, wall cabinets, tall cabinets, shelf units, related counter tops and other units as indicated on the Drawings and as specified.

1.02 SUBMITTALS
A. Shop Drawings: Submit Drawings showing layout of units, elevations, dimensions, filler panels, cutouts, fixture locations, hardware, construction details and schedule of finishes.
B. Samples: Submit 2 samples of plastic laminates, plastic, wood veneers and hardware.

1.03 QUALITY ASSURANCE
A. Manufacturer Qualifications: Manufacturer shall provide evidence of at least 3 years fabrication and installation experience for Projects of size and scope similar to this Project. Evidence shall be submitted with Shop Drawings.
B. Mock-up: Submit full size samples of casework construction, (base and wall units), with face, drawer, door, counter top and hardware at time of Shop Drawing submittal. Approved samples shall remain in Architect's possession until completion of Work and shall be used as the standard against which all Work will be evaluated.
C. Standards: Provide cabinetwork that is certified by ANSI A161.1 and KCMA for premium quality cabinets.

1.04 DELIVERY, STORAGE AND HANDLING
A. Delivery: Contractor shall make certain modular casework is not delivered until building and storage areas are sufficiently dry and will not be damaged by excessive changes in moisture content.
B. Storage: Adequately protect against damage while stored at the site. Store away from construction traffic under protective cover.
C. Handling: Comply with Manufacturer's instructions.

1.05 PROJECT CONTITIONS
A. Field verify measurements shown on shop drawings.

PART 2
PRODUCTS

2.01 MANUFACTURERS
A. Furnish products of one of the following Manufacturers, except as approved by the Architect, subject to compliance with Specification requirements:
   2. Other manufacturer approved by Architect.

2.02 MATERIALS
A. Medium Density Fiberboard: ANSI A208.2-2009, 1-M-3 requirements with moisture content 8 percent or less. 5/8 inch thick door and drawer fronts. 1/2 inch thick drawer parts. All with white melamine finish.
B. Particleboard: ANSI A208.1-2009, 1-M-3 requirements with moisture content 8 percent or less. 5/8 inch thick wall and base cabinet shelves, end panels and bottoms. 1/2 inch thick wall and base cabinet backs, nailers and toe kicks. All with white melamine finish except end panels and toe kicks which match cabinet color.
C. Door and Drawer Front Finish: Plastic Laminate. Back of doors white plastic laminate. Flush Style Doors
D. Plastic Laminate:
1. Melamine: Tested to meet NEMA Test LD-3. Color: light beige; one color only for this Project. This grade of laminate shall be counterbalanced.

E. Hardware:
1. Pulls: 4 ½ inch chrome, architectural pulls, square in section.
2. Hinges: 110 degree, frameless, 4-way adjustable, easy insert with quick release lever. Finish shall be as selected by Architect.
3. Drawer Guides: 75 pound epoxy coated side mount drawer guides.
4. Adjustable Shelf Supports: 5mm shelf pins, designed to fit pre-drilled holes in cabinet ends and partitions and capable of supporting 200 pounds. Supports shall capture shelf top and bottom and have 2 pins to prevent the shelf support from rotating and tipping.

F. Adhesives and fasteners: No VOC and manufacturer's standard as per reviewed Shop Drawings.

2.03 FABRICATION
A. General Requirements:
1. Details shall conform to full overlay cabinet construction.
2. Corners of doors, drawer fronts, and cabinet end panels shall be eased or radiused. Sharp corners will not be permitted.
3. Edge banding shall be applied after face surfaces.

B. Cabinet Joinery: Tops, bottoms and nailers shall be joined to cabinet ends with dovetail joints. Stapled and glued butt joints shall not be allowed.

PART 3 EXECUTION
3.01 EXAMINATION
A. Verification of Conditions: Examine subsurfaces to receive Work and report detrimental conditions in writing to Architect. Commencement of Work will be construed as acceptance of subsurfaces.

B. Coordination: Coordinate with other Work which affects, connects with, or will be concealed by this Work.

3.02 INSTALLATION
A. Install casework in accordance with Manufacturer's printed instructions under the supervision of the Manufacturer's representative with factory-trained personnel.

B. Set casework accurately in place, level, true and straight with no distortions. Shim as required. Scribe and cut to accurate fit and secure to floor and walls with connecting or attaching devices. Install scribes and trim members as required. Exposed scribes against walls shall not exceed one inch in width.

C. Securely fasten casework to walls, floors and other units as necessary for units to remain in place without movement under normal loading, except units not normally in a fixed position.

D. Adjust casework and hardware so that doors and drawers operate smoothly without warp and bind. Lubricate operating hardware as recommended by Manufacturer.

3.03 ADJUSTING AND CLEANING
A. Adjust moving parts, including doors and drawers, for proper operation.

B. Repair or remove and replace defective Work as directed upon completion of installation.

C. During the course of the Work and on completion, remove and dispose of excess materials, equipment and debris away from premises. Leave Work in clean condition.

D. Clean surfaces, including interiors, and leave ready for use. Repair minor damage to plastic surfaces per Plastic Laminate Manufacturer's recommendations.

END OF SECTION
SECTION 12 36 00
COUNTERTOPS

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Countertops for manufactured casework.
B. Wall-hung counters and vanity tops.

1.02 RELATED REQUIREMENTS
A. Section 06 41 00 - Architectural Wood Casework.
B. Section 12 32 13 - Manufactured Casework

1.03 REFERENCE STANDARDS
A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014.
B. ISFA 3-01 - Classification and Standards for Quartz Surfacing Material; 2013.
D. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.
E. PS 1 - Structural Plywood; 2009.

1.04 SUBMITTALS
A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Specimen warranty.
C. Shop Drawings: Complete details of materials and installation; combine with shop drawings of
   cabinets and casework specified in other sections.
D. Verification Samples: For each finish product specified, minimum size 6 inches square,
   representing actual product, color, and patterns.
E. Test Reports: Chemical resistance testing, showing compliance with specified requirements.

1.05 QUALITY ASSURANCE
A. Installer Qualifications: Company specializing in performing work of the type specified in this
   section, with not less than three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING
A. Store products in manufacturer's unopened packaging until ready for installation.
B. Store and dispose of solvent-based materials, and materials used with solvent-based materials,
   in accordance with requirements of local authorities having jurisdiction.

1.07 FIELD CONDITIONS
A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits
   recommended by manufacturer for optimum results. Do not install products under
   environmental conditions outside manufacturer's absolute limits.

PART 2 PRODUCTS

2.01 COUNTERTOPS
A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS), unless noted
   otherwise.
B. Natural Quartz and Resin Composite Countertops: Sheet or slab of natural quartz and plastic
   resin over continuous substrate.
   1. Flat Sheet Thickness: 2 cm, minimum
2. Natural Quartz and Resin Composite Sheets, Slabs and Castings: Complying with ISFA 3-01 and NEMA LD 3; orthophthalic polyester resin, mineral filler, and pigments; homogenous, non-porous and capable of being worked and repaired using standard woodworking tools; no surface coating; color and pattern consistent throughout thickness.
   b. Factory fabricate components to the greatest extent practical in sizes and shapes indicated; comply with the MIA Dimension Stone Design Manual.
   c. Finish on Exposed Surfaces: Polished.
3. Other Components Thickness: 2 cm, minimum.
4. Exposed Edge Treatment: eased edge at top and bottom on countertops
5. Back and End Splashes: Same sheet material, square top; minimum 4 inches high.

2.02 MATERIALS
A. Wood-Based Components:
   1. Wood fabricated from old growth timber is not permitted.
B. Plywood for Supporting Substrate: PS 1 Exterior Grade, A-C veneer grade, minimum 5-ply; minimum 3/4 inch thick; join lengths using metal splines.
C. Adhesives: Chemical resistant waterproof adhesive as recommended by manufacturer of materials being joined.
D. Joint Sealant: Mildew-resistant silicone sealant, to match quartz countertop to greatest extent possible.

2.03 FABRICATION
A. Fabricate tops and splashes in the largest sections practicable, with top surface of joints flush.
   1. Join lengths of tops using best method recommended by manufacturer.
   2. Fabricate to overhang fronts and ends of cabinets 1 inch except where top butts against cabinet or wall.
   3. Prepare all cutouts accurately to size; replace tops having improperly dimensioned or unnecessary cutouts or fixture holes.
B. Provide back/end splash wherever counter edge abuts vertical surface unless otherwise indicated.
   1. Secure to countertop with concealed fasteners and with contact surfaces set in waterproof glue.
   2. Height: 4 inches, unless otherwise indicated.
C. Solid Surfacing: Fabricate tops up to 114 inches long in one piece; join pieces with adhesive sealant in accordance with manufacturer's recommendations and instructions.

PART 3 EXECUTION

3.01 EXAMINATION
A. Do not begin installation until substrates have been properly prepared.
B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
C. Verify that wall surfaces have been finished and mechanical and electrical services and outlets are installed in proper locations.

3.02 PREPARATION
A. Clean surfaces thoroughly prior to installation.
B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION
A. Securely attach countertops to cabinets using concealed fasteners. Make flat surfaces level; shim where required.
B. Seal joint between back/end splashes and vertical surfaces.

### 3.04 TOLERANCES

A. Variation From Horizontal: 1/8 inch in 10 feet, maximum.
B. Offset From Wall, Countertops: 1/8 inch maximum; 1/16 inch minimum.
C. Field Joints: 1/8 inch wide, maximum.

### 3.05 CLEANING

A. Clean countertops surfaces thoroughly.

### 3.06 PROTECTION

A. Protect installed products until completion of project.
B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION
SECTION 12 93 13
BICYCLE RACKS

PART 1 GENERAL
1.01 SECTION INCLUDES
A. Indoor bicycle racks.

1.02 RELATED REQUIREMENTS
A. Section 03 30 00 - Cast-in-Place Concrete: Mounting surface for bicycle racks.

1.03 REFERENCE STANDARDS

1.04 SUBMITTALS
A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.

1.05 DELIVERY, STORAGE, AND HANDLING
A. Store products in manufacturer's unopened packaging until ready for installation.
B. Handle racks with sufficient care to prevent scratches and other damage to the finish.

PART 2 PRODUCTS
2.01 MANUFACTURERS
A. Indoor Bicycle Racks:
   1. The Park and Facilities.

2.02 BICYCLE RACKS
A. Outdoor Bicycle Racks: Device allows user provided lock to secure one wheel and part of the frame on each bicycle. Quantity of Racks as noted on Drawings.
   2. Finish: Hot-dipped galvanized, maintenance-free and weather-resistant.
B. Materials:

PART 3 EXECUTION
3.01 EXAMINATION
A. Examine surfaces to receive bicycle racks.
B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
C. Do not begin installation until unsatisfactory substrates have been properly repaired.

3.02 PREPARATION
A. Ensure surfaces to receive bicycle racks are clean, flat, and level.

3.03 INSTALLATION
A. Install in accordance with manufacturer's instructions.
B. Install bicycle racks level, plumb, square, and correctly located as indicated on drawings.

3.04 CLEANING
A. Clean installed work to like-new condition. Do not use cleaning materials or methods that could damage finish.
3.05 PROTECTION

A. Protect installed products until completion of project.
B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION
SECTION 32 17 13
PARKING BUMPERS

PART 1 GENERAL
1.01 SECTION INCLUDES
   A. Precast concrete parking bumpers and anchorage.

1.02 REFERENCE STANDARDS

1.03 SUBMITTALS
   A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
   B. Product Data: Provide unit configuration, dimensions.

PART 2 PRODUCTS
2.01 MATERIALS
   A. Parking Bumpers: Precast concrete, conforming to the following:
      3. Reinforcing Steel: ASTM A615/A615M, deformed steel bars; unfinished, strength and size commensurate with precast unit design.
      5. Concrete Mix: Minimum 5,000 psi compressive strength after 28 days, air entrained to 5 to 7 percent.
      6. Use rigid molds, constructed to maintain precast units uniform in shape, size and finish. Maintain consistent quality during manufacture.
      7. Embed reinforcing steel, and drill or sleeve for two dowels.
      8. Cure units to develop concrete quality, and to minimize appearance blemishes such as non-uniformity, staining, or surface cracking.
      9. Minor patching in plant is acceptable, providing appearance of units is not impaired.

PART 3 EXECUTION
3.01 INSTALLATION
   A. Install units without damage to shape or finish. Replace or repair damaged units.
   B. Install units in alignment with adjacent work.

END OF SECTION