NOTICE OF ADDENDUM

Date: May 16, 2022

RE: Substance Abuse Residential Facility ADDENDUM #1

This notice is for the following addendum to the Request for Bid:

PROJECT MANUAL (302 total pages)

No change to bid submittal date. Sealed bids, including all addendums will be received by the City Clerk for the City of Page, Page City Hall, 697 Vista Avenue, Page, Arizona, until 4:30 PM, June 9, 2022.

Kyle Christiansen
Director of Public Works
City of Page
CITY OF PAGE
ENCOMPASS SHELTER FACILITY

PROJECT MANUAL

MAY 2022
FOR BIDDING ONLY

Project #: 2110-042
**PROCUREMENT AND CONTRACTING REQUIREMENTS GROUP**

Division 00 - Procurement and Contracting Requirements

**Introductory Information**
00 01 10 Table of Contents
00 02 00 Geotechnical Report

**SPECIFICATIONS GROUP**

**GENERAL REQUIREMENTS SUBGROUP (Division 01)**

Division 01 - General Requirements
01 10 00 Summary
01 20 00 Price and Payment Procedures
01 30 00 Submittal Procedures
01 40 00 Quality Requirements
01 50 00 Temporary Facilities and Control
01 58 13 Temporary Project Signage
01 70 00 Execution and Closeout Requirements
01 71 13 Mobilization

**FACILITY CONSTRUCTION SUBGROUP (Division 02 to 19)**

Division 02 – Existing Conditions – Not Used

Division 03 - Concrete
03 10 00 Concrete Forming and Accessories
03 20 00 Concrete Reinforcing
03 30 00 Cast-in-Place Concrete
03 39 20 Penetrating Concrete Sealer

Division 04 – Masonry – Not Used

Division 05 - Metals
05 12 00 Structural Steel Framing
05 50 00 Metal Fabrications

Division 06 - Wood, Plastics and Composites
06 10 00 Rough Carpentry
06 17 53 Shop-Fabricated Wood Trusses
06 40 00 Architectural Woodwork

Division 07 - Thermal and Moisture Protection
07 11 13 Bituminous Dampproofing
07 31 13 Asphalt Shingles
07 92 13 Elastomeric Joint Sealants
07 92 19 Acoustical Joint Sealants
Division 08 - Openings
08 06 01 Hardware Group and Keying Schedules
08 11 00 Metal Doors and Frames
08 14 16 Flush Wood Doors
08 41 13 Aluminum-Framed Entrances and Storefronts
08 51 13 Aluminum Windows
08 71 02 Hanging Devices
08 71 03 Securing Devices
08 71 06 Closing Devices
08 71 07 Protective Plates and Trim
08 71 08 Stops and Holders
08 71 09 Accessories
08 80 00 Glazing

Division 09 - Finishes
09 22 16 Non-Structural Metal Framing
09 24 00 Diamond Wall One Coat Stucco
09 29 00 Gypsum Board
09 30 00 Tiling
09 65 13 Resilient Base and Accessories
09 68 13 Tile Carpeting
09 90 01 Common Painting and Coating Requirements
09 91 13 Exterior Painted Galvanized Metal

Division 10 - Specialties
10 11 16 Fixed Markerboards
10 21 23 Cubicle Curtains and Track
10 28 00 Toilet Bath and Laundry Accessories
10 44 00 Fire Protection Specialties

Division 11 - Equipment
11 30 13 Residential Appliances

Division 12 – Furnishings
12 36 61 Solid Surfacing Countertops

Division 13 to 19 – Not Used

FACILITY SERVICES SUBGROUP (Division 20 to 29) - Not Used

Division 30 – Not Used

Division 31 - Earthwork
31 31 16 Termite Control

Division 32 to 39 – Not Used

PROCESS EQUIPMENT SUGROUP (Division 40 to 49) – Not Used
GEOTECHNICAL INVESTIGATION
Proposed Page City Detox Center
Near Osprey Street and Coppermine Road
Page, Arizona.

Prepared for:
Campbell Architecture
46 North 200 East
St. George, UT 84770

Attn: Kim Campbell, Principal Architect

ROSENBERG ASSOCIATES
CIVIL ENGINEERS
LAND SURVEYORS

RA Project No. 12448-21-003
December 6, 2021

Copyright 2021 Rosenberg Associates
All Rights Reserved
December 6, 2021

Campbell Architecture
46 North 200 East
St. George, UT 84770

Attn: Kim Campbell, Principal Architect

SUBJECT: Geotechnical Investigation
Proposed Page City Detox Center
Near Osprey Street and Coppermine Road, Page, Arizona

Dear Kim:

Enclosed are the findings of a geotechnical investigation conducted by Rosenberg Associates (RA) for the proposed Page City Detox Center to be constructed near Osprey Street and Coppermine Road in Page, Arizona. The objectives of RA services were to evaluate the nature and engineering properties of the on-site soils, and to provide geotechnical recommendations for the proposed facility including general site preparation and grading, and the design and construction of foundations, retaining walls, concrete slabs-on-grade, and asphaltic concrete pavements.

Conclusions and opinions provided in the accompanying report are based on our analysis of the data obtained from the field and laboratory investigations, and our previous geotechnical experience with similar soil conditions. If you have any questions concerning the information contained in this report, please contact us at your convenience at (435) 673-8586.

Sincerely,

ROSENBERG ASSOCIATES

David R. Black, P.E.
Principal Geotechnical Engineer
# TABLE OF CONTENTS

EXECUTIVE SUMMARY ................................................................................................................................. i

1.0 INTRODUCTION ........................................................................................................................................ 1

2.0 SCOPE OF WORK ....................................................................................................................................... 1

3.0 GENERALIZED SITE CONDITIONS ........................................................................................................... 2
  3.1 Surface Description .................................................................................................................................. 2
  3.2 Subsurface Conditions ............................................................................................................................ 3
  3.3 Seismicity ................................................................................................................................................ 3

4.0 ENGINEERING ANALYSIS AND RECOMMENDATIONS ......................................................................... 4
  4.1 General Evaluation .................................................................................................................................. 4
  4.2 Earthwork ............................................................................................................................................... 4
    4.2.1 Site Preparation and Grading ........................................................................................................... 5
    4.2.2 Excavations ..................................................................................................................................... 5
    4.2.3 Permanent Cut and Fill Slopes ......................................................................................................... 6
    4.2.4 Structural Fill Material .................................................................................................................... 6
  4.3 Foundation Design ................................................................................................................................... 6
  4.4 Retaining Walls ....................................................................................................................................... 7
  4.5 Concrete Slabs-on-Grade ........................................................................................................................ 8
  4.6 Soil Corrosion ......................................................................................................................................... 8
  4.7 Asphaltic Concrete Pavements ............................................................................................................... 9
  4.8 Moisture Protection and Surface Drainage ............................................................................................ 9
  4.9 Design Review ....................................................................................................................................... 10
  4.10 Construction Observation .................................................................................................................... 10

5.0 CLOSURE .................................................................................................................................................. 10
  5.1 Limitations ............................................................................................................................................. 10
  5.2 Closing .................................................................................................................................................. 11

DRAWING 1 – VICINITY MAP
DRAWING 2 - SITE PLAN
APPENDIX A - FIELD INVESTIGATION
ASFE BROCHURE
EXECUTIVE SUMMARY

The executive summary is not intended to replace the information presented in the accompanying report. The executive summary should not be used separately from the report and is only provided as an overview to summarize conclusions and recommendations. The executive summary may omit a number of details, any one of which could be crucial to the proper interpretation and application of the report and implementation of the recommendations.

Rosenberg Associates (RA) has performed a geotechnical investigation for the proposed Page City Detox Center to be constructed near Osprey Street and Coppermine Road in Page, Arizona. A Vicinity Map showing the location of the site is included as Drawing 1 following the text of this report.

At the time of our field investigations, the subject site was generally vacant and undeveloped. However, we understand the site had previously been developed with the City’s Dog Pound Facility. The ground surface within the previously developed area had been disturbed by prior demolition activities and/or was covered with spread fill materials. To the best of our knowledge, there is no documentation available addressing the existing spread fill materials.

The subsurface conditions encountered at the site generally consisted of about ½ to 2 feet of undocumented spread fill materials and/or disturbed native soils overlying sandstone bedrock. The spread fill generally consisted of reddish-brown gravelly sand. Groundwater was not encountered within the explorations to the maximum depth explored (2 feet). The subsurface conditions are described in detail on the trench logs enclosed in Appendix A.

Based on the subsurface conditions encountered at the site, it is our opinion, from a geotechnical viewpoint, that the subject site will be suitable for the proposed construction provided that the recommendations contained herein are complied with. Specifically, it is RA’s standard practice to recommend that permanent structures not be founded on undocumented fill due to a risk of random settlements and potential distress. Therefore, within the planned building area, and at least 5 feet beyond, we recommend that the existing undocumented fill and/or disturbed native soils be excavated to expose the underlying bedrock. Suitable materials may be stockpiled for reuse as compacted structural fill. Within pavement areas, we suggest that as a minimum the existing fill materials be reworked to a depth of at least 1 foot. The site may then be brought to rough grade with structural fill as described in Section 4.2.4.
The proposed building should receive adequate support from conventional strip and/or spread footings founded entirely on undisturbed bedrock or entirely on a zone of properly placed and compacted structural fill. Building foundation elements should not be founded on a combination of structural fill and in-situ bedrock. If these mixed conditions are encountered within the building area, it is recommended that either all foundation elements extend down to undisturbed bedrock, or the bedrock be over-excavated to a depth of at least 1 foot below the bottom of footing elevation and replaced with properly compacted structural fill.

This report presents geotechnical recommendations for general earthwork, foundation design, retaining walls, concrete slabs-on-grade, soil corrosion, asphaltic concrete pavements, moisture protection, design review, and construction observation.
1.0 INTRODUCTION

This report presents the results of a geotechnical investigation performed by Rosenberg Associates (RA) for the proposed Page City Detox Center to be constructed near Osprey Street and Coppermine Road in Page, Arizona. A Vicinity Map showing the location of the proposed site is included as Drawing 1 following the text of this report. The objectives of this investigation were to evaluate the nature and engineering properties of the subsurface soils, and to provide geotechnical recommendations for general site grading and the design and construction of foundations, retaining walls, concrete slabs-on-grade, and asphaltic concrete pavements.

It is our understanding the subject site will be developed with a single-story building having a footprint of 5,928 square feet, and with associated paved parking and landscaped areas. We understand the proposed structure will be supported by conventional foundations and concrete slab-on-grade floors. Structural loads are anticipated to be relatively low.

The recommendations contained in this report are subject to the limitations presented in the Section 5.1. In addition, a brochure prepared by ASFE (The Association of Engineering Firms Practicing in the Geosciences) has been included following this report. We recommend that all individuals reading this report read the limitations along with the attached document.

2.0 SCOPE OF WORK

Our scope of work included subsurface exploration, engineering evaluation, and preparation of this report. The following tasks were included in our scope of work.

1. A site reconnaissance was conducted to evaluate the general conditions at the site and locate the exploration locations.

2. The subsurface soil conditions at the site were explored by excavating 5 exploratory test pits to depths of approximately 1 to 2 feet below the existing site grade. Each test pit was terminated with backhoe refusal on sandstone bedrock. The approximate locations of the explorations are shown on Drawing 2. The subsurface conditions encountered during trenching were logged by our field engineer. A description of the equipment and procedures used during trenching is presented in Appendix A. Logs of the subsurface conditions, as encountered in the explorations, are presented on the enclosed trench logs in Appendix A.
3. Results of the field exploration were evaluated and engineering analyses were performed to develop appropriate recommendations for the design and construction of the proposed project.

4. This report was prepared to present the results of our findings, conclusions, and recommendations

3.0 GENERALIZED SITE CONDITIONS

3.1 Surface Description

At the time of our field investigations, the subject site was generally vacant and undeveloped. However, based on conversations with the City and review of historic aerial photographs we understand the site had previously been developed with the City Dog Pound Facility (see Photos 1 and 2).

Photo 1: 2013 Google Earth Photo showing prior Dog Pound Facility.

Photo 2: 2015 Google Earth Photo representative of current conditions.

The ground surface within the previously developed area had been disturbed by prior demolition activities and/or was covered with about 1½ to 2 feet of spread fill materials. To the best of our knowledge, there is no documentation available (compaction tests etc.) addressing the existing spread fill materials. An existing fill slope, sloping up to the adjacent development to the east, was present along the eastern property line It
appeared that most of the fill slope encroached on to the subject site (see Photos 3 and 4). The site was bordered on the south and west by a natural undeveloped ridge which slope down to the south and southwest, and Osprey Road on the north.

Photo 3: Looking southwest across the site.  
Photo 4: Looking south along eastern property line.

3.2 Subsurface Conditions

The subsurface conditions encountered at the site generally consisted of about ½ to 2 feet of undocumented spread fill materials and/or disturbed native soils overlying sandstone bedrock. The spread fill generally consisted of reddish-brown gravelly sand. Groundwater was not encountered within the explorations to the maximum depth explored (2 feet). The subsurface conditions are described in detail on the trench logs enclosed in Appendix A. Stratification lines shown on the logs represent the approximate boundary between soil types. Care should be taken in interpolating subsurface conditions beyond the exploration locations.

3.3 Seismicity

Information and values obtained from the USGS U.S. Seismic Design Maps website, and ASCE 7-10, are provided below to aid in the seismic design:

Site Coordinates: 36.906746° N latitude, -111.456030° W longitude
Site Soil Classification: "C" (Soft Rock)
Risk Category: I/II
Seismic Site Coefficient, Fv: 1.5
Seismic Site Coefficient, Fa: 1.3
$S_S = 0.31g$  $S_1 = 0.097g$  $S_{MS} = 0.402g$  $S_{M1} = 0.145g$  $S_{DS} = 0.2681g$  $S_{D1} = 0.097g$
4.0 ENGINEERING ANALYSIS AND RECOMMENDATIONS

4.1 General Evaluation

Based on the subsurface conditions encountered at the site, it is our opinion, from a geotechnical viewpoint, that the subject site will be suitable for the proposed construction provided that the recommendations contained herein are complied with. Specifically, it is RA’s standard practice to recommend that permanent structures not be founded on undocumented fill due to a risk of random settlements and potential distress. Therefore, within the planned building pad area, it is our opinion that the existing fill soils should be overexcavated to expose the underlying bedrock and then replaced as documented (properly placed and compacted) structural fill. The proposed building should then receive adequate support from conventional strip and/or spread footings founded entirely on undisturbed bedrock or entirely on a zone of properly placed and compacted structural fill. Building foundation elements should not be founded on a combination of structural fill and in-situ bedrock. If these mixed conditions are encountered within the building area, it is recommended that either all foundation elements extend down to undisturbed bedrock, or the bedrock be over-excavated to a depth of at least 1 foot below the bottom of footing elevation and replaced with properly compacted structural fill. Within pavement areas, we suggest as a minimum that the existing fill materials be reworked to a depth of at least 1 foot through a combination of overexcavation, scarification, moisture conditioning and recompaction.

The following sections of this report present our recommendations for general site preparation and grading, foundation design, retaining walls, concrete slabs-on-grade, soil corrosion, moisture protection, and asphaltic concrete pavements. We recommend that the Geotechnical Consultant be allowed to review the final grading plans, when prepared, to evaluate the compatibility of these recommendations.

4.2 Earthwork

All earthwork including clearing, grubbing, excavation, grading, fill materials, and fill placement and compaction should be performed in accordance with the current "Uniform Standard Specifications and Details for Public Works Construction, sponsored and distributed by the Maricopa Association of Governments (MAG)", unless otherwise recommended in this report.
4.2.1 Site Preparation and Grading

Within the areas to be graded, any existing vegetation and debris should be removed and hauled off the site. Within the planned building area, and at least 5 feet beyond, the existing undocumented fill and/or disturbed native soils should be excavated to expose the underlying bedrock. Suitable materials may be stockpiled for reuse as compacted structural fill.

Within pavement areas, we suggest as a minimum that the existing fill materials be reworked to a depth of at least 1 foot through a combination of overexcavation, scarification, moisture conditioning and recompaction as outlined in the Structural Fill Section of this report. The Geotechnical Consultant should observe the excavation bottoms and the site grading operations to observe that unsuitable soils are identified and treated as recommended.

The site should then be brought to rough grade with structural fill as described in Section 4.2.4. Subgrade materials supporting concrete slab-on-grade floors, exterior flatwork and pavements should be kept moist and undisturbed. If the subgrade dries back or is disturbed, the exposed soils should be scarified, moisture-conditioned, and re-compacted as outlined in Section 4.2.4.

4.2.2 Excavations

Subsurface conditions encountered at the site generally consisted of about ½ to 2 feet of undocumented spread fill materials and/or disturbed native soils overlying sandstone bedrock. The measured depths to bedrock encountered within the explorations are summarized in Table 4.2.2.

<table>
<thead>
<tr>
<th>Exploration Location</th>
<th>Depth to Bedrock (ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-1</td>
<td>1</td>
</tr>
<tr>
<td>T-2</td>
<td>2</td>
</tr>
<tr>
<td>T-3</td>
<td>1</td>
</tr>
<tr>
<td>T-4</td>
<td>2</td>
</tr>
<tr>
<td>T-5</td>
<td>½</td>
</tr>
</tbody>
</table>

The spread fill materials should be readily excavatable with conventional excavation equipment. Where sandstone bedrock is encountered during site grading and/or utility trench excavation, heavy-duty ripping, heavy-duty backhoe, ho-ram, or other rock excavation techniques should be anticipated. Temporary excavations should be
laid back to safe slopes or properly shored. Contractors should meet OSHA health and safety standards.

4.2.3 Permanent Cut and Fill Slopes
It is recommended that in general, the maximum permanent cut and fill slopes should not be made steeper than 2½:1 (horizontal to vertical). These requirements should be adequate for overall stability; however, flatter slopes may be desired for erosion control. To reduce the potential for erosion, all drainage above the slopes should be directed away from the slope face. Where steeper slopes are desired within the development, retaining structures, reinforced slopes and/or additional analysis will be required.

4.2.4 Structural Fill Material
All fill placed for the support of footings, concrete floor slabs, exterior flatwork, and pavements should consist of structural fill. Structural fill may consist of excavated on-site sands or approved imported fill materials. Structural fill should be granular, non-expansive, be free of vegetation and debris, and contain no inert materials larger than 4 inches in nominal size.

Structural fill should be placed in maximum 8-inch loose lifts and compacted on a horizontal plane, unless otherwise approved by the Geotechnical Engineer. Soils in compacted fills should be compacted to at least 95 percent of the maximum dry density as determined by ASTM D-1557. The moisture content should be at or above optimum. Any imported fill materials should be approved prior to importing. Prior to placing any fill, the excavations should be observed by the Geotechnical Engineer to observe that unsuitable materials have been removed.

4.3 Foundation Design
The proposed building should receive adequate support from conventional strip and/or spread footings founded entirely on undisturbed bedrock or entirely on a zone of properly placed and compacted structural fill. Building foundation elements should not be founded on a combination of structural fill and in-situ bedrock. If these mixed conditions are encountered within the building area, it is recommended that either all foundation elements extend down to undisturbed bedrock, or the bedrock be over-excavated to a depth of at least 1 foot below the bottom of footing elevation and replaced with properly compacted structural fill.

Conventional strip and/or spread footings for 1-story structures should be a minimum of 15 inches wide and embedded a minimum of 18 inches below the lowest adjacent
final grade. Footings may be proportioned for a maximum net allowable bearing pressure of 2,000 psf. A one-third increase may be used for transient wind or seismic loads.

Foundations should be reinforced with a minimum of one No. 4 bar near the top of the stem wall, and two No. 4 bars near the footing base. Additional reinforcing may be required as per the Structural Engineer’s design.

Settlements of properly designed and constructed foundations are anticipated to be on the order of one inch, or less. Differential settlements should be on the order of 3/4 the total settlements, or less. It is expected that the majority of the anticipated settlement will occur during construction.

Prior to constructing the foundations, the footing excavations should be observed by the Geotechnical Consultant to observe whether suitable bearing materials have been exposed and whether the excavation bottoms are free of loose or disturbed soils.

Horizontal loads acting on foundations formed in open excavations will be resisted by friction acting at the base of foundations and by passive earth pressures. If the design makes use of passive earth pressures, it is important that the Geotechnical Consultant be present during any footing backfill placement. The friction acting along the base of footings founded on suitable foundation soils may be computed by using a coefficient of friction of 0.4 with the normal dead load. An allowable lateral passive earth pressure may be computed by using an equivalent fluid weighing 250 pcf for the side of footings poured against properly placed and compacted structural fill. The maximum allowable passive pressure should not exceed 1,000 psf. The values given above may be increased by one-third for transient wind or seismic loads.

4.4 Retaining Walls

Lateral earth pressures acting on restrained and unrestrained retaining walls, supporting a level backfill, should be computed using equivalent fluid densities of 55 and 40 pcf, respectively. These equivalent fluid densities assume that there will be no build-up of hydrostatic pressure and that the backfill against the walls will consist of sandy soils. The on-site sands are suitable for wall backfill, provided they are processed to meet the requirements for Structural Fill. Any surcharge from adjacent floor slabs, footings, traffic loads, or sloping backfill should be added to this pressure. Surcharge effect may be computed by using and active pressure coefficient of 0.3 times the uniform load. Retaining wall footings should be designed as recommended in the Foundation section of this report.
4.5 Concrete Slabs-on-Grade

Satisfactory support for concrete slab-on-grade floors and exterior concrete flatwork may be provided by 6-inch and 4-inch layers of compacted gravel, respectively, overlying a 1-foot minimum zone of properly placed and compacted structural fill. The compacted gravel may consist of road base, or pit-run gravel with a 2-inch maximum particle size and no more than 12 percent fines passing the No. 200 sieve.

If moisture sensitive floor coverings are used, we suggest using an impervious membrane (visqueen) in conjunction with the gravel layer. If used, the visqueen moisture barrier should be at least 10 mils in thickness and either placed at the base of the gravel layer or covered with 2 inches of sand for puncture protection and to aid in concrete curing.

All concrete slabs should be designed to minimize cracking as a result of shrinkage. Concrete floor slabs should be reinforced with a minimum of No. 3 bars at 24-inches O.C. each way. Additional reinforcement may be required by the Structural Engineer.

Special precautions should be taken during the placement and curing of all concrete slabs. Excessive slump (high water-cement ratio) of the concrete and/or improper curing procedures used during either hot or cold weather conditions could lead to excessive shrinkage, cracking or curling in the slabs. All concrete placement and curing operations should be performed in accordance with the American Concrete Institute (ACI) guidelines. We further recommend that control joint and expansion joint spacing be in accordance with ACI recommendations.

4.6 Soil Corrosion

Soils on the site contain sulfates in sufficient concentration to be considered moderately corrosive to concrete and metal. We recommend all concrete in contact with the on-site soils should contain Type V sulfate-resistant cement and be designed in accordance with the provisions provided in the American Concrete Institute Manual of Concrete Practice (ACI) 318-19. Tables 19.3.1.1 and 19.3.2.1 of ACI 318-4 should be referenced for the design of concrete elements utilizing a Sulfate Exposure Class of S2. Consideration should be given to cathodic protection of buried metal pipes, or to the use of PVC pipe where permitted by local building codes.
4.7 Asphaltic Concrete Pavements

Asphaltic concrete pavement sections should receive adequate support from properly prepared subgrade consisting of structural fill and reworked native soils as discussed in Section 4.2. In developing recommendations for asphaltic pavement sections, a minimum R-value (based on soil classification) of 45 was used for recompressed on-site soils. A traffic index of 5.0 was assumed for normal automobile and parking areas and 6.0 for large truck and entrance areas. If the assumed T.I. values are not considered appropriate, this office should be notified. Our design procedures were in accordance with the Caltrans method of designing flexible pavement. Table No. 2 presents the minimum recommended structural pavement section for the assumed design traffic conditions.

Table 4.7: Recommended Minimum Asphaltic Pavement Sections

<table>
<thead>
<tr>
<th>Traffic Condition</th>
<th>Traffic Index (T.I.)</th>
<th>Asphalt Thickness (inches)</th>
<th>Road Base Thickness (inches)</th>
<th>Structural Fill Thickness (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automobile / Parking</td>
<td>5.0</td>
<td>2½</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>Entrance / Large truck Areas</td>
<td>6.0</td>
<td>3</td>
<td>6</td>
<td>12</td>
</tr>
</tbody>
</table>

Base and asphaltic concrete materials should conform with current sections of the MAG "Uniform Standard Specifications and Details for Public Works Construction." It is important that pavement grades be set to provide positive drainage to suitable drainage structures.

4.8 Moisture Protection and Surface Drainage

Proper site drainage and moisture protection are essential for the project. Special precautions should be taken to minimize changes in moisture content of foundation soils. Positive drainage should be established away from the exterior walls of the building. The recommended minimum slope is 5% in landscape areas and 2% in flatwork and pavement areas, for a minimum distance of 10 feet from the structure. Watering adjacent to the structures should be eliminated or kept to a minimum and properly maintained to prevent over watering. Roof runoff and other sources of moisture should not be allowed to infiltrate the soils in the vicinity of, or up slope from, the structures.
4.9 Design Review

The recommendations presented in this report are based on preliminary design information for the proposed project and the subsurface conditions encountered during our geotechnical evaluation. The recommendations have been prepared to aid in the evaluation of this site and to assist in the design of the project. Prior to bid submittal, the Geotechnical Consultant should be provided the opportunity to review the final grading plans, design drawings, and specifications to determine whether the assumptions and recommendations presented in this report are valid and have been implemented. Review of the final grading plan, design drawings, and specifications should be noted in writing and should become a supplement to this report.

We recommend that a pre-construction meeting be held to discuss the project plans and requirements. The Owner or the Owner's representative, the Civil Engineer, the Geotechnical Consultant, and the Contractor should be in attendance at the meeting.

4.10 Construction Observation

Sufficient observation and review should be performed in order to permit correlation between the anticipated field conditions and the actual conditions encountered during construction, and to confirm that the recommendations presented herein are properly implemented. A final report of compliance, including all test results, should be prepared upon completion of the project. Rosenberg Associates does not provide construction observation and materials testing services, therefore, the Geotechnical Consultant selected to provide those services should complete an independent review of this geotechnical report to satisfy themselves that the recommendations presented herein are appropriate for the project site.

5.0 CLOSURE

5.1 Limitations

Our assumptions, conclusions, recommendations, and opinions contained in this report are: 1) based on the findings of the referenced field investigation program; 2) based on our geotechnical experience with similar soil conditions; 3) based on our understanding of the proposed construction; 4) subject to confirmation of the conditions encountered during construction, and 5) based upon the assumption that sufficient observation and testing will be provided during construction. If the actual construction changes from the assumptions presented in this report or if any conditions are encountered at this site
which are different from those described in this report, our firm should be immediately notified so that the recommendations presented herein can be re-evaluated for applicability to the new conditions.

This report was prepared in accordance with the generally accepted standard of practice existing at the time the report was written. No warranty, express or implied, is made. It is the Client's responsibility to see that all parties to the project, including the Designer, Contractor, Subcontractors, etc., are made aware of this report in its entirety. The use of information contained in this report for bidding purposes should be done at the Contractor's option and risk.

5.2 Closing

We appreciate the opportunity to be of service on this project. Should you have any questions regarding the report or wish to discuss additional services, please contact us at your convenience at (435) 673-8586.

Sincerely,
ROSENBERG ASSOCIATES

David R. Black, P.E.
Principal Geotechnical Engineer

DRB/21R-037.G
APPENDIX A

FIELD INVESTIGATION
APPENDIX A

FIELD INVESTIGATION

The subsurface soil conditions at the site were explored by excavating 5 exploratory test pits to depths of approximately 1 to 2 feet below the existing site grade. Each test pit was terminated with backhoe refusal on sandstone bedrock. The locations of the explorations are shown on the enclosed Site Plan, Drawing 2. Continuous logs of the subsurface conditions, as encountered in the explorations, were recorded by our field engineer. The subgrade soils were visually classified in accordance with the Unified Soil Classification System. Summaries of subsurface conditions are presented in this appendix on Drawings A-1 through A-5. A key to the soil symbols and terms is presented on Drawing A-6.
**Log of Trench No. T-1**

**Date Trenched:** 11/17/21  
Logged By: DRB  
Ground Surface Elevation:  

<table>
<thead>
<tr>
<th>DEPTH (m)</th>
<th>DEPTH (ft.)</th>
<th>GRAPHIC LOG</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SUMMARY OF SUBSURFACE CONDITIONS**

The following is a summary of subsurface conditions encountered at the time of exploration. Subsurface conditions may differ at other locations and may vary at this location with the passage of time. The data contained in this log is a simplification of actual conditions.

**FILL: GRAVELLY SAND (SP-SM)**  
Reddish Brown

<table>
<thead>
<tr>
<th>DRIVE</th>
<th>BULK</th>
<th>MOISTURE</th>
<th>CONSISTENCY</th>
<th>FIELD MOISTURE (%)</th>
<th>FIELD DENSITY (pcf)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Slightly Moist</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Refusal at 1' on Sandstone Bedrock

---

Groundwater: NE  
End of Trench at 1 Feet

---

**Project Title:** Page City Detox Center

---

ROSENBERG ASSOCIATES  
CIVIL ENGINEERS • LAND SURVEYORS  
302 East Riverbend Drive Suite A St. George, Utah 84790 – (435) 673-8688

---

**Project No.**  
12448-21-003  
**Drawing No.**  
A-1
**Log of Trench No. T-2**

**Date Trenched:** 11/17/21  
**Logged By:** DRB  
**Ground Surface Elevation:**

<table>
<thead>
<tr>
<th>DEPTH (m)</th>
<th>DEPTH (ft.)</th>
<th>GRAPHIC LOG</th>
</tr>
</thead>
</table>
| 1         | 3.3          | FILL: GRAVELLY SAND (SP-SM)  
Reddish Brown |
|           |              | Weathered Bedrock |
|           |              | Refusal at 2' on Sandstone Bedrock |

**SUMMARY OF SUBSURFACE CONDITIONS**

The following is a summary of subsurface conditions encountered at the time of exploration. Subsurface conditions may differ at other locations and may vary at this location with the passage of time. The data contained in this log is a simplification of actual conditions.

<table>
<thead>
<tr>
<th>DRIVE</th>
<th>BULK</th>
<th>MOISTURE</th>
<th>CONSISTENCY</th>
<th>FIELD MOISTURE (%)</th>
<th>FIELD DENSITY (pcf)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Slightly Moist</td>
<td>Dense</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Groundwater:** NE  
**End of Trench at 2 Feet**

**Project Title:** Page City Detox Center

**ROSENBERG ASSOCIATES**

CIVIL ENGINEERS • LAND SURVEYORS  
300 East Riverdale Drive Suite A St. George, Utah 84790 • (435) 673-9508

**Project No.:** 12448-21-003  
**Drawing No.:** A-2
## Log of Trench No. T-3

Date Trenched: 11/17/21  
Logged By: DRB

### SUMMARY OF SUBSURFACE CONDITIONS

The following is a summary of subsurface conditions encountered at the time of exploration. Subsurface conditions may differ at other locations and may vary at this location with the passage of time. The data contained in this log is a simplification of actual conditions.

<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>Depth (ft)</th>
<th>Graphic Log</th>
</tr>
</thead>
</table>

**FILL:** GRAVELLY SAND (SP-SM)  
- Reddish Brown

Disturbed Native SILTY SAND (SM)  
- Reddish Brown, Over Sewer Lateral

Refusal at 1’ on Sandstone Bedrock

<table>
<thead>
<tr>
<th>Drive</th>
<th>Bulk</th>
<th>Moisture</th>
<th>Consistency</th>
<th>Field Moisture</th>
<th>Field Density</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Slightly Moist</td>
<td>Disturbed</td>
</tr>
</tbody>
</table>

Groundwater: NE  
End of Trench at 1 Feet

---

Project Title: Page City Detox Center

---

ROSENBERG ASSOCIATES  
CIVIL ENGINEERS • LAND SURVEYORS  
365 East Riverdale Drive Suite #4 St. George, Utah 84790 - (435) 673-6000

---

Project No: 12448-21-003  
Drawing No: A-3
**Log of Trench No. T-4**

**Date Trenched:** 11/17/21  
**Logged By:** DRB  
**Ground Surface Elevation:**

<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>Depth (ft)</th>
<th>Graphic Log</th>
<th>Summary of Subsurface Conditions</th>
<th>Drive</th>
<th>Bulk Moisture</th>
<th>Consistency</th>
<th>Field Moisture (%)</th>
<th>Field Density (pcf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.3</td>
<td>1</td>
<td></td>
<td><strong>Fill:</strong> Gravelly Sand (SP-SM)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Reddish Brown</td>
<td></td>
<td>Slightly Moist</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.3</td>
<td>7.5</td>
<td></td>
<td>Silty Sand (SM) Reddish Brown,</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>and Fractured Sandstone</td>
<td></td>
<td>Disturbed</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Refusal at 2' on Sandstone Bedrock

**Groundwater:** NE

End of Trench at 2 Feet

**Project Title:** Page City Detox Center

---

**ROSENBERG ASSOCIATES**  
**Civil Engineers • Land Surveyors**  
352 East Riverdale Drive Suite A St. George, Utah 84790 - (435) 873-9000

**Project No.**  
12448-21-003

**Drawing No.**  
A-4
### Log of Trench No. T-5

**Date Trenched:** 11/17/21  
**Logged By:** DRB  
**Ground Surface Elevation:**

<table>
<thead>
<tr>
<th>DEPTH (m)</th>
<th>DEPTH (ft)</th>
<th>GRAPHIC LOG</th>
<th>SUMMARY OF SUBSURFACE CONDITIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.5</td>
<td>0.5</td>
<td></td>
<td>Refusal 0.5' on Sandstone Bedrock</td>
</tr>
<tr>
<td>1</td>
<td>3.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>6.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>9.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>13.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>16.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>19.7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**FILL:** GRAVELY SAND (SP-SM)  
Reddish Brown

**DRIVE**  
Slightly Moist

**MOISTURE:**

**CONSISTENCY:**

**FIELD MOISTURE (%)**

**FIELD DENSITY (pcf)**

**Groundwater:** NE

End of Trench at 0.5 Feet

**Project Title:** Page City Detox Center

**ROSENBERG ASSOCIATES**

**Project No.:** 12448-21-003  
**Drawing No.:** A-5
KEY TO SOIL SYMBOLS AND TERMS

Terms used in this report for describing soils according to their texture or grain size distributions are generally in accordance with the Unified Soils Classification System.

TERMS DESCRIBING CONDITION,
CONSISTENCY AND HARDNESS

COARSE GRAINED SOILS:
Major portion retained on No. 200 sieve. Includes:
(1) clean gravels, (2) silty or clayey gravels and (3) silty, clayey or gravelly sands. Consistency is rated according to relative density, as determined by laboratory test.

<table>
<thead>
<tr>
<th>DESCRIPTIVE TERM</th>
<th>BLOW COUNTS (N1)60</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Loose</td>
<td>0 to 4</td>
</tr>
<tr>
<td>Loose</td>
<td>5 to 10</td>
</tr>
<tr>
<td>Medium Dense</td>
<td>11 to 30</td>
</tr>
<tr>
<td>Dense</td>
<td>31 to 50</td>
</tr>
<tr>
<td>Very Dense</td>
<td>Greater than 50</td>
</tr>
</tbody>
</table>

FINE GRAINED SOILS:
Major portion passing No. 200 sieve. Includes:
(1) inorganic and organic silts and clays (2) gravelly, sandy or silty clays, and (3) clayey silts. Consistency is rated according to shearing strength as indicated by penetrometer readings or by direct shear tests.

<table>
<thead>
<tr>
<th>DESCRIPTIVE TERM</th>
<th>Blows per 6&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Soft</td>
<td>Less than 2</td>
</tr>
<tr>
<td>Soft</td>
<td>2 - 4</td>
</tr>
<tr>
<td>Firm</td>
<td>5 - 8</td>
</tr>
<tr>
<td>Stiff</td>
<td>9 - 15</td>
</tr>
<tr>
<td>Very Stiff</td>
<td>16 - 30</td>
</tr>
<tr>
<td>Hard</td>
<td>Greater than 30</td>
</tr>
</tbody>
</table>

ROCK:
Includes gravels, cobbles, rock, caliche and bedrock materials. Hardness is related to field identification procedures described below.

<table>
<thead>
<tr>
<th>DESCRIPTIVE TERM</th>
<th>FIELD IDENTIFICATION TEST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soft</td>
<td>Can be dug by hand and crushed by fingers.</td>
</tr>
<tr>
<td>Moderate Hard</td>
<td>Friable, can be gouged deeply with knife and will crumble readily under light hammer blows.</td>
</tr>
<tr>
<td>Hard</td>
<td>Knife scratch leaves dust trace, will withstand a few hammer blows before breaking.</td>
</tr>
<tr>
<td>Very Hard</td>
<td>Scratched with knife with difficulty, difficult to break with hammer blows.</td>
</tr>
</tbody>
</table>

SOIL MOISTURE
From low to high the soil moisture is indicated by:

- Dry - Absence of Moisture, Dusty, Dry to Touch
- Slightly Moist - Apparent Moisture but well below optimum Moisture Content
- Moist - Damp, but no visible water; at or near optimum Moisture Content
- Very Moist - Above optimum moisture content
- Wet - Visible Free Water; Substantially above optimum moisture content; at or above liquid limit

SIZE PROPORTIONS

<table>
<thead>
<tr>
<th>DESCRIPTIVE TERM</th>
<th>PERCENT BY WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trace</td>
<td>0 to 10</td>
</tr>
<tr>
<td>With</td>
<td>10 to 20</td>
</tr>
<tr>
<td>Some</td>
<td>20 to 35</td>
</tr>
<tr>
<td>And</td>
<td>35 to 50</td>
</tr>
</tbody>
</table>

SOIL TYPE KEY

LEGEND OF LABORATORY TEST

CH - Chemical Heave
C - Consolidation
T - Triaxial
S - Solubility
P - Compaction

SAMPLER TYPES

Drawing No. A-6
Important Information About Your
Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.
The following information is provided to help you manage your risks.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects
Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared solely for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. And no one - not even you - should apply the report for any purpose or project except the one originally contemplated.

Read the Full Report
Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors
Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:
• not prepared for you,
• not prepared for your project,
• not prepared for the specific site explored, or
• completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:
• the function of the proposed structure, as when it's changed from a parking garage to an office building, or from at a refrigerated warehouse.
• elevation, configuration, location, orientation, or weight of the proposed structure,
• composition of the design team, or
• project ownership.

As a general rule, always inform your geotechnical engineer of project changes - even minor ones - and request an assessment of their impact. Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.

Subsurface Conditions Can Change
A geotechnical engineering report is based on conditions that existed at the time the study was performed. Do not rely on a geotechnical engineering report whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. Always contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions
Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ-sometimes significantly from those indicated in your report. Reining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are Not Final
Do not overly on the construction recommendations included in your report. Those recommendations are not final, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual
subsurface conditions revealed during construction. The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.

**A Geotechnical Engineering Report Is Subject to Misinterpretation**

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

**Do Not Redraw the Engineer's Logs**

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should never be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, but recognize that separating logs from the report can elevate risk.

**Give Contractors a Complete Report and Guidance**

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, but preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. Be sure contractors have sufficient time to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

**Read Responsibility Provisions Closely**

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. Read these provisions closely. Ask questions. Your geotechnical engineer should respond fully and frankly.

**Geoenvironmental Concerns Are Not Covered**

The equipment, techniques, and personnel used to perform a geoenvironmental study differ significantly from those used to perform a geotechnical study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. Unanticipated environmental problems have led to numerous project failures. If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. Do not rely on an environmental report prepared for someone else.

**Obtain Professional Assistance To Deal with Mold**

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the express purpose of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.

**Rely on Your ASFE-Member Geotechnical Engineer For Additional Assistance**

Membership in ASFE/The Best People on Earth exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.
PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   2. Owner occupancy.

B. Related Requirements:
   1. Section 01 33 00 – Submittal Procedures.

1.2 CONTRACT DESCRIPTION

A. Work of Project includes construction of the City Of Page Shelter Encompass Facility and site improvements.

B. Perform Work of Contract under stipulated price Contract with Owner according to Conditions of Contract.

1.3 OWNER OCCUPANCY

A. Owner will not occupy Site during period of construction.

1.4 SPECIFICATION CONVENTIONS

A. These Specifications are written in imperative mood and streamlined form. This imperative language is directed to Contractor unless specifically noted otherwise. The words "shall be" are included by inference where colon (:) is used within sentences or phrases.

PART 2 PRODUCTS - NotUsed

PART 3 EXECUTION - Not Used

END OF SECTION
SECTION 01 20 00
PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Schedule of Values.
   2. Application for Payment.
   3. Change procedures.
   4. Defect assessment.
   5. Unit price schedule.

1.2 SCHEDULE OF VALUES

A. Submit printed or electronic PDF file of Schedule of Values on Contractor's standard form.

B. Submit Schedule of Values as required in General Conditions.

C. Format: Use Table of Contents of this Project Manual. Identify each line item with number and title of major Specification Section. Also identify mobilization, bonds and insurance, and other related items.

D. Include within each line item, direct proportional amount of Contractor's overhead and profit.

E. Revise Schedule of Values to list approved Change Orders with each Application for Payment.

1.3 APPLICATION FOR PAYMENT

A. Submit one copy of each Application for Payment on American Institute of Architects (AIA) Payment Application Form included in Contact Documents.

B. Content and Format: Use Schedule of Values for listing items in Application for Payment.

C. Submit updated Progress Schedule with each Application for Payment.

D. Payment Period: Submit at monthly intervals as agreed upon at Preconstruction Meeting.

E. Substantiating Data: When Architect requires substantiating information, submit data justifying dollar amounts in question.
1.4 CHANGE PROCEDURES

A. Submit name of individual who is authorized to receive change documents and is responsible for informing others in Contractor’s employ or Subcontractors of changes to Work.

B. Carefully study and compare Contract Documents before proceeding with fabrication and installation of Work. Promptly advise Architect of any error, inconsistency, omission, or apparent discrepancy.

C. Requests for Interpretation (RFI) and Clarifications: Allot time in construction scheduling for handling queries and clarifications.

D. Use Contractor’s standard form for requesting interpretations.

E. Architect may respond with direct answer on Request for Interpretation form, Field Order, or Work Change Directive.

F. Substitutions are to be requested and reviewed by Architect prior to submittal of bids as indicated in Instructions to Bidders.

G. Execution of Change Orders: Architect will issue Change Orders for signatures of parties as provided in General Conditions.

H. Correlation of Contractor Submittals:
   1. Promptly revise Application for Payment forms to record each authorized Change Order as separate line item and adjust Contract Price.
   2. Promptly revise Progress Schedule to reflect change in Contract Time, revise sub-schedules to adjust times for other items of Work affected by change, and resubmit.
   3. Promptly enter changes in Record Documents.

1.5 DEFECT ASSESSMENT

A. Replace Work, or portions of Work, not conforming to specified requirements.

B. If, in opinion of Architect, it is not practical to remove and replace Work, Architect will direct appropriate remedy or adjust payment.
   1. Defective Work may remain, but unit sum/price will be reduced up to 50 percent at discretion of Architect.
   2. Defective Work will be partially repaired according to instructions of Architect, and unit sum/price will be adjusted to new sum/price at discretion of Architect.
   3. Individual Specification Sections may modify these options or may identify specific formula or percentage sum/price reduction.
C. Authority of Architect to assess defects and identify payment adjustments is final.

D. Nonpayment for Rejected Products: Payment will not be made for rejected products for any of the following reasons:
   1. Products wasted or disposed of in manner that is not acceptable.
   2. Products determined as unacceptable before or after placement.
   3. Products not completely unloaded from transporting vehicle.
   4. Products placed beyond lines and levels of the required Work.
   5. Products remaining on hand after completion of Work.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION
SECTION 01 33 00
SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Definitions.
B. Submittal procedures.
C. Construction progress schedule.
D. Product data.
E. Shop Drawings.
F. Samples.
G. Closeout submittals.
H. Test reports.
I. Certificates.
J. Manufacturer's instructions.
K. Manufacturer's field reports.
L. Contractor review.
M. Architect review.

1.2 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Architect, Owner's or construction team's responsive action.

B. Informational Submittals: Written and graphic information and physical Samples that do not require Architect responsive action. Submittals may be rejected for not complying with requirements.

1.3 SUBMITTAL PROCEDURES

A. Transmit each submittal with transmittal or cover letter.

B. Mark revised submittals with original number and sequential alphabetic suffix.
C. Identify: Project, Contractor, Subcontractor and supplier, pertinent Drawing and detail number, and Specification Section number appropriate to submittal.

D. Apply Contractor's stamp, signed or initialed, certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information is according to requirements of Work and Contract Documents.

E. Schedule submittals to expedite Project, and deliver to Architect at business address. Submit electronic submittals via email as PDF electronic files. Coordinate submission of related items.

F. For each submittal for review, allow 14 days, excluding delivery time to and from Contractor.

G. Identify variations in Contract Documents and product or system limitations that may be detrimental to successful performance of completed Work.

H. Allow space on submittals for Contractor and Architect review stamps.

I. When revised for resubmission, identify changes made since previous submission.

J. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report inability to comply with requirements.

K. Submittals not requested will not be recognized nor processed.

L. Incomplete Submittals: Architect will not review. Complete submittals for each item are required. Delays resulting from incomplete submittals are not responsibility of Architect.

1.4 CONSTRUCTION PROGRESS SCHEDULE

A. Submit construction Progress Schedule before or at Preconstruction Meeting.

B. Revise and resubmit at least monthly with each application for payment.

C. Show complete sequence of construction by activity, identifying Work of separate stages/phases and other logically grouped activities.

1.5 PRODUCT DATA

A. Product Data:
   1. Action submittal.
2. Submit to Architect/ for review for assessing conformance with information given and design concept expressed in Contract Documents.

3. Submit hard copies or electronic copies:
   a. Hard Copies: Submit number of copies Contractor requires, plus two copies Architect will retain.
   b. Electronic Copies: Submit via email as PDF electronic files.

B. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers’ standard data to provide information specific to this Project.

C. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

D. After review, produce copies and distribute according to submittal procedures.

1.6 SHOP DRAWINGS

A. Shop Drawings:
   1. Action submittal.
   2. Submit to Architect for assessing conformance with information given and design concept expressed in Contract Documents.
   3. Submit hard copies or electronic copies:
      a. Hard Copies: Submit number of copies Contractor requires, plus two copies Architect will retain.
      b. Electronic Copies: Submit via email as PDF electronic files.

B. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

C. When required by individual Specification Sections, provide Shop Drawings signed and sealed by professional engineer responsible for designing components shown on Shop Drawings.
   1. Include signed and sealed calculations to support design.
   2. Submit Shop Drawings and calculations in form suitable for submission to and approval by authorities having jurisdiction.
   3. Make revisions and provide additional information when required by authorities having jurisdiction.

D. After review, produce copies and distribute according to submittal procedures.

1.7 SAMPLES
A. Samples:
   1. Action submittal.
      2. Submit to Architect for assessing conformance with information given and design concept expressed in Contract Documents.

B. Samples for Selection as Specified in Product Sections:
   1. Submit to Architect for aesthetic, color, and finish selection.
   2. Submit Samples of finishes, textures, and patterns for Architect selection.

C. Submit Samples to illustrate functional and aesthetic characteristics of products, with integral parts and attachment devices. Coordinate Sample submittals for interfacing work.

D. Include identification on each Sample, with full Project information.

E. Submit number of Samples specified in individual Specification Sections; Architect will retain one Sample.

F. Reviewed Samples that may be used in Work are indicated in individual Specification Sections.

G. After review, produce copies and distribute according to submittal procedures.

1.8 CLOSEOUT SUBMITTALS

A. Closeout Submittals: Comply with General Conditions and Section 01 70 00.

B. Informational Submittal: Submit data for Architect’s knowledge as Contract administrator or for Owner.

C. Submit information for assessing conformance with information given and design concept expressed in Contract Documents.

1.9 TEST REPORTS

A. Informational Submittal: Submit reports for Architect’s knowledge as Contract administrator or for Owner.

B. Submit test reports for information for assessing conformance with information given and design concept expressed in Contract Documents.

1.10 CERTIFICATES
A. Informational Submittal: Submit one copy of certification by manufacturer, installation/application Subcontractor, or Contractor to Architect.

B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

C. Certificates may be recent or previous test results on material or product but must be acceptable to Architect.

1.11 MANUFACTURER’S INSTRUCTIONS

A. Informational Submittal: Submit manufacturer's installation instructions for Architect's knowledge as Contract administrator or for Owner.

B. Submit one copy of printed instructions for delivery, storage, assembly, installation, startup, adjusting, and finishing to Architect.

C. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.12 MANUFACTURER’S FIELD REPORTS

A. Informational Submittal: Submit reports for Architect’s knowledge as Contract administrator or for Owner.

B. Submit one copy of report within 5 days of observation to Architect for information.

C. Submit reports for information for assessing conformance with information given and design concept expressed in Contract Documents.

1.13 CONTRACTOR REVIEW

A. Review submittals for compliance with Contract Documents and approve submittals before transmitting to Architect, otherwise submittal will be returned to Contractor.

B. Contractor is responsible for:
   1. Determination and verification of materials including manufacturer's catalog numbers.
   2. Determination and verification of field measurements and field construction criteria.
   3. Checking and coordinating information in submittal with requirements of Work and of Contract Documents.
   4. Determination of accuracy and completeness of dimensions and quantities.
5. Confirmation and coordination of dimensions and field conditions at Site.
6. Construction means, techniques, sequences, and procedures.
7. Safety precautions.
8. Coordination and performance of Work of all trades.

C. Stamp, sign or initial, and date each submittal to certify compliance with requirements of Contract Documents.

D. Do not fabricate products or begin Work for which submittals are required until approved submittals have been received from Architect.

1.14 ARCHITECT REVIEW

A. Informational submittals and other similar data are for Architect's information, do not require Architect's responsive action, and will not be reviewed or returned with comment.

B. Submittals made by Contractor that are not required by Contract Documents may be returned without action.

C. Submittal approval does not authorize changes to Contract requirements unless accompanied by Change Order, Field Order, or Work Change Directive.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION
## SUMMARY OF SUBMITTALS

<table>
<thead>
<tr>
<th>Section</th>
<th>Submittal</th>
<th>Contractor's Anticipated Submission Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>03 20 00 CONCRETE REINFORCING</td>
<td>Shop Drawings: Indicate bar sizes, spacing, locations, splice locations, and quantities of reinforcing steel. Indicate bending and cutting schedules. Indicate supporting and spacing devices.</td>
<td></td>
</tr>
<tr>
<td>03 20 00 CONCRETE REINFORCING</td>
<td>Manufacturer's Material Certificate: Certify that products meet or exceed specified requirements.</td>
<td></td>
</tr>
<tr>
<td>03 30 00 CAST-IN-PLACE CONCRETE</td>
<td>Product Data: Submit data on joint devices, attachment accessories, admixtures, bonding agent, non-shrink grout, curing compound, and accessories.</td>
<td></td>
</tr>
<tr>
<td>03 30 00 CAST-IN-PLACE CONCRETE</td>
<td>Design Data: Submit concrete mix design for each concrete class used. Submit prior test results for each concrete mix design. Submit separate mix designs if admixtures are required for following: Hot and cold weather concrete work. Air entrained concrete work. Identify mix ingredients and proportions, including admixtures. Identify chloride content of admixtures and whether chlorides were added during manufacturing.</td>
<td></td>
</tr>
<tr>
<td>03 30 00 CAST-IN-PLACE CONCRETE</td>
<td>Concrete Placement Plan: Submit concrete placement plan minimum of 72-hours prior to placement of concrete or as determined by Engineer. See attachment at end of this section. This requirement may be waived for minor concrete placements when accepted by Engineer.</td>
<td></td>
</tr>
<tr>
<td>03 30 00 CAST-IN-PLACE CONCRETE</td>
<td>Batch Ticket: Submit to Engineer’s onsite representative with each truck load delivered. Include information as follows: Name of batch plant. Name of Contractor and Project. Mix design number or designation. Class of concrete mix and type of cement. Time and date of batching.</td>
<td></td>
</tr>
<tr>
<td>Code</td>
<td>Description</td>
<td>Details</td>
</tr>
<tr>
<td>----------</td>
<td>-----------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>03 30 00</td>
<td>CAST-IN-PLACE CONCRETE</td>
<td>Project Record Documents: Record actual locations of embedded utilities and components concealed from view in finished construction.</td>
</tr>
<tr>
<td>03 30 00</td>
<td>CAST-IN-PLACE CONCRETE</td>
<td>Warranty: Submit before or with final application for payment.</td>
</tr>
<tr>
<td>03 39 20</td>
<td>PENETRATING CONCRETE SEALER</td>
<td>Manufacturer’s product data sheets and recommended installation instructions.</td>
</tr>
<tr>
<td>03 39 20</td>
<td>PENETRATING CONCRETE SEALER</td>
<td>A random sample of the penetrating concrete sealer for testing at the Engineer’s discretion to verify product compliance.</td>
</tr>
<tr>
<td>05 12 00</td>
<td>STRUCTURAL STEEL FRAMING</td>
<td>Shop Drawings: Indicate profiles, sizes, spacing, locations of structural members, openings, attachments, and bolts. Connections. Indicate welded connections with AWS A2.4 welding symbols, and indicate net weld lengths.</td>
</tr>
<tr>
<td>05 12 00</td>
<td>STRUCTURAL STEEL FRAMING</td>
<td>Manufacturer’s Certificate: Certify that products meet or exceed specified requirements.</td>
</tr>
<tr>
<td>05 12 00</td>
<td>STRUCTURAL STEEL FRAMING</td>
<td>Welders Certificates: Certify welders employed on the Work, verifying AWS qualification within previous 12 months.</td>
</tr>
<tr>
<td>05 12 00</td>
<td>STRUCTURAL STEEL FRAMING</td>
<td>Mill Test Reports: Submit indicating structural strength, destructive and non-destructive test analysis.</td>
</tr>
<tr>
<td>05 12 00</td>
<td>STRUCTURAL STEEL FRAMING</td>
<td>Source Quality-Control Submittals: Indicate results of shop tests and inspections.</td>
</tr>
<tr>
<td>05 12 00</td>
<td>STRUCTURAL STEEL FRAMING</td>
<td>Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.</td>
</tr>
<tr>
<td>05 12 00</td>
<td>STRUCTURAL STEEL FRAMING</td>
<td>Qualifications Statements: Submit qualifications for fabricator, erector, shop painter, and welders. Indicate items that require submittals.</td>
</tr>
<tr>
<td>05 50 00 METAL FABRICATIONS</td>
<td>Product Data: Submit data for canopy steel.</td>
<td></td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>05 50 00 METAL FABRICATIONS</td>
<td>Shop Drawings: Submit shop drawings for &lt; &gt;. Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable. Indicate welded connections using standard AWS A2.4 welding symbols.</td>
<td></td>
</tr>
<tr>
<td>05 50 00 METAL FABRICATIONS</td>
<td>Welders Certificates: Certify welders employed on Work, verifying AWS qualification within previous 12 months.</td>
<td></td>
</tr>
<tr>
<td>05 50 00 METAL FABRICATIONS</td>
<td>Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.</td>
<td></td>
</tr>
<tr>
<td>06 10 00 ROUGH CARPENTRY</td>
<td>Product Data: Manufacturer information on insulated sheathing, wood preservative materials, and application instructions.</td>
<td></td>
</tr>
<tr>
<td>06 10 00 ROUGH CARPENTRY</td>
<td>Shop Drawings for Site-Fabricated Truss Frame: Dimensions, wood species and grades, component profiles, drilled holes, fasteners, connectors, erection details, and sequence.</td>
<td></td>
</tr>
<tr>
<td>06 10 00 ROUGH CARPENTRY</td>
<td>Manufacturer’s Certificate: Products meet or exceed specified requirements.</td>
<td></td>
</tr>
<tr>
<td>06 17 53 SHOP-FABRICATED WOOD TRUSSES</td>
<td>Product Data: Submit truss plate connections, bearing plates, anchor connections, wind uplift connections, and bridging and bracing.</td>
<td></td>
</tr>
<tr>
<td>06 17 53 SHOP-FABRICATED WOOD TRUSSES</td>
<td>Shop Drawings: Indicate truss sizes, dimensions, spacing of trusses, associated components, uplift connectors, web and chord sizes, plate sizes, fastener descriptions and spacings, loads and truss cambers, and framed openings.</td>
<td></td>
</tr>
<tr>
<td>06 17 53 SHOP-FABRICATED WOOD TRUSSES</td>
<td>Design Calculations: Indicate design loads, truss reactions, and member forces, deflections, and stresses.</td>
<td></td>
</tr>
<tr>
<td>06 17 53 SHOP-FABRICATED WOOD TRUSSES</td>
<td>Manufacturer’s/Fabricator’s Certificate: Certify that products meet or exceed specified requirements.</td>
<td></td>
</tr>
<tr>
<td>06 17 53</td>
<td>Delegated Design Submittals: Submit signed and sealed Shop Drawings with design calculations and assumptions for sizes, dimensions,</td>
<td></td>
</tr>
<tr>
<td>Section Code</td>
<td>Description</td>
<td>Notes</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
<td>-------</td>
</tr>
<tr>
<td><strong>SHOP-</strong></td>
<td><strong>FABRICATED</strong></td>
<td><strong>WOOD TRUSSES</strong></td>
</tr>
<tr>
<td><strong>06 17 53</strong></td>
<td><strong>SHOP-</strong></td>
<td><strong>FABRICATED</strong></td>
</tr>
<tr>
<td><strong>06 40 00</strong></td>
<td><strong>ARCHITECTURAL</strong></td>
<td><strong>WOODWORK</strong></td>
</tr>
<tr>
<td><strong>06 40 00</strong></td>
<td><strong>ARCHITECTURAL</strong></td>
<td><strong>WOODWORK</strong></td>
</tr>
<tr>
<td><strong>06 40 00</strong></td>
<td><strong>ARCHITECTURAL</strong></td>
<td><strong>WOODWORK</strong></td>
</tr>
<tr>
<td><strong>06 40 00</strong></td>
<td><strong>ARCHITECTURAL</strong></td>
<td><strong>WOODWORK</strong></td>
</tr>
<tr>
<td><strong>07 11 13</strong></td>
<td><strong>BITUMINOUS</strong></td>
<td><strong>DAMPPROOFING</strong></td>
</tr>
<tr>
<td><strong>07 11 13</strong></td>
<td><strong>BITUMINOUS</strong></td>
<td><strong>DAMPPROOFING</strong></td>
</tr>
<tr>
<td><strong>08 11 00</strong></td>
<td><strong>METAL DOORS</strong></td>
<td><strong>AND FRAMES</strong></td>
</tr>
<tr>
<td><strong>08 11 00</strong></td>
<td><strong>METAL DOORS</strong></td>
<td><strong>AND FRAMES</strong></td>
</tr>
<tr>
<td><strong>08 14 16</strong></td>
<td><strong>FLUSH WOOD</strong></td>
<td><strong>DOORS</strong></td>
</tr>
<tr>
<td><strong>08 14 16</strong></td>
<td><strong>FLUSH WOOD</strong></td>
<td><strong>DOORS</strong></td>
</tr>
<tr>
<td>08 14 16</td>
<td>FLUSH WOOD DOORS</td>
<td>Dimensions and locations of mortises and holes for hardware. Dimensions and locations of cutouts. Undercuts. Requirements for veneer matching. Doors to be factory finished and finish requirements. Fire-protection ratings for fire-rated doors.</td>
</tr>
<tr>
<td>08 14 16</td>
<td>FLUSH WOOD DOORS</td>
<td>Samples for Initial Selection: For factory-finished doors.</td>
</tr>
<tr>
<td>08 14 16</td>
<td>FLUSH WOOD DOORS</td>
<td>Sample Warranty: For special warranty.</td>
</tr>
<tr>
<td>08 14 16</td>
<td>FLUSH WOOD DOORS</td>
<td>Quality Standard Compliance Certificates: AWI Quality Certification Program certificates.</td>
</tr>
<tr>
<td>08 51 13</td>
<td>ALUMINUM WINDOWS</td>
<td>Product Data: Submit for each type of aluminum window indicated.</td>
</tr>
<tr>
<td>08 51 13</td>
<td>ALUMINUM WINDOWS</td>
<td>Shop Drawings: Include plans, elevations, sections, details, hardware, attachments to other work, operational clearances, and installation details. The following paragraph assumes the manufacturer's standard-size samples are acceptable. Revise to suit project.</td>
</tr>
<tr>
<td>08 51 13</td>
<td>ALUMINUM WINDOWS</td>
<td>Samples: Submit sample for each exposed finish.</td>
</tr>
<tr>
<td>08 51 13</td>
<td>ALUMINUM WINDOWS</td>
<td>Product Schedule: Use same designations indicated on Drawings.</td>
</tr>
<tr>
<td>08 51 13</td>
<td>ALUMINUM WINDOWS</td>
<td>Manufacturer’s Certificate: Certify that products meet or exceed specified requirements. Provide supporting documentation and test reports.</td>
</tr>
<tr>
<td>08 51 13</td>
<td>ALUMINUM WINDOWS</td>
<td>Maintenance Data. Provide manufacturer's recommended maintenance information.</td>
</tr>
<tr>
<td>09 24 00</td>
<td>DIAMOND WALL ONE COAT STUCCO</td>
<td>Product Data: All product data sheets, evaluation reports, details, and warranty information that pertain to the project in accordance with Section 01 30 00 Submittal Procedures.</td>
</tr>
<tr>
<td>09 24 00</td>
<td>DIAMOND WALL ONE COAT STUCCO</td>
<td>Samples: Submitted upon request. Samples of the finish coat shall be of an adequate size as required to represent each color.</td>
</tr>
<tr>
<td>Product</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
<td></td>
</tr>
<tr>
<td>DIAMOND WALL ONE COAT STUCCO</td>
<td>and texture to be utilized on the project and produced using the same techniques and tools required to complete the project. Retain approved samples at the construction site throughout the application process.</td>
<td></td>
</tr>
<tr>
<td>09 29 00 GYPSUM BOARD</td>
<td>Product Data: Submit data on gypsum board, joint tape; decorative finish, and acoustic accessories. Samples: Submit one sample of textured surfacing; 24x24 inch in size illustrating textured finish.</td>
<td></td>
</tr>
<tr>
<td>09 30 00 TILING</td>
<td>Product Data: For each type of product indicated. Samples: Each type and composition of tile and for each color and finish required. Assembled samples, with grouted joints, for each type and composition of tile and for each color and finish required. Stone thresholds in 6-inch lengths. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering and identified with labels describing contents.</td>
<td></td>
</tr>
<tr>
<td>09 30 00 TILING</td>
<td>Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed for each type, composition, color, pattern, and size indicated.</td>
<td></td>
</tr>
<tr>
<td>09 65 13 RESILIENT BASE AND ACCESSORIES</td>
<td>Product Data: For each type of product indicated. Samples: For each type of product indicated, in manufacturer’s standard-size Samples but not less than 12 inches long, of each resilient product color, texture, and pattern required.</td>
<td></td>
</tr>
<tr>
<td>09 68 13 TILE CARPETING</td>
<td>Product Data: Provide for each type of product indicated. Shop Drawings: Show following: Columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cut-outs are required in carpet tiles. Type of subfloor. Type of installation. Pattern of installation. Pattern type, location, and direction.</td>
<td></td>
</tr>
<tr>
<td>Code</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>--------</td>
<td>-----------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>09 68 13 TILE CARPETING</td>
<td>Pile direction. Samples: Provide for each exposed product and for each color and texture specified.</td>
<td></td>
</tr>
<tr>
<td>09 68 13 TILE CARPETING</td>
<td>Product test reports.</td>
<td></td>
</tr>
<tr>
<td>09 68 13 TILE CARPETING</td>
<td>Sample warranty.</td>
<td></td>
</tr>
<tr>
<td>09 68 13 TILE CARPETING</td>
<td>Maintenance data.</td>
<td></td>
</tr>
<tr>
<td>10 28 00 TOILET, BATH, AND LAUNDRY ACCESSORIES</td>
<td>Product Data: For each type of product indicated.</td>
<td></td>
</tr>
<tr>
<td>10 28 00 TOILET, BATH, AND LAUNDRY ACCESSORIES</td>
<td>Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required. Identify locations using room designations indicated. Identify products using designations indicated.</td>
<td></td>
</tr>
<tr>
<td>10 28 00 TOILET, BATH, AND LAUNDRY ACCESSORIES</td>
<td>Maintenance data.</td>
<td></td>
</tr>
<tr>
<td>10 28 00 TOILET, BATH, AND LAUNDRY ACCESSORIES</td>
<td>Warranty: Sample of special warranty.</td>
<td></td>
</tr>
</tbody>
</table>
SECTION 01 40 00
QUALITY REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Quality control.
B. Tolerances.
C. References.
D. Labeling.
E. Mockup requirements.
F. Quality control testing.
G. Acceptance testing and inspection services.
H. Nonconforming Work.
I. Manufacturer’s field services.
J. Related Requirements:
   1. Section 01 33 00 – Submittal Procedures

1.2 QUALITY CONTROL

A. Monitor quality control over suppliers, manufacturers, products, services, Site conditions, and workmanship, to produce Work of specified quality.

B. Comply with specified standards as minimum quality for Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

C. Perform Work using persons qualified to produce required and specified quality.

D. Supervise performance of Work in such manner and by such means to ensure that Work, whether completed or in progress, will not be subjected to harmful, dangerous, damaging, or otherwise deleterious exposure during construction period.

1.3 TOLERANCES

A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
B. Comply with manufacturers’ recommended tolerances and tolerance requirements in reference standards. When such tolerances conflict with Contract Documents, request clarification from Architect before proceeding.

C. Adjust products to appropriate dimensions; position before securing products in place.

1.4 REFERENCES

A. For products or workmanship specified by association, trade, or other consensus standards; comply with requirements of standard except when more rigid requirements are specified or are required by applicable codes.

B. When requirements of indicated reference standards conflict with Contract Documents, request clarification from Architect before proceeding.

1.5 LABELING

A. Attach label from agency approved by authorities having jurisdiction for products, assemblies, and systems required to be labeled by applicable code.

B. Label Information: Include manufacturer’s or fabricator’s identification, approved agency identification, and the following information, as applicable, on each label:
   1. Model number.
   2. Serial number.
   3. Performance characteristics.

C. Manufacturer’s Nameplates, Trademarks, Logos, and Other Identifying Marks on Products: Not allowed on surfaces exposed to view in public areas, interior or exterior.

1.6 MOCKUP REQUIREMENTS

A. Tests will be performed under provisions identified in this Section and identified in individual product Specification Sections.

B. Assemble and erect specified or indicated items with specified or indicated attachment and anchorage devices, flashings, seals, and finishes.

C. Accepted mockups shall be comparison standard for remaining Work.

D. Where mockup has been accepted by Architect and is specified in product Specification Sections to be removed, remove mockup and clear area when directed to do so by Architect.

1.7 QUALITY CONTROL TESTING
A. Employ and pay for services of testing agency or laboratory acceptable to Architect to perform quality control testing.
   1. Before starting Work, submit testing laboratory name, address, and telephone number, and names of full-time Professional Engineer, specialist and responsible officer.
   2. Include information on laboratory’s and personnel's qualifications and certifications for required testing.

B. Other requirements for testing agency or laboratory:
   1. Laboratory: Authorized to operate in State of Utah.
   2. Laboratory Staff: Maintain full-time Professional Engineer or specialist on staff to review services.
   3. Testing Equipment: Calibrated at reasonable intervals with devices of accuracy traceable to National Bureau of Standards or accepted values of natural physical constants.

C. Perform required off-Site testing and inspections for source quality control.

D. Perform quality control testing at minimum frequency indicated in individual Specification Sections. Perform additional tests as required to ensure materials and Work are in accordance with requirements of Contract Documents. Perform testing during progress of Work, unless indicated otherwise.

E. Submit testing reports to Architect within 24 hours of completion of tests. Include information as follows in report:
   1. Date issued.
   2. Project title and number.
   3. Name of inspector.
   4. Date and time of sampling or inspection.
   5. Identification of product and Specification Section.
   6. Location in Project.
   7. Type of inspection or test.
   8. Date of test.
   9. Results of tests.
   10. Conformance or noncompliance with Contract Documents.
   12. When requested, provide interpretation of test results.

F. Submit testing reports in accordance with Section 01 33 00.

G. Responsibilities of Testing Agency or Laboratory:
   1. Test Samples of mixes submitted by Contractor.
   2. Provide qualified personnel at Site. Cooperate with Engineer and Contractor in performance of services.
   3. Perform indicated sampling and quality control testing of products according to specified standards and as directed by Contractor.
4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
5. Promptly notify Contractor of observed irregularities or nonconformance of Work or products.
6. Perform additional quality control tests as required by Contractor.
7. When requested, attend preconstruction meetings and progress meetings.

H. Limits on Testing Authority:
1. May not release, revoke, alter, or enlarge on requirements of Contract Documents.
2. May not approve or accept any portion of Work.
3. May not assume duties of Contractor.
4. Has no authority to stop Work.

1.8 ACCEPTANCE TESTING AND INSPECTION SERVICES

A. Owner will employ and pay for services of Engineer or independent firm to perform acceptance testing and inspection.

B. Engineer or independent firm will perform acceptance tests, inspections, and other services specified in individual Specification Sections and as required by Owner and authorities having jurisdiction.

C. Independent firm will promptly submit reports to Engineer within 24 hours of completion of tests and inspections. Engineer will submit reports to Owner, Contractor, and authorities having jurisdiction. Reports will include information as follows:
   1. Date issued.
   2. Project title and number.
   3. Name of inspector.
   4. Date and time of sampling or inspection.
   5. Identification of product and Specification Section.
   6. Location in Project.
   7. Type of inspection or test.
   8. Date of test.
   9. Results of tests.
   10. Conformance or noncompliance with Contract Documents.
   12. When requested, provide interpretation of test results.

D. Cooperate with Engineer and independent firm; furnish samples of materials, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
   1. Notify Engineer and independent firm 48 hours before expected time for operations requiring services.
2. Make arrangements with Engineer and independent firm, and pay for additional Samples and tests required for Contractor's use.

E. Employment of Engineer or independent firm shall not relieve Contractor of obligation to perform Work according to requirements of Contract Documents.

F. Payment for retesting or re-inspection may be charged to Contractor by deducting testing charges from Contract Price.

G. Responsibilities of Engineer or Independent Firm:
   1. Provide qualified personnel at Site. Cooperate with Engineer and Contractor in performance of services.
   2. Perform indicated sampling and acceptance testing of products according to specified standards.
   3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
   4. Promptly notify Engineer of observed irregularities or nonconformance of Work or products.
   5. Perform additional acceptance tests as required by Owner/Engineer.
   6. When requested, attend preconstruction meetings and progress meetings.

H. Limits on Testing Authority by Independent Firm:
   1. May not release, revoke, alter, or enlarge on requirements of Contract Documents.
   2. May not approve or accept any portion of Work.
   3. May not assume duties of Contractor.
   4. Has no authority to stop Work.

I. Acceptance testing will govern over quality control testing performed by Contractor.

1.9 NONCONFORMING WORK

A. Whether discovered by Contractor or Architect, correct or replace nonconforming Work at no cost to Owner.

B. Materials or Work which fail quality control or acceptance testing, shall be rejected. Make corrections or replace as necessary to meet requirements of Contract Documents.

1.10 MANUFACTURER'S FIELD SERVICES
A. When specified in individual Specification Sections, use product supplier’s or manufacturer’s qualified representative to observe Site conditions, conditions of surfaces and installation, quality of workmanship, startup of equipment, testing, adjusting and balancing of equipment, commissioning, or other field services as applicable.

B. Submit qualifications of observer to Architect 30 days in advance of required observations. Observer is subject to approval of Architect.

C. Report observations and Site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturer’s written instructions.

D. Submit reports in accordance with Section 01 33 00.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION
SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Temporary utilities.

B. Construction Facilities:
   1. Vehicular access.
   2. Parking.
   3. Progress cleaning and waste removal.
   4. Traffic control.
   5. Signage
   6. Fire-prevention facilities.

C. Temporary Controls:
   1. Barriers.
   2. Enclosures and fencing.
   4. Water control.
   5. Dust control.
   7. Pollution control.

D. Removal of utilities, facilities, and controls.

E. Related Requirements:
   1. Section 01 55 26 – Traffic Control.
   2. Section 01 57 13 – Temporary Erosion and Sediment Control.
   3. Section 01 58 13 – Temporary Project Signage.

1.2 SUBMITTALS

A. Traffic Control Plan: Provide traffic control plan that addresses all phases of Work and is stamped and signed by licensed professional engineer. Submit to allow Engineer’s review prior to start of on-site Work.

1.3 TEMPORARY UTILITIES

A. Provide and pay for temporary utilities such as, but not limited to: electricity, heat, telephone, water and sanitary facilities.

B. Owner will provide water required for construction. Exercise measures to conserve water. Coordinate with Owner for location, metering and other requirements to obtain water for construction operations.
C. Provide and maintain required sanitary facilities. Existing sanitary facility use is not permitted. Provide facilities at time of Project mobilization.

D. At end of construction, return existing facilities used for construction operations to same or better condition as original condition.

1.4 VEHICULAR ACCESS

A. Extend and relocate vehicular access as Work progress requires and provide detours as necessary for unimpeded traffic flow.

B. Provide unimpeded access for emergency vehicles. Maintain 20 foot-wide driveways with turning space between and around combustible materials.

C. Provide and maintain access to fire hydrants free of obstructions.

D. Provide means of removing mud from vehicle wheels before entering streets.

1.5 PARKING

A. Arrange for temporary parking areas as necessary to accommodate construction personnel.

B. Locate as indicated on Drawings, or as reviewed and approved by Owner.

C. Use of designated areas of existing parking facilities by construction personnel is not permitted.

D. Do not allow heavy vehicles or construction equipment in parking areas. Avoid traffic loading beyond paving design capacity.

E. Maintain existing gravel and paved areas used for construction; promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain surfacing and drainage in original condition.

F. Provide means of removing mud from vehicle wheels before entering parking areas and streets.

1.6 PROGRESS CLEANING AND WASTE REMOVAL

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

A. Collect and remove waste materials, debris, and rubbish from Site daily and dispose off-site.

B. Sweep and clean paved areas.
1.7 TRAFFIC CONTROL

A. Use traffic control equipment, devices, and personnel to direct traffic safely through or around construction areas.

   1. Post-Mounted Traffic Control and Informational Signs.
   2. Traffic Control Signals.
   4. Flag Person Equipment.

C. Flag Persons: Provide trained and equipped flag persons to regulate traffic when construction operations or traffic encroach on public traffic lanes.

D. Flares and Lights: Use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.

E. Traffic Signs and Signals:
   1. Provide signs at approaches to Site and on Site, at crossroads, detours, parking areas, and elsewhere as needed to direct construction and affected public traffic.
   2. Provide, operate, and maintain traffic control signals to direct and maintain orderly flow of traffic in areas under Contractor's control and areas affected by Contractor's operations.
   3. Relocate signs and signals as Work progresses, to maintain effective traffic control.

F. Removal:
   1. Remove equipment and devices when no longer required.
   2. Repair damage caused by installation.
   3. Remove post settings to depth of 2 feet.

G. Haul Routes:
   1. Consult with authorities having jurisdiction and establish public thoroughfares to be used for haul routes and Site access.
   2. Confine construction traffic to designated haul routes.
   3. Provide traffic control at critical areas of haul routes to regulate traffic and to minimize interference with public traffic.

1.8 SIGNAGE

A. Existing signage affected by Project construction is responsibility of Contractor.
   1. Coordinate with Owner and Engineer to verify if signage should be kept in use throughout construction process.
   2. Remove or cover signage as necessary to ensure lack of confusion and safety of general public.
3. Where possible, re-install or uncover signage as work progresses to maintain effective public information.
4. After construction is complete re-install or uncover signage promptly.
5. Restore signage to equal or better condition as existed prior to construction.

1.9 FIRE-PREVENTION FACILITIES

A. Prohibit smoking within buildings under construction and demolition. Designate area on Site where smoking is permitted. Provide approved ashtrays in designated smoking areas.

B. Establish fire watch for cutting, welding, and other hazardous operations capable of starting fires. Maintain fire watch before, during, and after hazardous operations until threat of fire does not exist.

C. Portable Fire Extinguishers: NFPA 10; 10-pound capacity, 4A-60B: C UL rating.
   1. Provide one fire extinguisher at each stairway on each floor of buildings under construction and demolition.
   2. Provide minimum of one fire extinguisher in every construction trailer and storage shed.
   3. Provide minimum of one fire extinguisher on roof during roofing operations using heat-producing equipment.

D. Take necessary actions to prevent fires on Site.

E. Report fires to appropriate agency. Take immediate action to suppress fires. Continue fire suppression until fire has been mopped up and out, or until relieved by firefighting personnel.

1.10 BARRIERS

A. Provide barriers to prevent unauthorized entry to construction areas and to protect public.

B. Provide barriers to protect existing facilities and adjacent properties from damage from construction operations and demolition.

C. Tree and Plant Protection: Preserve and protect existing trees and plants designated to remain.
   1. Protect areas within drip lines from traffic, parking, storage, dumping, chemically injurious materials and liquids, ponding, and continuous running water.
   2. Provide 6-foot high barriers around drip line, with access for maintenance.
   3. Replace trees and plants damaged by construction operations.
1.11 ENCLOSURES AND FENCING

A. Exterior Enclosures:
   1. Provide temporary weathertight 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.
   2. Provide access doors with self-closing hardware and locks.

B. Fencing:
   1. Construction: Contractor's option.
   2. Provide [6]-foot high fence around construction Site; equip with vehicular [and pedestrian] gates with locks.

1.12 SECURITY

A. Security Program:
   1. Protect Work from theft, vandalism, and unauthorized entry.
   2. Initiate program at Project mobilization.
   3. Maintain program throughout construction period.

B. Entry Control:
   1. Restrict entrance of persons and vehicles to Project Site.
   2. Allow entrance only to authorized persons.

1.13 WATER CONTROL

A. Grade Site to drain. Maintain excavations free of water. Provide, operate, and maintain necessary pumping equipment.

B. Protect Site from puddles or running water. Provide water barriers as required to protect Site from soil erosion.

C. Provide temporary drainage for storm water and irrigation water. Make repairs to correct damage caused by temporary or lack of temporary drainage.

1.14 DUST CONTROL

A. Execute Work by methods that minimize raising dust from construction operations.

B. Provide positive means to prevent airborne dust from dispersing into atmosphere and into occupied areas and adjacent properties.

C. If water is used for dust control, provide adequate supply of water. Do not waste water or over saturate construction areas.
1.15 EROSION AND SEDIMENT CONTROL

A. Plan and execute construction by methods to control surface drainage from cuts and fills from borrow and waste disposal areas. Prevent erosion and sedimentation.

B. Minimize surface area of bare soil exposed at one time.

C. Provide temporary measures including berms, dikes, drains, and other devices to prevent water flow.

D. Construct fill and waste areas by selective placement to avoid erosive surface silts and clays.

E. Periodically inspect earthwork to detect evidence of erosion and sedimentation. Promptly apply corrective measures.

1.16 POLLUTION CONTROL

A. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances and pollutants produced by construction operations.

B. Comply with pollution and environmental control requirements of authorities having jurisdiction.

1.17 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, facilities, and materials before final inspection.

B. Remove underground installations to minimum depth of 2 feet. Grade Site as indicated on Drawings.

C. Clean and repair damage caused by installation or use of temporary Work.

D. Restore existing and permanent facilities used during construction to original condition, unless indicated otherwise.

PART 2 PRODUCTS – Not Used

PART 3 EXECUTION - Not Used

END OF SECTION
SECTION 01 58 13
TEMPORARY PROJECT SIGNAGE

PART 1 GENERAL

1.1 SUMMARY
A. Section Includes:
   1. Temporary construction project signage.
   2. Funding agency requirements for project sign.

B. Related Requirements:
   1. Section 01 50 00 – Temporary Facilities and Controls.

1.2 REFERENCE STANDARDS

1.3 SUBMITTALS
A. Shop Drawings: Submit drawing indicating layout and size of graphics and lettering to be included on project sign. Include proposed materials and finish colors to be used. Indicate proposed location for installation of project sign.

PART 2 PRODUCTS

2.1 MATERIALS
A. Plywood: 4 foot by 8 foot by ¾ inch thick plywood, APA rated A-B, exterior grade or approved equal.

B. Posts: Minimum two cedar or treated wood posts nominal 4 inch by 4 inch by 8 feet long or approved equal.

C. Fasteners: As necessary to assemble sign.

D. Paint: Exterior grade with prime coat, intermediate coat and top coat. Use colors as directed.

E. Alternative Materials: Plastic, vinyl or metal may be considered with Shop Drawing submittal.

PART 3 EXECUTION

3.1 PREPARATION
A. Specific sign lettering and content will be specified at Preconstruction Meeting. Sign will generally include project name, Owner/Sponsor,
Architect, Engineer, Contractor, funding agency emblem and logo, and other information as directed by funding agency.

B. No work will be allowed until sign is installed.

C. Coordinate sign location with Architect and Owner.

3.2 CONSTRUCTION

A. Construct sign as indicated on submittal drawings.

B. Install sign at noticeable location. Maintain sign throughout duration of Project.

C. Remove sign after construction is completed.

D. Repair damage caused by installation and restore site to equal or better condition as existed prior to construction.

END OF SECTION
SECTION 01 70 00
EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Field engineering.
B. Closeout procedures.
C. Starting of systems.
D. Demonstration and instructions.
E. Project record documents.
F. Operation and maintenance data.
G. Manual for materials and finishes.
H. Manual for equipment and systems.
I. Spare parts and maintenance products.
J. Product warranties and product bonds.
K. Examination.
L. Preparation.
M. Execution.
N. Cutting and patching.
O. Protecting installed construction.
P. Final cleaning.

1.2 FIELD ENGINEERING

A. Owner will employ surveyor registered in State of Utah and provide field engineering services as follows:
   1. Pipe culverts: Offset and elevation for inlet and outlet.
   2. Pavement Cut Line: Location of saw cut line on existing pavement.
   3. Pavement Markings: Location of paint striping.
   4. Signs and Delineators: Location of signs and delineators.
   5. Manholes and Drainage Structures: Offset and cut / fill to invert or reference elevation.
6. Fencing: Corners, angle points and points on line at 500 foot intervals.
8. Other Site Improvements:
   a. Excavation: Slope stakes at 100 foot stations on tangents and 50 foot stations as needed on curves.
   b. Finish Grade: Red heads at 50 foot stations.

B. Not all grade break points will be set. Set additional stakes as needed to construct Work.

C. Prior to beginning Work, verify floor elevations of existing facilities to ensure that new Work will match existing elevations, except where specifically detailed or indicated otherwise.

D. Promptly notify Engineer minimum of 48 hours prior to expected time for operations requiring field engineering services.

E. Promptly notify Architect of discrepancies discovered.

F. Protect survey control, reference and other staking during construction. Preserve permanent reference points. If due to neglect of Contractor, pay cost for re-staking.

G. Preserve permanent reference points. Promptly notify Architect of loss or destruction of reference point or relocation required because of changes in grades or other reasons.

1.3 CLOSEOUT PROCEDURES

A. Prerequisites to Substantial Completion: Complete following items before requesting Certification of Substantial Completion, either for entire Work or for portions of Work:
   1. Complete facility startup, testing, adjusting, balancing of systems and equipment, demonstrations, and instructions to Owner’s operating and maintenance personnel as specified in compliance with this Section.
   2. Conduct inspection to establish basis for request that Work is substantially complete. Create comprehensive list (initial punch list) indicating items to be completed or corrected, value of incomplete or nonconforming Work, reason for being incomplete, and date of anticipated completion for each item. Include copy of list with request for Certificate of Substantial Completion.
   3. Discontinue or change over and remove temporary facilities and services from Project Site, along with construction tools, mockups, and similar elements.
   4. Perform final cleaning according to this Section.
B. Substantial Completion Inspection:
1. When Contractor considers Work to be substantially complete, submit to Architect and Owner:
   a. Written certificate that Work, or designated portion, is substantially complete.
   b. List of items to be completed or corrected (initial punch list).
2. After receipt of request for Substantial Completion, Architect will schedule inspection with Owner and Contractor to determine whether Work or designated portion is substantially complete.
3. When Architect and Owner find that Work is substantially complete, Architect will prepare Certificate of Substantial Completion accompanied by list of items to be completed or corrected (final punch list).
4. After Work is substantially complete, Contractor shall:
   a. Allow Owner occupancy of Project under provisions stated in Certificate of Substantial Completion.
   b. Complete Work listed for completion or correction within time period stipulated.

C. Prerequisites for Final Completion: Complete following items before requesting final acceptance and final payment.
1. When Contractor considers Work to be complete, submit written certification that:
   a. Work has been examined for compliance with Contract Documents.
   b. Work has been completed according to Contract Documents.
   c. Work is completed and ready for final inspection.
2. Submittals: Submit final punch list indicating all items have been completed or corrected
3. Perform final cleaning for Contractor-soiled areas according to this Section.

D. Final Completion Inspection:
1. After receipt of request for final inspection, Architect will schedule final inspection with Owner and Contractor to determine whether Work or designated portion is complete.
2. Should Architect and Owner consider Work to be incomplete or defective:
   a. Architect will promptly notify Contractor in writing, listing incomplete or defective Work.
   b. Contractor shall remedy stated deficiencies.
   c. Repeat as necessary until Work passes Architect's and Owner's inspection.

1.4 STARTING OF SYSTEMS

A. Coordinate schedule for startup of various equipment and systems.
B. Notify Architect and Owner at least seven days prior to startup of each item.

C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions which may cause damage.

D. Verify that tests, meter readings, and electrical characteristics agree with those required by equipment or system manufacturer.

E. Verify that wiring and support components for equipment are complete and tested.

F. Execute startup under supervision of manufacturer's representative or Contractors' personnel according to manufacturer's instructions.

G. When specified in individual Specification Sections, require manufacturer to provide authorized representative who will be present at Site to inspect, check, and approve equipment or system installation prior to startup and will supervise placing equipment or system in operation.

1.5 DEMONSTRATION AND INSTRUCTIONS

A. Demonstrate operation and maintenance of products to Owner's personnel prior to Final Completion.

B. For equipment or systems requiring seasonal operation, perform demonstration for each season.

C. Use operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.

D. Demonstrate startup, operation, control, adjustment, troubleshooting, servicing, maintenance, and shutdown of each item of equipment at agreed time and location.

E. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

F. Provide additional demonstrations and instructions for each item of equipment and system is specified in individual Specification Sections.

1.6 PROJECT RECORD DOCUMENTS

A. Maintain on Site one set record documents as follows; record actual revisions to Work:
   1. Drawings.
   2. Specifications.
3. Addenda.
4. Change Orders and other modifications to Contract.
5. Reviewed Shop Drawings, product data, and samples.
6. Manufacturer's instruction for assembly, installation, and adjusting.

B. Ensure entries are complete and accurate, enabling future reference by Owner.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress, not less than weekly.

E. Specifications: Legibly mark and record, at each product Section, description of actual products installed, including the following:
   1. Manufacturer's name and product model and number.
   2. Product substitutions or alternates used.
   3. Changes made by Addenda and modifications.

F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction as follows:
   1. Include Contract modifications such as Addenda, supplementary instructions, change directives, field orders, minor changes in Work, and change orders.
   2. Include locations of concealed elements of Work.
   3. Identify depth of buried utility lines and provide dimensions showing distances from permanent facility components that are parallel to utilities.
   4. Dimension ends, corners, and junctions of buried utilities to permanent facility components using triangulation.
   5. Identify and locate existing buried or concealed items encountered during Project.
   7. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
   8. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of Work.
   10. Details not on original Drawings.

G. Submit marked-up paper copy documents to Architect with claim for final Application for Payment.

1.7 OPERATION AND MAINTENANCE DATA
A. Submit data in PDF composite electronic indexed file and 3 hard copies bound in 8-1/2 x 11-inch text pages, three ring binders and with durable plastic covers.

B. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS," title of Project, and subject matter of binder when multiple binders are required.

C. Internally subdivide binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.

D. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages. For large format drawings which cannot be reasonably folded or reduced in size, provide neat, clean, and organized set.

E. Contents: Prepare table of contents for each volume, with each product or system description identified, typed on white paper, in three parts as follows:
   1. Part 1: Directory, listing names, addresses, and telephone numbers of Architect, Contractor, Subcontractors, and major equipment suppliers.
   2. Part 2: Operation and maintenance instructions, arranged by system and subdivided by Specification Section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Include information as follows:
      a. Significant design criteria.
      b. List of equipment.
      c. Parts list for each component.
      d. Operating instructions.
      e. Maintenance instructions for equipment and systems.
      f. Maintenance instructions for finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
      g. Safety precautions to be taken when operating and maintaining or working near equipment.
   3. Part 3: Project documents and certificates, including information as follows:
      a. Shop Drawings and product data.
      b. Air and water balance reports.
      c. Certificates.
      d. Photocopies of warranties and bonds.

1.8 MANUAL FOR MATERIALS AND FINISHES
A. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect will review draft and return one copy with comments.

B. For equipment or component parts of equipment put into service during construction and operated by Owner, submit documents within ten days after acceptance.

C. Submit one copy of completed volumes before Substantial Completion. Draft copy be reviewed and returned after Substantial Completion, with Engineer comments. Revise content of document sets as required prior to final submission.

D. Submit PDF composite electronic indexed file of final manual or two sets of hard copies of revised final volumes within ten days after final inspection.

E. Building Products, Applied Materials, and Finishes: Include product data, with catalog number, size, composition, and color and texture designations. Include information for re-ordering custom-manufactured products.

F. Instructions for Care and Maintenance: Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.


H. Additional Requirements: As specified in individual product Specification Sections.

I. Include listing in table of contents for design data, with tabbed fly sheet and space for insertion of data.

1.9 MANUAL FOR EQUIPMENT AND SYSTEMS

A. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect will review draft and return one copy with comments.

B. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit documents within ten days after acceptance.

C. Submit one copy of completed volumes before Substantial Completion. Draft copy will be reviewed and returned after Substantial Completion, with
Architect comments. Revise content of document sets as required prior to final submission.

D. Submit PDF composite electronic indexed file of final manual or two sets of hard copies of revised final volumes within ten days after final inspection.

E. Each Item of Equipment and Each System: Include description of unit or system and component parts. Identify function, normal operating characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and model number of replaceable parts.

F. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.

G. Include color-coded wiring diagrams as installed.

H. Operating Procedures: Include startup, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shutdown, and emergency instructions. Include summer, winter, and special operating instructions.

I. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and troubleshooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

J. Include servicing and lubrication schedule and list of lubricants required.

K. Include manufacturer’s printed operation and maintenance instructions.

L. Include sequence of operation by controls manufacturer.

M. Include original manufacturer’s parts list, illustrations, assembly drawings, and diagrams required for maintenance.

N. Include control diagrams by controls manufacturer as installed.

O. Include Contractor’s coordination drawings with color-coded piping diagrams as installed.

P. Include charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

Q. Include list of original manufacturer’s spare parts, current prices, and recommended quantities to be maintained in storage.

R. Include test and balancing reports as specified.
S. Additional Requirements: As specified in individual product Specification Sections.

T. Include listing in table of contents for design data with tabbed dividers and space for insertion of data.

1.10 SPARE PARTS AND MAINTENANCE PRODUCTS

A. Furnish spare parts, maintenance, and extra products in quantities specified in individual Specification Sections.

B. Deliver to Project Site and place in location as directed by Owner; obtain receipt prior to final payment.

1.11 PRODUCT WARRANTIES AND PRODUCT BONDS

A. Obtain warranties and bonds executed in duplicate by responsible Subcontractors, suppliers, and manufacturers.

B. Execute and assemble transferable warranty documents and bonds from Subcontractors, suppliers, and manufacturers.

C. Verify documents are in proper form, contain full information, and are notarized.

D. Co-execute submittals when required.

E. Include table of contents and assemble in three ring binder with durable plastic cover.

F. Submit prior to final Application for Payment.

G. Time of Submittals:
   1. For equipment or component parts of equipment put into service during construction with Owner’s permission, submit documents within ten days after acceptance.
   2. Make other submittals prior to final Application for Payment.
   3. For items of Work for which acceptance is delayed beyond Substantial Completion, submit within ten days after acceptance, listing date of acceptance as beginning of warranty or bond period.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION
3.1 EXAMINATION

A. Verify that existing Site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new 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. Verify that utility services are available with correct characteristics and in correct locations.

3.2 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance according to manufacturer’s instructions.

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 new material or substance in contact or bond.

3.3 EXECUTION

A. Comply with manufacturer’s installation instructions, performing each step in sequence. Maintain one set of manufacturer’s installation instructions at Project Site during installation and until completion of construction.

B. When manufacturer’s installation instructions conflict with Contract Documents, request clarification from Architect before proceeding.

C. Verify that field measurements are as indicated on approved Shop Drawings or as instructed by manufacturer.

D. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.
   1. Secure Work true to line and level and within specified tolerances, or if not specified, industry-recognized tolerances.
   2. Physically separate products in place, provide electrical insulation, or provide protective coatings to prevent galvanic action or corrosion between dissimilar metals.
   3. Exposed Joints: Provide uniform joint width and arrange to obtain best visual effect. Refer questionable visual-effect choices to Architect for final decision.
E. Allow for expansion of materials and building movement.

F. Climatic Conditions and Project Status: Install each unit of Work under conditions to ensure best possible results in coordination with entire Project.
   1. Isolate each unit of Work from incompatible Work as necessary to prevent deterioration.
   2. Coordinate enclosure of Work with required inspections and tests to minimize necessity of uncovering Work for those purposes.

G. Mounting Heights: Where not indicated, mount individual units of Work at industry recognized standard mounting heights for particular application indicated.
   1. Refer questionable mounting heights choices to Architect for final decision.
   2. Elements Identified as Accessible to Handicapped: Comply with applicable codes and regulations.

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

I. Clean and perform maintenance on installed Work as frequently as necessary through remainder of construction period. Lubricate operable components as recommended by manufacturer.

3.4 CUTTING AND PATCHING

A. Employ skilled and experienced installers to perform cutting and patching.

B. Submit written request in advance of cutting or altering elements affecting:
   1. Structural integrity of element.
   2. Integrity of weather-exposed or moisture-resistant elements.
   3. Efficiency, maintenance, or safety of element.
   5. Work of Owner or separate contractor.

C. Execute cutting, fitting, and patching including excavation and fill to complete Work and to:
   1. Fit the several parts together, to integrate with other Work.
   2. Uncover Work to install or correct ill-timed Work.
   3. Remove and replace defective and nonconforming Work.
   4. Remove samples of installed Work for testing.
   5. Provide openings in elements of Work for penetrations of mechanical and electrical Work.

D. Execute Work by methods to avoid damage to other Work and to provide proper surfaces to receive patching and finishing.

E. Cut masonry and concrete materials using masonry saw or core drill.
F. Restore Work with new products according to requirements of Contract Documents.

G. Fit Work tight to pipes, sleeves, ducts, conduits, and other penetrations through surfaces.

H. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.

I. At penetrations of fire-rated walls, partitions, ceiling, or floor construction, completely seal voids with fire-rated material to full thickness of penetrated element.

J. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for assembly, refinish entire unit.

K. Identify hazardous substances or conditions exposed during the Work to Architect for decision or remedy.

3.5 PROTECTING INSTALLED CONSTRUCTION

A. Protect installed Work and provide special protection where specified in individual Specification Sections.

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

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

D. Use durable sheet materials to protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects.

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

F. Prohibit traffic from landscaped areas.

3.6 FINAL CLEANING

A. Execute final cleaning prior to final Project assessment. Employ experienced personnel or professional cleaning firm.

B. Clean interior and exterior glass and surfaces exposed to view; remove temporary labels, stains, and foreign substances; polish transparent and glossy surfaces; and vacuum carpeted and soft surfaces.
C. Clean equipment and fixtures to sanitary condition with appropriate cleaning materials.

D. Clean furnishings and finishes in accordance with requirements set forth in associated Specification Sections.

E. Clean or replace filters of operating equipment.

F. Clean debris from roofs, gutters, downspouts, and drainage systems.

G. Clean Site; sweep paved areas, rake clean landscaped surfaces.

H. Remove waste and surplus materials, rubbish, and construction facilities from Site.

END OF SECTION
SECTION 01 71 13
MOBILIZATION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Mobilizing personnel, equipment, supplies and other incidental items to and from Project Site.
   2. Providing, maintaining and removing temporary facilities and controls.

B. Related Requirements:
   1. Section 01 50 00 – Temporary Facilities and Controls.

1.2 MOBILIZATION

A. Conduct preparatory work and operations necessary to move personnel, equipment, supplies and incidentals to Project Site before beginning Work.

B. Establish field offices, buildings, temporary utilities and other necessary facilities to complete Work.

C. Remove equipment, supplies, temporary facilities, and temporary controls from Site when no longer required.

PART 2 PRODUCTS – Not Used

PART 3 EXECUTION – Not Used

END OF SECTION
SECTION 03 10 00
CONCRETE FORMING AND ACCESSORIES

A.  Section Includes:
   1.  Formwork for cast-in-place concrete.
   2.  Shoring, bracing, and anchorage.
   3.  Form accessories.
   4.  Form stripping.

B.  Related Requirements:
   1.  Section 03 20 00 - Concrete Reinforcing.

1.2  REFERENCE STANDARDS

A.  American Concrete Institute (ACI):
   2.  ACI 301 - Specifications for Structural Concrete.
   3.  ACI 318 - Building Code Requirements for Structural Concrete.

B.  American Forest & Paper Association (AF&PA):

C.  APA - The Engineered Wood Association (APA):
   1.  APA PS 1 - Voluntary Product Standard - Structural Plywood.

D.  ASTM International (ASTM):

E.  West Coast Lumber Inspection Bureau (WCLIB):
   1.  WCLIB - Standard No. 17 Grading Rules for West Coast Lumber.

1.3  COORDINATION

A.  Coordinate Work of this Section with other Sections of Work in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other Work.

1.4  QUALITY ASSURANCE

A.  Perform Work according to ACI 318.

B.  For wood products furnished for Work of this Section, comply with AF&PA.

1.5  DELIVERY, STORAGE, AND HANDLING
A. Store materials off ground in ventilated and protected manner to prevent deterioration from moisture.

PART 2 PRODUCTS

2.1 PERFORMANCE AND DESIGN CRITERIA

A. Design, engineer, and construct formwork, shoring, and bracing according to ACI 318 to conform to achieve concrete shape, line, and dimension as indicated on Drawings.

2.2 WOOD FORM MATERIALS

A. Form Materials: At discretion of Contractor, except as indicated in Table 2 – Schedule for Formwork of this Section.

2.3 PREFABRICATED FORMS

A. Preformed Steel and FRP Forms: Matched, tightly fitted, and stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of finished surfaces.

B. Tubular Column:
   1. Description: Round spirally wound laminated fiber or glass fiber.
   2. Surface Treatment: Release agent, non-reusable.
   3. Sizes: As indicated on Drawings.

C. Void Forms:
   1. Moisture-resistant treated paper faces; biodegradable.
   2. Structurally sufficient to support weight of wet concrete mix until initial set.
   3. Thickness: As required.

D. Form Liners: Smooth, durable, grainless, and non-staining hardboard unless otherwise indicated on Drawings.

E. Framing, Studding, and Bracing: Stud or No. 3 structural light-framing grade.

2.4 COATINGS

A. Coatings for Aluminum:
   1. Polyamide epoxy finish coat with paint manufacturer’s recommended primer for aluminum substrate.
   2. Primer coat and top coat.

2.5 FORMWORK ACCESSORIES
A. Form Ties: Be suitable material, type, size, shape, quality, and strength to ensure construction as designed.

B. Spreaders:
   1. Description: Standard, non-corrosive metal-form clamp assembly, of type acting as spreaders and leaving no metal within 1-inch of concrete face.
   2. Wire ties, wood spreaders, or through bolts are not permitted.

C. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Size, strength, and character to maintain formwork in place while placing concrete.

D. Form Release Agent: Colorless mineral oil that will not stain concrete or absorb moisture or impair natural bonding or color characteristics of coating intended for use on concrete.

E. Bituminous Joint Filler: Comply with ASTM D1751.

F. Corners:
   1. Type: Chamfer per details on drawings

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify lines, levels, and centers before proceeding with formwork.

B. Verify that dimensions agree with Drawings and Shop Drawings.

C. If formwork is placed after reinforcement resulting in insufficient concrete cover over reinforcement, consult with Engineer before proceeding.

3.2 INSTALLATION

A. Earth Forms: Not permitted.

B. Formwork:
   1. Provide top form for sloped surfaces steeper than 1.5 horizontal to 1 vertical to hold shape of concrete during placement, unless demonstrated that top forms can be omitted.
   2. Construct forms to correct shape and dimensions, mortar-tight, braced, and of sufficient strength to maintain shape and position under imposed loads from construction operations.
   3. Camber forms where necessary to produce level finished soffits unless indicated otherwise on Drawings.
   4. Positioning:
      a. Carefully verify horizontal and vertical positions of forms.
b. Correct misaligned or misplaced forms before placing concrete.

5. Complete wedging and bracing before placing concrete.

6. Erect formwork, shoring, and bracing to achieve design requirements according to ACI 301.

7. Stripping:
   a. Arrange and assemble formwork to permit dismantling and stripping.
   b. Do not damage concrete during stripping.
   c. Permit removal of remaining principal shores.

8. Obtain acceptance of Engineer before framing openings in structural members not indicated on Drawings.

9. Install chamfer strips on external corners as detailed in drawings

10. Install void forms according to manufacturer instructions.

11. Do not use wood or other formwork that is not structurally sound or that will not meet finish requirements.

12. Do not patch formwork.

13. Leave forms in place for minimum number of days according to Table 1 of this Section.

[(Remainder of page intentionally left blank.)]
### Table 1 Form Stripping Time

<table>
<thead>
<tr>
<th>Structural Element Supported</th>
<th>Structural Live Load Not Greater Than Structural Dead Load</th>
<th>Structural Live Load Greater Than Structural Dead Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walls*</td>
<td>12 hours</td>
<td>12 hours</td>
</tr>
<tr>
<td>Columns*</td>
<td>12 hours</td>
<td>12 hours</td>
</tr>
<tr>
<td>Sides of beams and girder</td>
<td>12 hours</td>
<td>12 hours</td>
</tr>
<tr>
<td>Pan joist forms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30 inches wide or less</td>
<td>3 days</td>
<td>3 days</td>
</tr>
<tr>
<td>Over 30 inches wide</td>
<td>4 days</td>
<td>4 days</td>
</tr>
<tr>
<td>Arch centers</td>
<td>14 days</td>
<td>7 days</td>
</tr>
<tr>
<td>Joist, beam or girder soffits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under 10 feet clear span between supports</td>
<td>7 days**</td>
<td>4 days</td>
</tr>
<tr>
<td>10 to 20 feet clear span between structural supports</td>
<td>14 days**</td>
<td>7 days</td>
</tr>
<tr>
<td>Over 20 feet clear span between structural supports</td>
<td>21 days**</td>
<td>14 days</td>
</tr>
<tr>
<td>One-way floor slabs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under 10 feet clear span between supports</td>
<td>4 days**</td>
<td>3 days</td>
</tr>
<tr>
<td>10 to 20 feet clear span between structural supports</td>
<td>7 days**</td>
<td>4 days</td>
</tr>
<tr>
<td>Over 20 feet clear span between structural supports</td>
<td>10 days**</td>
<td>7 days</td>
</tr>
<tr>
<td>Two-way slab systems</td>
<td>As indicated by Engineer</td>
<td></td>
</tr>
<tr>
<td>Post tensioned slab system</td>
<td>As soon as post-tensioning operations have been completed and accepted</td>
<td></td>
</tr>
</tbody>
</table>

*Where forms also support formwork for slab or beam soffits, removal times of latter will govern.

**Where forms can be removed without disturbing shores, use half of values shown but not less than 3-days.

### C. Form Removal:

1. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.
2. Loosen forms carefully; do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.
3. Store removed forms in manner that surfaces to be in contact with fresh concrete will not be damaged.
4. Discard damaged forms.
5. Form Release Agent:
   a. Apply according to manufacturer instructions.
   b. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.
   c. Do not apply form release agent if concrete surfaces are indicated to receive special finishes or applied coverings that may be affected by agent.
   d. Soak inside surfaces of untreated forms with clean water, and keep surfaces coated prior to placement of concrete.
6. Form Cleaning:
a. Clean forms as erection proceeds to remove foreign matter within forms.
b. Clean formed cavities of debris prior to placing concrete.
c. Flush with water or use compressed air to remove remaining foreign matter.
d. Ensure that water and debris drain to exterior through cleanout ports.
e. Cold Weather:
   1) During cold weather, remove ice and snow from within forms.
   2) Do not use de-icing salts.
   3) Do not use water to clean out forms, unless formwork and concrete construction proceed within heated enclosure; use compressed air or other dry method to remove foreign matter.

7. Reuse and Coating of Forms:
   a. Thoroughly clean forms and reapply form coating before each reuse.
   b. For exposed Work, do not reuse forms with damaged faces or edges.
   c. Apply form coating to forms according to manufacturer instructions.
   d. Do not coat forms for concrete indicated to receive scored finish.
   e. Apply form coatings before placing reinforcing steel.

D. Forms for Smooth Finish Concrete:
   1. Use steel, plywood, or lined-board forms.
   2. Use clean and smooth plywood and form liners, uniform in size, and free from surface and edge damage capable of affecting resulting concrete finish.
   3. Install form lining with close-fitting square joints between separate sheets without springing into place.
   4. Use full-sized sheets of form liners and plywood wherever possible.
   5. Tape joints to prevent protrusions in concrete.
   6. Apply forming and strip wood forms in manner to protect corners and edges.
   7. Level and continue horizontal joints.
   8. Keep wood forms wet until stripped.

E. Forms for Surfaces to Receive Membrane Waterproofing:
   1. Use plywood or steel forms.
   2. After erection of forms, tape form joints to prevent protrusions in concrete.

F. Framing, Studding, and Bracing:
   1. Maximum Spacing of Studs:
a. Boards: **16-inches on center**.

b. Plywood: **12-inches on center**.

2. Size framing, bracing, centering, and supporting members for sufficient strength to maintain shape and position under imposed loads from construction operations.

3. Construct beam soffits of material minimum **2-inches** thick.

4. Distribute bracing loads over base area on which bracing is erected.

5. When placed on ground, protect against undermining, settlement, and accidental impact.

**G. Form Anchors and Hangers:**

1. Do not use anchors and hangers leaving exposed metal at concrete surface.

2. Symmetrically arrange hangers supporting forms from structural-steel members to minimize twisting or rotation of member.

3. Penetration of structural-steel members is not permitted.

**H. Inserts, Embedded Parts, and Openings:**

1. Install formed openings for items to be embedded in or passing through concrete Work.

2. Locate and set in place items required to be cast directly into concrete.

3. Install accessories straight, level, and plumb, and ensure that items are not disturbed during concrete placement.

4. Openings:
   a. Provide temporary ports or openings in formwork as required to facilitate cleaning and inspection.
   b. Locate openings at bottom of forms to allow flushing water to drain.

5. Close temporary openings with tight-fitting panels, flush with inside face of forms, and neatly fitted such that joints will not be apparent in exposed concrete surfaces.

**I. Form Ties:**

1. Provide sufficient strength and quantity to prevent spreading of forms.

2. Place ties at least **1-inch** away from finished surface of concrete.

3. Leave inner rods in concrete when forms are stripped.

4. Space form ties equidistant, symmetrical, and aligned vertically and horizontally unless indicated otherwise on Drawings.

**J. Arran**

1. Arrange formwork to allow proper erection sequence and to permit form removal without damage to concrete.

**K. Construction Joints:**

1. Install surfaced pouring strip where construction joints intersect on exposed surfaces to provide straight line at joints.
2. Just prior to subsequent concrete placement, remove strip and tighten forms to conceal shrinkage.

3. Appearance:
   a. Show no overlapping of construction joints.
   b. Construct joints to present same appearance as butted plywood joints.

4. Arrange joints in continuous line straight, true, and sharp.

L. Embedded Items:
1. Make provisions for pipes, sleeves, anchors, inserts, reglets, anchor slots, nailers, waterstops, and other features.
2. Do not embed wood or uncoated aluminum in concrete.
3. Obtain installation and setting information for embedded items furnished under other Sections.
4. Securely anchor embedded items in correct location and alignment prior to placing concrete.
5. Ensure that conduits and pipes, including those made of coated aluminum, meet requirements of ACI 318 regarding size and location limitations.

M. Openings for Items Passing through Concrete:
1. Frame openings in concrete where indicated on Drawings.
2. Establish exact locations, sizes, and other conditions required for openings and attachment of Work specified under other Sections.
3. Coordinate Work to avoid cutting and patching of concrete after placement.
4. Perform cutting and repairing of concrete required as result of failure to provide required openings.

N. Screeds:
1. Set screeds and establish levels for top and finish on concrete slabs.
2. Slope slabs to drain where required or as indicated on Drawings.
3. Before depositing concrete, remove debris from space to be occupied by concrete and thoroughly wet forms; remove freestanding water.

O. Screed Supports:
1. For concrete over waterproof membranes and vapor retarder membranes, use cradle-, pad-, or base-type screed supports that will not puncture membrane.
2. Staking through membrane is not permitted.

P. Cleanouts and Access Panels:
1. Provide removable cleanout sections or access panels at bottoms of forms to permit inspection and effective cleaning of loose dirt, debris, and waste material.
2. Clean forms and surfaces against which concrete is to be placed.
3. Remove chips, sawdust, and other debris.
4. Thoroughly blow out forms with compressed air just before concrete is placed.

3.3 TOLERANCES

A. Refer to ACI 301 and ACI 318 for tolerance references. If tolerances are not appropriate, include supplementary statements in this Article.

B. Tolerances: Construct formwork to produce completed concrete surfaces within construction tolerances according to ACI 117.

C. Refer to ASME A17.1 for elevator shaft hoistway plumb alignment requirements.

D. Camber: As indicated on Drawings.

3.4 FIELD QUALITY CONTROL

A. Inspection:
   1. Inspect erected formwork, shoring, and bracing to ensure that Work complies with formwork design and that supports, fastenings, wedges, ties, and items are secure.
   2. Notify Engineer after placement of reinforcing steel in forms but prior to placing concrete. For walls, notify Engineer after placement of reinforcing steel but prior to placement of forms on one side of wall.
   3. Schedule concrete placement to permit formwork inspection before placing concrete.

3.5 ATTACHMENTS

A. Schedule for Formwork: In accordance with Table 2 of this Section.

<table>
<thead>
<tr>
<th>Element</th>
<th>Form Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foundation walls not exposed to view</td>
<td>Site – fabricated plywood coated with form oil</td>
</tr>
<tr>
<td>Foundation walls exposed to view</td>
<td>Site – fabricated plywood coated with form oil.</td>
</tr>
<tr>
<td>Supported floor slabs</td>
<td>Prefabricated glass-fiber pan forms, treated for exposed-to-view finish, or metal decking where specified on drawings.</td>
</tr>
</tbody>
</table>
SECTION 03 20 00
CONCRETE REINFORCING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Reinforcing bars.
   2. Reinforcement accessories.

B. Related Requirements:
   1. Section 03 10 00 - Concrete Forming and Accessories.
   2. Section 03 30 00 - Cast-in-Place Concrete.

1.2 REFERENCE STANDARDS

A. American Concrete Institute (ACI):
   2. ACI 318 - Building Code Requirements for Structural Concrete.

B. American Welding Society (AWS):
   1. AWS D1.4 - Structural Welding Code - Reinforcing Steel.

C. ASTM International (ASTM):
   1. ASTM A615 - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
   2. [ASTM A1064 - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.] 

1.3 COORDINATION

A. Coordinate Work of this Section with placement of formwork, formed openings, and other Work.

1.4 SUBMITTALS

A. Shop Drawings:
   1. Indicate bar sizes, spacing, locations, splice locations, and quantities of reinforcing steel.
   2. Indicate bending and cutting schedules.
   3. Indicate supporting and spacing devices.

B. Manufacturer's Material Certificate: Certify that products meet or exceed specified requirements.
1.5 QUALITY ASSURANCE
   A. Prepare Shop Drawings according to ACI SP-66.

1.6 DELIVERY, STORAGE, AND HANDLING
   A. Inspection: Accept materials on Site in manufacturer’s original packaging and inspect for damage.
   B. Store materials on skids above grade. Meet additional storage requirements according to manufacturer instructions.
   C. Protection:
      1. Protect materials from moisture by storing in clean, dry location remote from construction operations areas.
      2. Provide additional protection according to manufacturer instructions.

1.7 EXISTING CONDITIONS
   A. Field Measurements:
      1. Verify field measurements prior to fabrication.
      2. Indicate field measurements on Shop Drawings.

PART 2 PRODUCTS
2.1 REINFORCEMENT
   A. Reinforcing Steel:
      1. Comply with ASTM A615.
      2. Yield Strength: 60-kips per square inch.

2.2 FABRICATION
   A. Fabricate concrete reinforcement according to ACI 318.
   B. Form reinforcement bends and hooks with standard diameters and extension lengths according to ACI 318.
   C. Fabricate column reinforcement with offset bends at reinforcement splices.
   D. Where required, shop weld reinforcement according to AWS D1.4. Welding of reinforcement not permitted unless specifically detailed on Drawings or accepted in writing by Engineer.
   E. Splicing:
1. If not indicated on Drawings, locate reinforcement splices at point of minimum stress and stagger splice locations of adjacent parallel bars.
2. For splicing devices, follow manufacturer’s instructions.

2.3 ACCESSORY MATERIALS

A. Tie Wire: Minimum 16-gage, annealed type.

B. Chairs, Bolsters, Bar Supports, and Spacers:
   1. Size and Shape: To strengthen and support reinforcement during concrete placement conditions.
   2. Where applicable, furnish load-bearing pad on bottom to prevent vapor retarder puncture.

C. Special Chairs, Bolsters, Bar Supports, and Spacers Adjacent to Weather-Exposed Concrete Surfaces:
   2. Size and Shape: To meet Project conditions.

PART 3 EXECUTION

3.1 INSTALLATION

A. Place, support, and secure reinforcement against displacement.

B. Do not deviate from required position beyond specified tolerance.

C. Do not weld reinforcement.

D. Do not displace or damage vapor retarder.

E. Accommodate placement of formed openings.

F. Spacing:
   1. Space reinforcement bars with minimum clear spacing according to ACI 318.
   2. If bars are indicated in multiple layers, place upper bars directly above lower bars.

G. Unless indicate otherwise on Drawings, maintain minimum concrete cover around reinforcement for cast-in-place non-prestressed concrete members according to ACI 318 as follows in Table 1 below.

   [(Remainder of page intentionally left blank.)]
### Table 1 Minimum Concrete Cover for Reinforcing Steel

<table>
<thead>
<tr>
<th>Concrete Exposure</th>
<th>Member</th>
<th>Reinforcement</th>
<th>Specified Cover (in.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cast against and permanently in contact with ground</td>
<td>All</td>
<td>All</td>
<td>3</td>
</tr>
<tr>
<td>Exposed to weather or in contact with ground</td>
<td>All</td>
<td>No. 6 through No. 18 bars</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No. 5 bar, W31 or D31 wire, and smaller</td>
<td>1-1/2</td>
</tr>
<tr>
<td>Not exposed to weather or in contact with ground</td>
<td>Slabs, joints, and walls</td>
<td>No. 14 and No. 18 bars</td>
<td>1-1/2</td>
</tr>
<tr>
<td></td>
<td>Beams, Columns, pedestals, and tension ties</td>
<td>Primary reinforcement, stirrups, ties, spirals, and hoops</td>
<td>1-1/2</td>
</tr>
</tbody>
</table>

#### 3.2 TOLERANCES

A. Install reinforcement within following tolerances for flexural members, walls, and compression members:
   1. Reinforcement Depth Greater Than 8-Inches:
      b. Concrete Cover Tolerance: Minus 3/8-inch.
   2. Reinforcement Depth Less Than or Equal to 8-Inches:
      a. Depth Tolerance: Plus, or Minus 1/2-inch.
      b. Concrete Cover Tolerance: Minus 1/2-inch.

B. Foundation Walls: Install reinforcement within tolerances according to ACI 117.

#### 3.3 FIELD QUALITY CONTROL TESTING

A. Perform field inspection of reinforcement according to ACI 318. Inspect for correct materials, fabrication, sizes, locations, spacing, concrete cover, and splicing.

#### 3.4 FIELD ACCEPTANCE TESTING
A. Field inspection testing will be performed by Owner's testing laboratory according to ACI 318.

B. Provide unrestricted access to Work and cooperate with appointed inspection firm.

C. Reinforcement Inspection:
   1. Periodic Placement Inspection: Inspect for correct materials, fabrication, sizes, locations, spacing, concrete cover, and splicing.
   2. Placement Acceptance: In accordance with ACI 318 material requirements and specified placement tolerances.

3.5 PROTECTION

A. Protect reinforcement and accessories from damage and displacement until concrete is placed.

END OF SECTION
# Concrete Placement Plan

<table>
<thead>
<tr>
<th>PLACEMENT ITEM</th>
<th>SUBMITTAL DATE</th>
<th>PLAN NO.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>SUBMITTED TO</th>
<th>J&amp;DE PM</th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>PROJECT NAME</th>
<th>J&amp;DE PROJECT NO.</th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>CONTRACTOR</th>
<th>SUPERINTENDENT</th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>CONCRETE SUB</th>
<th>CONTRACTOR PROJ NO.</th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>OWNER</th>
<th>PROJECT LOCATION</th>
<th></th>
</tr>
</thead>
</table>

## Placement Means & Methods

- **Mix Design Reviewed (Y/N)**: 
  - **Date**: 
  - **Design Strength**: 
  - **Target Slump**: 

- **Concrete Quantity (Yd^3)**: 
  - **Additives**: 
  - **Air (%)**: 

- **No. of Laborers**: 
  - **Start Date/Time**: 
  - **Est. Finish Date/Time**: 

- **Equipment to Be Used**: 
  - 

- **Tools to Be Used**: 
  - 

- **Pre-Placement Conference Held (Y/N)**: 
  - **Date**: 
  - **Testing Agency**: 

- **Notes**: 
  - 

## Weather

- **Forecast Weather Conditions Day of Placement**: 

- **Temperature Forecast Day of Placement**: 
  - **High Temp**: 
  - **Low Temp**: 

- **5-Day Temperature Forecast After Placement**: 
  - **5-Day High Temp**: 
  - **5-Day Low Temp**: 

- **Proposed Heating Plan**: 
  - 

- **Proposed Cooling Plan**: 
  - 

---

## Finish & Curing Plan

- **No. of Laborers**: 
  - **Start Date/Time**: 
  - **Est. Finish Date/Time**: 

- **Proposed Finish Means to Achieve Finish**: 
  - 

- **Product(s) to Be Used**: 
  - 

- **Method(s) to Be Used**: 
  - 

- **Tools to Be Used**: 
  - 

- **Curing Product(s) Submittal(s) Reviewed (Y/N)**: 
  - **Date Reviewed**: 

- **Notes**: 
  - 

---

City of Page
Encompass Shelter Facility (2110-042)
PLACEMENT PLAN SKETCH – Indicate start and finish locations, screed direction, position of pump truck and other key equipment, location of control joints, and other pertinent information (attach additional sheets & sketches as needed):

SUBMITTED BY ___________________________  RECEIVED BY ___________________________

SIGNATURE ___________________________  SIGNATURE ___________________________

POST-PLACEMENT NOTES OF CONFORMANCE W/ SUBMITTED PLAN

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

CONSTRUCTION OBSERVER ___________________________  DATE _________________
PART 1 GENERAL

1.1 SUMMARY

A. Section Includes Cast-in-Place Concrete for Items as Follows:
   1. Foundation walls.
   2. Footings.
   3. Supported slabs and slabs on grade.

B. Related Requirements:
   1. Section 03 10 00 – Concrete Forming and Accessories.
   2. Section 03 20 00 – Concrete Reinforcing.
   3. Section 07 26 00 – Vapor Retarders.
   4. Section 32 16 00 – Curbs, Gutters, Sidewalks, and Driveways

1.2 PRICE REDUCTION

A. Price Reduction for Compressive Strength:
   1. If compressive strength test of concrete does not meet requirement of Table 3 of this Section, Engineer may allow price reduction pending review of affected structural element. If allowed, Engineer will calculate price reduction using Table 1 of this Section.
   2. Price reduction will be dollar reduction per cubic yard from Table 1 of this Section multiplied by cubic yards of concrete place for compressive strength test represented.
   3. If test results for compressive strength are more than 400-pounds per square inch below specified compressive strength in Table 3 of this Section, Engineer will reject concrete and require removal.

   (Remainder of page intentionally left blank.)

<table>
<thead>
<tr>
<th>Table 1. Price Reduction for Compressive Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compressive Strength Below Specified Strength (psi)</td>
</tr>
<tr>
<td>-------------------------------------------------</td>
</tr>
<tr>
<td>1-100</td>
</tr>
<tr>
<td>101-200</td>
</tr>
<tr>
<td>201-300</td>
</tr>
<tr>
<td>301-400</td>
</tr>
<tr>
<td>Greater than 400</td>
</tr>
</tbody>
</table>
1.3 REFERENCE STANDARDS

A. American Concrete Institute (ACI):
   1. ACI 301 – Specifications for Structural Concrete.
   2. ACI 305.1 – Specification for Hot Weather Concreting.
   4. ACI 308.1 – Specification for Curing Concrete.
   5. ACI 309R – Guide for Consolidation of Concrete.
   6. ACI 318 – Building Code Requirements for Structural Concrete.

B. ASTM International (ASTM):
   1. ASTM C31 - Standard Practice for Making and Curing Concrete Test Specimens in the Field.
   8. ASTM C172 - Standard Practice for Sampling Freshly Mixed Concrete.
   9. ASTM C231 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
  13. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.
  15. ASTM C1017 - Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete.

1.4 COORDINATION

A. Coordinate placement of joint devices with erection of concrete formwork and placement of form accessories.

1.5 SUBMITTALS

A. Product Data: Submit data on joint devices, attachment accessories, admixtures, bonding agent, non-shrink grout, curing compound, and accessories.

B. Design Data:
   1. Submit concrete mix design for each concrete class used.
   2. Submit prior test results for each concrete mix design.
   3. Submit separate mix designs if admixtures are required for following:
      a. Hot and cold weather concrete Work.
      b. Air entrained concrete Work.
   4. Identify mix ingredients and proportions, including admixtures.
   5. Identify chloride content of admixtures and whether chlorides were added during manufacturing.

C. Concrete Placement Plan: Submit concrete placement plan minimum of 72-hours prior to placement of concrete or as determined by Engineer. See attachment at end of this Section. This requirement may be waived for minor concrete placements when accepted by Engineer.

D. Batch Ticket: Submit to Engineer’s onsite representative with each truck load delivered. Include information as follows:
   1. Name of batch plant.
   2. Name of Contractor and Project.
   3. Mix design number or designation.
   4. Class of concrete mix and type of cement.
   5. Time and date of batching.
   7. Weights of cement and each size of aggregate.
   8. Amount of water added at plant and any additional water added.
   9. Amount of each admixture.

1.6 CLOSEOUT SUBMITTALS

A. Project Record Documents: Record actual locations of embedded utilities and components concealed from view in finished construction.

B. Warranty: Submit before or with final application for payment.
1.7 QUALITY ASSURANCE

A. Perform Work according to ACI 318, unless indicated otherwise.

B. Acquire cement and aggregate from one source for Work.

1.8 AMBIENT CONDITIONS

A. Hot Weather Concreting: Comply with ACI 305.1, except as modified herein.
   1. From mixing to placement, maintain concrete temperature not to exceed 90 degrees Fahrenheit.
   2. When ambient air temperature exceeds 90-degrees Fahrenheit, moist cure concrete for minimum of 5-days following placement.
   3. Cool surfaces that will come in contact with concrete to below 95 degrees Fahrenheit.

B. Cold Weather Concreting: Comply with ACI 306.1, except as modified herein.
   1. When ambient air temperature is above 45-degrees Fahrenheit, maintain concrete temperature at minimum equal to air temperature, but not greater than 90-degrees Fahrenheit.
   2. When ambient air temperature is below 45-degrees Fahrenheit, maintain concrete temperature at or above but not more than 10-degrees Fahrenheit above minimum temperatures shown in Table 2 of this Section.
   3. Do not place concrete without using blankets and heaters, or other accepted protective measures when ambient air temperature is less than 20-degrees Fahrenheit.
   4. Adequately vent combustion-type heaters that produce carbon monoxide. Position heaters and ducts so hot air does not cause areas of concrete surface to overheat or over-dry. Maintain most conditions to avoid excessive loss of moisture from external heat.
   5. Do not place concrete against adjacent concrete, foundations, formwork, reinforcing, or other items that are frozen or have surface temperature less than 40-degrees Fahrenheit.
### Table 2.
Concrete Temperature (Degrees Fahrenheit) for Cold-Weather Construction

<table>
<thead>
<tr>
<th>Condition</th>
<th>Sections less than 12 inches</th>
<th>Sections 12 to 36 inches</th>
<th>Sections 36 to 72 inches</th>
<th>Sections over 72 inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum temperature fresh concrete as mixed in weather indicated</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Above 30 °F</td>
<td>60</td>
<td>55</td>
<td>50</td>
<td>45</td>
</tr>
<tr>
<td>0 °F to 30 °F</td>
<td>65</td>
<td>60</td>
<td>55</td>
<td>50</td>
</tr>
<tr>
<td>Below 0 °F</td>
<td>70</td>
<td>65</td>
<td>60</td>
<td>55</td>
</tr>
<tr>
<td>Minimum temperature fresh concrete as placed and maintained (protection period)</td>
<td>55</td>
<td>50</td>
<td>45</td>
<td>40</td>
</tr>
<tr>
<td>Maximum allowable gradual drop in temperature in first 24 hours after end of protection</td>
<td>50</td>
<td>40</td>
<td>30</td>
<td>20</td>
</tr>
</tbody>
</table>

C. Measure concrete temperature with surface thermometer insulated from surrounding air.

D. Protection Period:
   1. Maintain concrete temperature after placement at minimum temperatures shown in Table 2 of this Section for minimum six days.
   2. For high-early strength concrete, maintain concrete temperature after installation at minimum temperatures shown in Table 2 of this Section for minimum three days.

1.9 WARRANTY

A. Provide written guarantee to promptly remove and/or repair defective concrete for two-year period after date of substantial completion.

PART 2 PRODUCTS

2.1 MATERIALS

A. Concrete:
   1. Cement:
      a. Portland cement complying with ASTM C150.
      b. Use Type II - Moderate Sulfate Resistant or Type II-V blend for Class A through C concrete.
      c. Use Type V - High Sulfate Resistant for Class S2 and S3 concrete. Meet or exceed sulfate Exposure Class S2 Severe in accordance with Tables 4.2.1 and 4.3.1 of ACI 318.
   2. Coarse Aggregate:
      a. Comply with ASTM C33.
b. Maximum Size: According to ACI 318.
   1) Not larger than 1/5 narrowest dimension between sides of form.
   2) Not larger than 1/3 depth of slab.
   3) Not larger than ¾ minimum clear distance between reinforcing bar or between reinforcing bars and forms, whichever is smallest.


4. Water:
   b. Potable.

B. Admixtures:
   1. Do not use calcium chloride or admixtures that contain calcium chloride.
   2. Air Entrainment: Comply with ASTM C260. Use pre-measured admixtures for air entrainment added on site.
   3. Chemical: Submit with mix design for review prior to use.
      b. Type A - Water Reducing. Slump requirements on Table 3 of this Section may be changed to 5-inches maximum for all classes of concrete.
      c. Type D - Water Reducing and Retarding. Slump requirements on Table 3 of this Section may be changed to 5-inches maximum for all classes of concrete.
      d. Type F - Water Reducing, High Range. Slump requirements on Table 3 of this Section may be changed to 9-inches maximum for all classes of concrete.
      e. Set retarding admixtures may be used when haul time will be exceeded. Establish effective life of concrete mix by trial batch.
   4. Fly Ash: Comply with ASTM C618, Class F, and not exceed 3-percent loss on ignition and do not exceed 15-percent CaO content. May be used to replace cement. Limit content of fly ash to 30-percent of required cement content by weight. Submit with mix design for review prior to use.
   5. Plasticizing: Comply with ASTM C1017 and submit with mix design for review prior to use.

C. Fibrous Reinforcing: ASTM C1116, 100-percent virgin polypropylene fibrillated, MD graded, fibers containing no reprocessed olefin materials. Minimum application rate shall be 4.0-pounds per cubic yard. Manufactured by Fibermesh or equal.
   1. Schedule: Where indicated on Drawings.

2.2 CONCRETE MIX
A.  Determine mix design with required portions of cement, aggregate, admixtures, and water. Verify mix design with trial batch.

B.  Provide concrete complying with Table 3 of this Section.

( Remainder of page intentionally left blank. )
<table>
<thead>
<tr>
<th>Class</th>
<th>Coarse Aggregate Size (inches)</th>
<th>Maximum Water/Cement</th>
<th>Minimum Cement Content (Sacks/ C. Y.)</th>
<th>Slump (inches)</th>
<th>Air Content (Percent)</th>
<th>Mix Design Compressive Strength (PSI)</th>
<th>28 Day Minimum Compressive Strength (PSI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S3 or S3(AE)</td>
<td>1&quot; to No. 4</td>
<td>0.45</td>
<td>7.0</td>
<td>1-3.5</td>
<td>5.0-7.5</td>
<td>6520</td>
<td>5000</td>
</tr>
<tr>
<td>S2 or S2(AE)</td>
<td>1&quot; to No. 4</td>
<td>0.45</td>
<td>6.5</td>
<td>1-3.5</td>
<td>5.0-7.5</td>
<td>5870</td>
<td>4500</td>
</tr>
<tr>
<td>AA(AE)</td>
<td>2&quot; to No. 4</td>
<td>0.44</td>
<td>6.0</td>
<td>1-3.5</td>
<td>5.0-7.5</td>
<td>5210</td>
<td>4000</td>
</tr>
<tr>
<td></td>
<td>1 1/2&quot; to No. 4</td>
<td>0.44</td>
<td>6.0</td>
<td>1-3.5</td>
<td>5.0-7.5</td>
<td>5210</td>
<td>4000</td>
</tr>
<tr>
<td></td>
<td>1&quot; to No. 4</td>
<td>0.44</td>
<td>6.5</td>
<td>1-3.5</td>
<td>5.0-7.5</td>
<td>5210</td>
<td>4000</td>
</tr>
<tr>
<td></td>
<td>3/4&quot; to No. 4</td>
<td>0.44</td>
<td>6.5</td>
<td>1-3.5</td>
<td>5.0-7.5</td>
<td>5210</td>
<td>4000</td>
</tr>
<tr>
<td>A or A(AE)</td>
<td>1 1/2&quot; to No. 4</td>
<td>0.45</td>
<td>5.0</td>
<td>1-3.5</td>
<td>4.5-7.5</td>
<td>3910</td>
<td>3000</td>
</tr>
<tr>
<td></td>
<td>1&quot; to No. 4</td>
<td>0.45</td>
<td>5.0</td>
<td>1-3.5</td>
<td>4.5-7.5</td>
<td>3910</td>
<td>3000</td>
</tr>
<tr>
<td></td>
<td>3/4&quot; to No. 4</td>
<td>0.45</td>
<td>5.25</td>
<td>1-3.5</td>
<td>4.5-7.5</td>
<td>3910</td>
<td>3000</td>
</tr>
<tr>
<td>B or B(AE)</td>
<td></td>
<td>0.62</td>
<td>4.0</td>
<td>2-5</td>
<td>3.0-6.0</td>
<td>3260</td>
<td>2500</td>
</tr>
<tr>
<td>C or C(AE)</td>
<td></td>
<td>0.71</td>
<td>4.0</td>
<td>2-5</td>
<td>3.0-6.0</td>
<td>2610</td>
<td>2000</td>
</tr>
</tbody>
</table>

(AE) = Air-Entrainment
C. Ready-Mixed Concrete: Mix and deliver concrete according to ASTM C94. For remote locations where ready mixed concrete is not readily available, mix and deliver concrete according to ASTM C685.

D. Site-Mixed Concrete: Request and obtain acceptance from Engineer prior to using site-mixed concrete. Mix concrete according to ACI 318.

2.3 ACCESSORIES

A. Non-shrink Grout:
   1. Description: Premixed compound consisting of non-metallic aggregate, cement, and water-reducing and plasticizing agents.
   2. Comply with ASTM C1107.
   3. Minimum Compressive Strength: 2,400-pounds per square inch in 48-hours and 7,000-pounds per square inch in 28-days.

B. Joint Devices and Filler:
   1. Joint Filler:
      a. Description: Asphalt-impregnated fiberboard or felt.
      b. Comply with ASTM D1751.
      c. Thickness: ½-inch.
      d. Sealant: Where indicated on Drawings.
   2. Construction Joint Devices: As indicated on Drawings or as accepted by Engineer.
   3. Expansion and Contraction Joint Devices: As indicated on Drawings or as accepted by Engineer.

C. Curing Materials:
   1. Membrane Curing Compound Type A: ASTM C309, Type 1, Class A.
   2. Absorptive Mats: Burlap-polyethylene, minimum 9-ounces per square yard bonded to prevent separation during handling and placing.
   3. Polyethylene Film: 4-mil thick, white opaque color.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify requirements for concrete cover over reinforcement.

B. Verify that anchors, seats, plates, reinforcement, and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with placing concrete.

3.2 PREPARATION

A. Previously Placed Concrete:
1. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent in accordance with manufacturer’s recommendations.

2. Remove laitance, coatings, and unsound materials.

B. In locations where new concrete is dowelled to existing work, drill holes in existing concrete, insert steel dowels, and pack solid with epoxy.

C. If concrete subgrade is dry, dampen with water prior to placing concrete. Keep subgrade firm and free from excess water.

D. Remove debris and ice from formwork, reinforcement, and concrete substrates.

E. Remove water from areas receiving concrete before concrete is placed.

3.3 INSTALLATION

A. Placing Concrete:
1. Place concrete according to ACI 318.
2. Notify Engineer minimum 48-hours prior to commencement of operations.
3. Ensure that reinforcement, inserts, embedded parts, formed expansion and contraction joints, and other materials are not disturbed during concrete placement.
4. Where indicated on Drawings, install vapor barrier under interior slabs on grade.
5. Joint Filler:
   a. Separate slabs on grade from vertical surfaces with 1/2-inch-thick joint filler or 30-pound felt.
   b. Place joint filler in slab pattern placement sequence; set top to required elevations; secure to resist movement by wet concrete.
   c. Extend joint filler from bottom of slab to within ½-inch of finished slab surface, unless indicated otherwise on Drawings.
   d. Apply sealant in joints where indicated on Drawings.
6. Convey concrete from mixer to place of final position by methods that will prevent segregation of mix or loss of materials. Use tremie or other accepted method. Do not allow concrete to free fall more than 5 feet, or less if segregation of mix occurs.
7. After concrete has been conveyed from mixer, do not add water. Adding water to place concrete will be cause for rejection.
8. Place concrete in continuous operation for each panel or section as determined by predetermined joints.
9. Consolidate concrete during placement using hand tools, mechanical vibrators, vibrating screeds, and finishing machines in
accordance with ACI 309R. Consolidation techniques will be reviewed and accepted with Concrete Placement Plan.

a. Do not use vibrator to move concrete horizontally.
b. Do not vibrate high slump (greater than 6-inches) concrete, unless accepted by Engineer.
c. Do not over vibrate concrete.
d. Provide sufficient vibrators to consolidate concrete within 15-minutes after placement of concrete in forms.
e. Provide at least two vibrators for each concrete placement greater than 25-cubic yards.
f. Do not attach vibrators to or against forms or reinforcing steel.
g. Do not allow vibrators to penetrate concrete layers that have taken initial set.

10. Maintain records of concrete placement, including date, location, quantity, air temperature, and test samples taken.

11. Place concrete continuously between predetermined expansion, control, and construction joints.

12. Do not interrupt successive placement and do not permit cold joints to occur.

13. Place floor slabs with saw-cut pattern indicated on Drawings.

14. Saw-Cut Joints: Diangle at 24” on center
   a. Saw-cut joints within 12-hours after placing.
   b. Use 3/16-inch-thick blade.
   c. Cut 1/4 depth of slab thickness.

15. Screeding:
   a. Screed floors and slabs on grade level, unless indicated otherwise on Drawings.
   b. Minimum Surface Flatness: Minimum FF 25
   c. Minimum Surface Levelness: Minimum FL 20

B. Concrete Finishing:

1. Finish concrete as indicated in schedule.
2. Finish concrete floor surfaces according to ACI 318.
3. Wood float surfaces receiving quarry tile, ceramic tile, terrazzo with full bed setting system.
4. Steel trowel surfaces receiving carpeting, resilient flooring, seamless flooring, and tile.
5. Steel trowel interior surfaces as indicated in finish schedule. Consolidate concrete surface by final hand troweling operation, free of trowel marks, uniform in texture and appearance.
7. Do not use steel trowels or fresno to finish exterior concrete.
8. Do not use jitter bugs for concrete consolidation.

C. Curing and Protection:
1. Immediately after placement, protect concrete from premature drying, excessively hot, or cold temperatures, and mechanical injury.
2. Maintain concrete with minimal moisture loss at relatively constant temperature for period as necessary for hydration of cement and hardening of concrete.
3. Cure horizontal concrete surfaces according to ACI 308.1 using one of following methods:
   a. Ponding: Maintain 100-percent coverage of water over slab continuously for seven days.
   b. Spraying: Spray water over slab and maintain wet for seven days.
   c. Absorptive Matt: Cover slab with saturated mat lapping ends and sides. Maintain saturated condition for seven days.
   d. Membrane Curing Compound: Apply curing compound in two coats with second coat applied at right angles to first.
   e. Polyethylene Film: Spread over slab, lap edges and sides, seal with pressure sensitive tape and cover with plywood as necessary to secure film. Maintain in place for seven days.
4. Cure vertical surfaces according to ACI 308.1 using one of following methods:
   a. Spraying: Spray water over surface and maintain wet for seven days.
   b. Membrane Curing Compound: Apply curing compound in two coats with second coat applied at right angles to first.
5. Provide additional protection as necessary to prevent freezing during cold weather.
6. Use curing method which is compatible with finish coat of concrete surface.

3.4 FIELD QUALITY CONTROL TESTING

A. Perform in accordance with ACI 318 and referenced standards.

B. Field Testing: Comply with ASTM C172. Sample and test concrete at least once for every 50-cubic yards or less of each class of concrete placed each day.
   1. Slump Test: Comply with ASTM C143.
   2. Air Content Test: Comply with ASTM C231.
   3. Perform initial air and slump test on first truck of each day prior to placing concrete in forms.
      a. If initial air and slump test are acceptable, proceed with placement of concrete.
      b. If initial air and slump tests are not acceptable, reject concrete and remove from site or make required corrections to make concrete acceptable.
   4. Perform final air and slump tests on middle portion of batch in accordance with ASTM C172.
5. Temperature Test: Comply with ASTM C1064.
   a. Cast four cylinders.
   b. Test one cylinder at 7-days.
   c. Test three cylinders at 28-days. Compressive strength will be average of three cylinders.
7. If tests are not acceptable, make adjustments in mix design and/or production. If necessary, remove and replace Work.

3.5 NON-CONFORMING WORK

A. Optional Core Compressive Strength Testing: If compressive strength test fails, compressive strength testing by core samples may be requested. Submit detailed request to Engineer.
   2. Drill three cores for each failed strength test from failed concrete.
   3. If compressive strength test of cores does not meet requirements of Table 3 of this Section, Engineer may reject concrete and require removal or allow concrete to remain with price reduction. Price reduction or replacement will be at discretion of Owner and Engineer.

B. Patching:
   1. Allow Engineer to observe concrete surfaces immediately upon removal of forms.
   2. Honeycombing or Embedded Debris in Concrete:
      a. Not acceptable.
      b. Notify Engineer upon discovery.
   3. Patch imperfections as indicated by Engineer.

C. Defective Concrete:
   1. Description: Concrete not conforming to required lines, details, dimensions, tolerances, or specified requirements.
   2. Repair or replacement of defective concrete will be indicated by Engineer.
   3. Do not patch, fill, touch up, repair, or replace exposed concrete, except as indicated by Engineer for each individual area.

3.6 ATTACHMENTS

A. Concrete Schedule: See Table 4 of this Section.

   (Remainder of page intentionally left blank.)
### Table 4. Concrete Schedule

<table>
<thead>
<tr>
<th>Element</th>
<th>Class</th>
<th>Finish</th>
<th>Other Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Columns</td>
<td>AA(AE)</td>
<td>Form Finish</td>
<td></td>
</tr>
<tr>
<td>Fence Footings</td>
<td>B(AE)</td>
<td>Form Finish</td>
<td></td>
</tr>
<tr>
<td>Interior Floor Slabs</td>
<td>AA</td>
<td>Form Finish</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>See architectural Drawings</td>
<td>Slope to floor drain(s)</td>
</tr>
<tr>
<td>Exterior Floor Slabs</td>
<td>AA(AE)</td>
<td>Form Finish</td>
<td></td>
</tr>
<tr>
<td>Footings</td>
<td>AA(AE)</td>
<td>Form Finish</td>
<td></td>
</tr>
<tr>
<td>Foundation Walls</td>
<td>AA(AE)</td>
<td>Form Finish</td>
<td></td>
</tr>
<tr>
<td>Headwalls</td>
<td>AA(AE)</td>
<td>Form Finish</td>
<td></td>
</tr>
<tr>
<td>Thrust Blocks</td>
<td>B or B(AE)</td>
<td>Form Finish</td>
<td></td>
</tr>
<tr>
<td>Valve Collars</td>
<td>AA(AE)</td>
<td>Light Broom Finish</td>
<td></td>
</tr>
</tbody>
</table>

B. Concrete Placement Plan: See attached document consisting of 2 pages.

END OF SECTION
SECTION 03 39 20
PENETRATING CONCRETE SEALER

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Penetrating concrete sealer applied to concrete, masonry, or stone surface.

1.2 REFERENCES


1.3 SUBMITTALS

A. Manufacturer’s product data sheets and recommended installation instructions.

B. A random sample of the penetrating concrete sealer for testing at the Engineer’s discretion to verify product compliance.

PART 2 PRODUCTS

2.1 PENETRATING CONCRETE SEALERS

A. Choose from the following list:
   1. Silane
   2. Siloxane
   3. Silicate
   4. Siliconate
   5. Organo Silane Ester
   6. Styrene Acrylic Copolymer
   7. Organo Siloxane
   8. Alkylalkoxy Siloxane
   9. Alkylalkoxy Silane

B. Meet VOC content of 350 g/L or less for Reactive Penetrating Sealer and 100 g/L or less for others. Refer to ASTM D 3960.

C. Can be applied to either new or existing surfaces.

D. Dries clear without significant change in surface appearance.

E. Maximum drying time of 1½ hours.
F. Product can be applied in horizontal, vertical and overhead surfaces.

PART 3 EXECUTION

3.1 PREPARATION

A. Keep surfaces dry and free of release agents, laitance, dirt, dust, paint, grease, oil, rust and other contaminants.

B. Remove any curing compound or other incompatible products from the surface of the concrete before applying penetrating sealer.

C. Use one of the following cleaning methods:
   1. Pressure washing – 700 psi min.
   2. Shotblasting
   3. Sandblasting
   4. Etching

D. Keep concrete surface matrix intact without exposing any large aggregate.

E. Cure concrete for 28 days before sealer application.

F. Obtain approval from the Engineer before applying material.

G. Apply only when the outside air temperature will remain between 45 and 90 degrees F for 24 hours or the manufacturer’s recommended cure time, whichever is longer.

H. Do not apply within 24 hours of a rain event or pressure washing, nor if a rain event is forecasted within 24 hours.

3.2 APPLICATION

A. Application Rate
   1. Apply according to manufacturer’s recommendations for each of the following surfaces:
      a. Horizontal
      b. Vertical
      c. Overhead

B. Apply the penetrating concrete sealer evenly at an application rate recommended by the manufacturer.

C. Do not apply penetrating concrete sealer to portland cement concrete pavement (PCCP) or other roadway surface.

D. The sealer is considered defective if clouding or chalking occurs after placement.
PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Structural shapes.
   2. Channels and angles.
   3. Hollow structural sections.
   4. Structural pipe.
   5. Structural plates.
   6. Floor plates.
   7. Bolts, connectors, and anchors.
   8. Grout.

1.2 SUBMITTALS

A. Shop Drawings:
   1. Indicate profiles, sizes, spacing, locations of structural members, openings, attachments, and bolts.
   2. Connections.
   3. Indicate welded connections with AWS A2.4 welding symbols, and indicate net weld lengths.

B. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

C. Welders Certificates: Certify welders employed on the Work, verifying AWS qualification within previous 12 months.

D. Mill Test Reports: Submit indicating structural strength, destructive and non-destructive test analysis.

E. Source Quality-Control Submittals: Indicate results of shop tests and inspections.

F. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

G. Qualifications Statements:
   1. Submit qualifications for fabricator, erector, shop painter, and welders.

1.3 QUALITY ASSURANCE
A. Perform Work according to following:

B. Fabricator:
   1. Company specializing in fabricating products specified in this Section with minimum three years' documented experience with following current AISC Certification:
      a. Standard Steel Building Structures (STD).
      b. Conventional Steel Building Structures (SBD).
      c. Complex Steel Building Structures (CBD).

C. Erector:
   1. Company specializing in performing Work of this Section with minimum three years documented experience with following current AISC Certification:
      a. Certified Steel Erector (CSE).
      b. Advanced Certified Steel Erector (ACSE).

D. Shop Painter:
   1. Company specializing in performing Work of this Section with minimum three documented experience with following current AISC Certification:
      a. Sophisticated Paint Endorsement - Enclosed (P1).
      b. Sophisticated Paint Endorsement - Covered (P2).
      c. Sophisticated Paint Endorsement - Outside (P3).

E. Welders and Welding Procedures: AWS D1.1 qualified within previous 12 months.

PART 2 PRODUCTS

2.1 STRUCTURAL STEEL

A. Structural W Shapes: ASTM A992.

B. Structural M Shapes: ASTM A36

C. Structural S Shapes: ASTM A36

D. Structural T Shapes: Cut from structural W shapes

E. Channels and Angles: ASTM A36

F. Round, Hollow Structural Sections: ASTM A500, Grade B
G. Rectangular, Hollow Structural Sections: ASTM A500, Grade B
H. Structural Pipe: ASTM A53, Grade B
I. Structural Plates and Bars: ASTM A36

2.2 BOLTS, CONNECTORS, AND ANCHORS

A. Bolts: Heavy-hex, structural type.
   1. ASTM A325; Type 1, galvanized, or Type 3, plain.
   2. ASTM A490; Type 1 or 3, plain.

B. Nuts: ASTM A563; Grade 36; heavy-hex type.
   1. Finish: Plain

C. Forged Structural Steel Hardware:
   2. Eye Nuts and Eye Bolts: ASTM A108; Grade 1030.

2.3 WELDING MATERIALS

A. Welding Materials:
   1. AWS D1.1.
   2. Type required for materials being welded.

2.4 FABRICATION

A. Space shear stud connectors as indicated otherwise on Drawings.
B. Continuously seal joined members by intermittent welds and plastic filler, continuous welds. Grind exposed welds smooth.
C. Fabricate connections for bolt, nut, and washer connectors.
D. Develop required camber for members.

2.5 FINISHES

A. Prepare structural component surfaces according to SSPC SP 3
B. Shop-prime structural steel members. Do not prime surfaces that will be fireproofed, field welded, in contact with concrete, or high-strength bolted.

2.6 ACCESSORIES

A. Grout:
1. Non-shrink type; premixed compound consisting of nonmetallic aggregate, cement, water-reducing, and plasticizing additives.

B. Shop Primer: SSPC Paint 15, Type 1, red oxide

C. Touchup Primer: Match shop primer.

2.7 SOURCE QUALITY CONTROL

A. Testing: Test bolted and welded connections as specified in PART 3 for field quality control tests.

B. Certificate of Compliance: When fabricator is approved by authorities having jurisdiction, submit certificate of compliance indicating Work performed at fabricator's facility conforms to Contract Documents.

1. Specified shop tests are not required for Work performed by approved fabricator.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that bearing surfaces are at correct elevation.

B. Verify that anchor rods are set in correct locations and arrangements, with correct exposure for steel attachment.

3.2 PREPARATION

A. Furnish templates for installation of anchor rods and embedments in concrete and masonry work.

3.3 ERECTION

A. Allow for erection loads and for sufficient temporary bracing to maintain structure safe, plumb, and in alignment until completion of erection and installation of permanent bracing.

B. Field-weld components and shear connectors as indicated on Drawings.

C. Field-connect members with threaded fasteners; torque to required resistance and snug-tighten for bearing-type connections.

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

E. After erection, touch up welds and abrasions to match shop finishes.

3.4 GROUT INSTALLATION
A. Grout under base plates
B. Fill void under bearing surface with grout; install and pack grout to remove air pockets.
C. Moist-cure grout.
D. Remove forms after grout is set; trim grout edges to form smooth surface, splayed 45 degrees.
E. Tighten anchor bolts after grout has cured for a minimum of three days.

3.5 TOLERANCES
A. Maximum Variation from Plumb: ¼ inch per story, noncumulative.
B. Maximum Offset from Alignment: ¼ inch.

3.6 FIELD QUALITY CONTROL
A. Bolted Connections: Inspect according to AISC 303.
   1. Visually inspect all bolted connections.
   2. Direct Tension Indicators: Comply with requirements of ASTM F959, and verify that gaps are less than gaps specified in Table 2.
B. Welding: Inspect welds according to AWS D1.1.
   1. Use certified welders, and conduct inspections and tests as required. Record types and locations of defects found in Work. Record work required and performed to correct deficiencies.
   2. Visually inspect all welds.
   3. Ultrasonic Inspection: ASTM E164; perform on each full-penetration weld.
   4. Liquid Penetrant Inspection: ASTM E165.
C. Correct defective bolted connections and welds.

END OF SECTION
PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Shop-fabricated metal items.
   2. Loose steel lintels.
   4. Ladders.
   5. Fabricated trash enclosure gates.
   6. Concrete embeds and inserts.

B. Related Requirements:
   1. Section 03 30 00 - Cast-In-Place Concrete.
   2. Section 05 12 00 - Structural Steel Framing.
   3. Section 09 22 16 Non-Structural Metal Framing
   4. Section 09 90 00 – Painting and Coating.

1.2 REFERENCE STANDARDS

A. American Architectural Manufacturers Association (AAMA):

B. American National Standards Institute (ANSI):
   1. ANSI A14.3 - American National Standard (ASC) for Ladders - Fixed
      Safety Requirements.

C. American Welding Society (AWS):
   1. AWS D1.1 - Structural Welding Code - Steel.
   2. AWS D1.6 - Structural Welding Code - Stainless Steel.

D. ASTM International (ASTM):
   2. ASTM A53- Standard Specification for Pipe, Steel, Black and Hot-
      Dipped, Zinc-Coated, Welded and Seamless.
   5. ASTM A193 - Standard Specification for Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications.
   6. ASTM A194 - Standard Specification for Carbon Steel, Alloy Steel, and Stainless Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both.
13. ASTM A500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
15. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

E. Builders Hardware Manufacturers Association (BHMA):

F. National Association of Architectural Metal Manufacturers (NAAMM):
   1. NAAMM AMP 510 – Metal Stairs Manual.
   2. NAAMM MBG 531 – Metal Bar Grating Manual.

G. SSPC: The Society for Protective Coatings:
   1. SSPC Paint 15 - Steel Joist Shop Primer/Metal Building Primer.
1.3 SUBMITTALS

A. Product Data: Submit data for canopy steel.

B. Shop Drawings: Submit shop drawings. Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable. Indicate welded connections using standard AWS A2.4 welding symbols.

C. Welders Certificates: Certify welders employed on Work, verifying AWS qualification within previous 12 months.

D. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Inspection: Accept metal fabrications on-Site in labeled shipments. Inspect for damage.

B. Protect metal fabrications from damage by exposure to weather or by ground contact.

1.5 BOLLARDS

A. Description:
   1. Steel pipe, concrete filled.
   2. Pipe Size: 6-inch diameter, length as indicated on Drawings.
   3. Pipe Finish: Prime coat, intermediate coat and top coat. Use color for intermediate and top coat as indicated on Drawings or as selected by Owner.
   4. Concrete Fill: Class A(AE) as indicated in Section 03 30 00 with dome shaped finish at top of pipe.

1.6 TRASH ENCLOSURES AND GATES

A. Description:
   1. Steel sections, size and configuration as indicated on Drawings.
   2. Finish for Exterior Locations: Prime coat and top coat.

B. Infill Panels:
   1. Description: Corrugated steel panels.
   2. Deep Deck Panel:
      a. Thickness: 24 gage.
      b. Finish:
         1) Manufacturer's standard Kynar 500 polyvinylidene fluoride resin-based coating.
2) Color: As selected by Architect from manufacturer's standard colors.

3) Prime coat and top coat.

C. Gate Hardware:
   1. Finish: Galvanized or zinc plated.
   2. Heavy-Duty Steel Hinges Rating:
      a. Gate leaf weight of 250 lb., minimum.
      b. ANSI/BHMA A156.20.
   3. Drop Bolt and Keeper: Minimum 1/2 inch, for pairs of gates.

1.7 ANCHORS

A. Description:
   1. ASTM F1554; Grade 36, unless indicated otherwise on Drawings.
   2. Shape: Straight, headed or threaded, unless indicated otherwise on Drawings.
   3. Furnish with double nut and washer for threaded anchors.
   4. Grout: As indicated in Section 03 30 00.

B. Epoxy Adhesive Anchors:
   1. Manufacturer: Hilti or equivalent.
   2. Threaded Rod:
      a. Stainless Steel: Type 316.
      b. Mild Steel: ASTM A36.

1.8 MATERIALS

A. Steel:
   2. Structural Shapes: ASTM A36 unless noted otherwise.
   5. Hollow Structural Sections: ASTM A500, Grade B.
   7. Floor Plates: ASTM A53; raised pattern.
   8. Sheet Steel: ASTM A653, Grade 33 Structural Quality.
   9. Conventional Bolts: ASTM A307; Grade A.
   10. High Strength Bolts: ASTM A325N
   12. Washers: ASTM F436; Type 1.
   13. Welding Materials: AWS D1.1; type required for materials being welded.

B. Bolts, Nuts, and Washers for Equipment and Piping:
   1. Carbon Steel:
      a. Structural Connections: ASTM A307, Grade A.

1.9 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. Continuously seal joined members by continuous welds.
D. 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.
E. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
F. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.
G. Fabricate support framing for openings.
H. Fabrication Tolerances:
   5. Maximum Deviation from Plane: 1/16 inch in 48 inches.

1.10 FINISHES
A. Steel:
   1. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
   2. Do not prime surfaces in direct contact with concrete or where field welding is required.
   3. Prime coat except where galvanizing is specified.
   5. Galvanizing for Fasteners, Connectors, and Anchors:
      b. Mechanical Galvanizing: ASTM B695; Class 50 minimum.
   6. Sheet Steel: Galvanized with G coating class.
10. Shop Primer: SSPC Paint 15, Type 1, red oxide.
11. Touchup Primer: Match shop primer.

PART 2 EXECUTION

2.1 EXAMINATION
   A. Verify that field conditions are acceptable and are ready to receive Work.

2.2 PREPARATION
   A. Clean and strip primed steel items to bare metal and aluminum where Site welding is required.
   B. Supply steel items required to be cast into concrete or embedded in masonry with setting templates to appropriate sections.

2.3 INSTALLATION
   A. Install items plumb and level, accurately fitted, and free from distortion or defects.
   B. Install anchors and other required accessories.
   C. Make provisions for erection stresses. Install temporary bracing to maintain alignment until permanent bracing and attachments are installed.
   D. Field-weld components indicated on Drawings.
   E. Perform field welding according to AWS D1.1.
   F. Obtain approval of Architect prior to Site cutting or making adjustments not scheduled.

2.4 TOLERANCES
   A. Maximum Variation from Plumb: 1/4 inch per story or for every 12 feet in height, whichever is greater, non-cumulative.
   B. Maximum Variation from Level: 1/16 inch in 3 feet and 1/4 inch in 10 feet.
   C. Maximum Offset from Alignment: 1/4 inch.

2.5 FIELD QUALITY CONTROL
   A. Welding: Inspect welds according to AWS D1.1.
B. Replace damaged or improperly functioning hardware.

C. After erection, touch up welds, abrasions, and damaged finishes with prime paint or galvanizing repair paint to match shop finishes.

D. Touch up factory-applied finishes according to manufacturer-recommended procedures.

2.6 ADJUSTING

A. Adjust operating hardware and lubricate as necessary for smooth operation.

END OF SECTION
PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Structural wall and roof framing.
   2. Roof sheathing.
   3. Miscellaneous framing and sheathing.

SUBMITTALS

B. Product Data: Manufacturer information on insulated sheathing, wood preservative materials, and application instructions.

C. Shop Drawings for Site-Fabricated Truss Frame: Dimensions, wood species and grades, component profiles, drilled holes, fasteners, connectors, erection details, and sequence.

D. Manufacturer's Certificate: Products meet or exceed specified requirements.

1.2 QUALITY ASSURANCE

A. Perform Work according to:
   4. Wood Structural Panels: DOC PS 1 or PS 2.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Store materials according to manufacturer instructions.

B. Protection: Protect trusses from warping or other distortion by stacking in vertical position and bracing to resist movement.

PART 2 PRODUCTS

2.1 MATERIALS

A. Sheathing:
   1. Wood Structural Panel Roof Sheathing:
      a. Description: APA rated.
      b. Material: Oriented strand board (OSB).
2.2 SHEATHING AND UNDERLAYMENT LOCATIONS

A. Roof Sheathing:
   1. Thickness: As indicated on drawings.
   2. Sheet Size: 48 by 96 inches.
   4. Edges: Square.

2.3 ACCESSORIES

A. Fasteners and Anchors:
   1. Fasteners:
   2. Nails and Staples: Comply with ASTM F1667.

PART 3 EXECUTION

3.1 APPLICATION

A. Sheathing:
   1. Fasten sheathing according to applicable code.
   2. Secure roof sheathing with longer edge (strength axis) perpendicular to framing members, with ends staggered and sheet ends over bearing.
   3. Structurally Rigid Building Corners:
      a. Place wood structural panel sheeting at building corners for horizontal distance of [48] inches.

END OF SECTION
SECTION 06 1100
WOOD FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. Includes But Not Limited To:
   1. Furnish and install wood framing and blocking as described in Contract Documents.

B. Products Installed But Not Furnished Under This Section:
   1. Glue-laminated structural units.
   3. Roof related blocking, wood nailers, and curbs.
   4. Structural composite lumber.
   5. Wood panel product sheathing.
   6. Wood trusses.

C. Related Requirements:
   1. Section 06 1753: Shop fabricated wood trusses.
   2. Section 08 4113: 'Aluminum-Framed Entrances And Storefronts':

1.2 REFERENCES

A. Reference Standards:
   1. National Institute of Standards and Technology (NIST), Technology Administration, U. S. Department of Commerce:
   2. Truss Plate Institute / Wood Truss Council of America:

1.3 SUBMITTALS

A. Informational Submittals:
   1. Test And Evaluation Reports:
      a. Technical and engineering data on nails to be set by nailing guns for Architect's approval of types proposed to be used as equivalents to specified hand set nails and adjusted number and spacing of pneumatically-driven nails to provide equivalent connection capacity.
   2. Manufacturer Instructions:
a. Copies of pamphlets specified in REFERENCE Article. After Architect's examination, keep pamphlets on Project site with approved shop drawings. Pamphlets may be obtained from Truss Plate Institute, Wood Truss Council of America, or from Truss Fabricator.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Delivery And Acceptance Requirements:
1. Protect lumber and plywood and keep under cover in transit and at job site.
2. Do not deliver material unduly long before it is required.

B. Storage And Handling Requirements:
1. Store lumber and plywood on level racks and keep free of ground to avoid warping.
2. Stack to insure proper ventilation and drainage.
3. Handle and store wood trusses in accordance with ANSI / WTCA Booklet BSCL except trusses may be unloaded by dumping if trusses are shipped horizontally, are rolled off low profile roller bed trailer, and no part of any truss is required to drop more than 18 inches (450 mm).

PART 2 - PRODUCTS

2.1 MATERIALS

A. Dimension Lumber:
1. Meet requirements of PS 20 and National Grading Rules for softwood dimension lumber.
2. Bear grade stamp of WWPA, SPIB, or other association recognized by American Lumber Standards Committee identifying species of lumber by grade mark or by Certificate of Inspection.
3. Lumber 2 inches (50 mm) or less in nominal thickness shall not exceed 19 percent in moisture content at time of fabrication and installation and be stamped 'S-DRY', 'K-D', or 'MC15.'
4. Lumber shall be S4S.
5. Preservative Treated Plates / Sills:
   a. 2x4 (38 mm by 64 mm): Standard and better Douglas Fir, Southern Pine, or HemFir, or StrandGuard by iLevel by Weyerhaeuser Boise, ID www.ilevel.com. (LSL 1.3 E)
   b. 2x6 (38 mm by 140 mm) And Wider: No. 2 or or MSR 1650f - 1.5e Douglas Fir, Southern Pine, HemFir, or StrandGuard by iLevel by Weyerhaeuser, Boise, ID www.ilevel.com. (LSL 1.3 E).

B. Posts, Beams, And Timbers 5 Inches by 5 Inches (125 mm by 125 mm) And Larger:
1. No. 1 or better Douglas Fir or Southern Pine.

C. Lumber Ledgers:
1. No. 2 Douglas Fir-Larch, or Southern Pine.
D. See drawings for additional requirements.

2.2 ACCESSORIES

A. Blocking:
   1. Sound lumber without splits, warps, wane, loose knots, or knots larger than 1/2 inch (13 mm).

B. Furring Strips:
   1. Utility or better.

C. Sill Sealer:
   1. Closed-cell polyethylene foam, 1/4 inch (6 mm) thick by width of plate.

PART 3 - EXECUTION

3.1 INSTALLERS

A. Installers shall be pre-approved and included in Contract Documents by Addendum.

3.2 INSTALLATION

A. General:
   1. Use preservative treated wood for wood members in contact with concrete or masonry, including wall, sill, and ledger plates, door and window subframes and bucks, etc.

B. Interface With Other Work:
   1. Coordinate with other Sections for location of blocking required for installation of equipment and building specialties. Do not allow installation of gypsum board until required blocking is in place.
   2. Where manufactured items are to be installed in framing, provide rough openings of dimensions within tolerances required by manufacturers of such items. Confirm dimensions where not shown on Drawings.

C. Tolerances:
   1. Walls:
      a. 1/4 inch (6 mm) in 20 feet (6 meters), non-cumulative in length of wall.
      b. 1/8 inch (3 mm) in 10 feet (3 meters) with 1/4 inch (6 mm) maximum in height of wall.
      c. Distances between parallel walls shall be 1/4 inch (6 mm) maximum along length and height of wall.

D. Walls:
   1. Openings: Single, bearing stud supporting header and one adjacent (king) stud continuous between top and bottom plates, unless shown otherwise.
   2. Corners And Partition Intersections: Triple studs.
3. Top Plates In Bearing Partitions: Doubled or tripled and lapped. Stagger joints at least 48 inches (1200 mm).
4. Firestops:
   a. Horizontal or vertical concealed spaces in walls, light coves, soffits, drop ceilings, and other features over 10 feet (3000 mm) in length or height, and at stairs, ceiling levels, floor levels, and other junctures of horizontal to vertical concealed spaces.
   b. Within concealed spaces of exterior wall finishes and exterior architectural elements, such as trims, cornices or projections, at maximum intervals of 20 feet (6000 mm), length or height.
5. Sill Plates:
   a. Shear Walls And Bearing Walls:
      1) Provide specified anchor 12 inches (300 mm) maximum and 4 inches (100 mm) minimum from each end of each plate.
      2) Shear Walls: Fasten with anchor bolts embedded in concrete or with screw anchors.
      3) Bearing Walls: Fasten with anchor bolts embedded in concrete, or with screw anchors or expansion bolts in drilled holes.
   b. Non-Structural Walls: Fasten with powder actuated fasteners.
   c. In addition to requirements of paragraphs 'a' and 'b' above, set sill plates of interior walls measuring less than 36 inches (900 mm) in length in solid bed of specified construction adhesive, except where sill sealer is used.
   d. Install specified seal sealer under sill plates of exterior walls of main building and of acoustically insulated interior walls.
6. Posts And Columns:
   a. Unless shown otherwise, nail members of multiple member columns together with 16d at 6 inches (150 mm) on center from each side.
7. Beams And Girders:
   a. Built-Up Members:
      1) Stagger individual members of multiple span beams and girders so, over any one support, no more than half the members will have a joint. In all cases, however, joints shall occur over supports.
      2) Unless shown otherwise on Drawings, nail two-ply built-up members with 10d nails 12 inches (300 mm) on center top and bottom, staggered on opposite sides. Nail three-ply built-up members with 16d nails at 12 inches (300 mm) on center, top and bottom, staggered, on opposite sides. Set with crown edge up with full bearing at ends and intermediate supports.
   b. Pre-Fabricated Members:
      1) Solid glu-lam, LVL, LSL, or PSL members may be used in place of built-up 2x (38 mm) framing members. Size shall be same as built-up member.
      2) Solid LVL or PSL members may be used in place of built-up LVL members. Size shall be same as sum of built-up members.
   c. Wood shims are not acceptable under ends.
   d. Do not notch framing members unless specifically shown in Drawing detail.
8. Nailing:
   a. Stud to plate:
   
<p>| 2 by 4 inch nominal | 38 by 89 mm | End nail, two 16d OR toe nail, |</p>
<table>
<thead>
<tr>
<th>Lumber Size</th>
<th>Thickness</th>
<th>Nails</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 by 6 inch nominal</td>
<td>38 by 140 mm</td>
<td>End nail, three 16d OR toe nail, four 8d</td>
</tr>
<tr>
<td>2 by 8 inch nominal</td>
<td>38 by 184 mm</td>
<td>End nail, four 16d OR toe nail, six 8d</td>
</tr>
<tr>
<td>2 by 10 inch nominal</td>
<td>38 by 235 mm</td>
<td>End nail, five 16d OR toe nail, six 8d</td>
</tr>
<tr>
<td>1-3/4 by 5-1/2 inch LVL</td>
<td>44 by 140 mm LVL</td>
<td>End nail, three 16d OR toe nail, four 8d</td>
</tr>
<tr>
<td>1-3/4 by 7-1/4 inch LVL</td>
<td>44 by 184 mm LVL</td>
<td>End nail, four 16d OR toe nail, six 8d</td>
</tr>
<tr>
<td>1-3/4 by 9-1/4 inch LVL</td>
<td>44 by 235 mm LVL</td>
<td>End nail, five 16d OR toe nail, six 8d</td>
</tr>
<tr>
<td>1-3/4 by 11-1/4 inch LVL</td>
<td>44 by 286 mm LVL</td>
<td>End nail, six 16d OR toe nail eight 8d</td>
</tr>
</tbody>
</table>

b. Top plates: Spiked together, 16d, 16 inches (400 mm) on center.

c. Top plates: Laps, lap members 48 inches (1200 mm) minimum and nail with 16d nails 4 inches (100 mm) on center

d. Top plates: Intersections, three 16d.

e. Backing And Blocking: Three 8d, each end.

f. Corner studs and angles: 16d, 16 inches (400 mm) on center.

E. Roof And Ceiling Framing:
1. Place with crown side up at 16 inches (400 mm) on center unless noted otherwise.
2. Install structural blocking and bridging as necessary and as described in Contract Documents.
3. Special Requirements:
   a. Roof And Ceiling Joists: Lap joists 4 inches (100 mm) minimum and secure with code approved framing anchors.
   b. Roof Rafters And Outlookers:
      1) Cut level at wall plate and provide at least 2-1/2 inches (64 mm) bearing where applicable. Spike securely to plate with three 10d nails.
      2) Attach to trusses or other end supports with framing anchors described in Contract Documents.
      3) Provide for bracing at bearing partitions.
4. Installation of Wood Trusses:
   a. Handle, erect, and brace wood trusses in accordance with TPI / WTCA Booklet BCSI.
   b. Do not install damaged or broken wood trusses. Replace wood trusses that are broken, damaged, or have had members cut out during course of construction.
   c. Provide construction bracing for trusses in accordance with TPI DSB-89.
   d. Provide continuous 2x4 horizontal web bracing as shown on truss shop drawings.
      1) Secure bracing to each truss with two 10d or 16d nails.
      2) Lap splice bracing by placing bracing members side by side on common web member. Butt splices are not acceptable.
e. Unless directed or shown otherwise, provide diagonal 2x4 bracing between trusses at each line of horizontal web bracing.
   1) This diagonal bracing shall be continuous and extend from junction of web and top chord of one truss to junction of web and bottom chord of different truss.
   2) Install bracing at approximately 45 degree angle. Bracing will extend over three trusses minimum or more as determined by height of trusses and 45 degree installation angle.
   3) Install brace on side of web opposite horizontal web bracing and nail to each web with two 10d or 16d nails.
   4) Install one brace every 20 feet as measured from top of brace to top of next brace.

5. Installation of Glue-Laminated Structural Units:
   a. Install work in accordance with Fabricators instructions and Glue-Lam Erection Safety Practices.
   b. Adequately support and brace work until tied into building structure to insure against collapse due to wind or other forces.
   c. Maintain protection of beams until roofing has been installed.

6. Installation of Structural Composite Lumber:
   a. Install temporary horizontal and cross bracing to hold members plumb and in safe condition until permanent bracing is installed.
   b. Install permanent bracing and related components before application of loads to members.

7. Installation of wood Web Joists:
   a. Handle, erect, and brace plywood web joists in accordance with Manufacturer's instructions.
   b. Do not install damaged or broken wood web joists.
   c. Install temporary horizontal and cross bracing to hold members plumb and in safe condition until permanent bracing is installed.
   d. Cut holes through webs at locations or of sizes shown on Drawings and as recommended by Manufacturer.

F. Accessory / Equipment Mounting And Gypsum Board Back Blocking (nailers):
   1. Furnish and install blocking in wood framing required for hardware, specialties, equipment, accessories, and mechanical and electrical items, etc.
   2. Furnish and install back blocking in wood framing required for joints in gypsum wallboard.
      a. Install back blocking between I-joist framing members with equivalent of Simpson Z2 clips attached with four 10d x 1-1/2 inches (38 mm) nails at each end, two into 'I' joist and two into blocking.
      b. Attach back blocking at trusses, stick framing, or walls with two 10d nails in each end of each piece of blocking.

G. Accessory / Equipment Mounting And Standing & Running Trim Blocking (nailers):
   1. Furnish and install blocking in wood framing required for hardware, specialties, equipment, accessories, and mechanical and electrical items, etc.
   2. Attach blocking not installed with clips with two fasteners in each end of each piece of blocking.
H. Furring Strips
   1. On Wood or Steel: Nail or screw as required to secure firmly.

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

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Shop-fabricated wood trusses for:
      a. Roof framing.
      b. Bridging, bracing, and anchorage.
   2. Preservative treatment of wood.

1.2 SUBMITTALS

A. Product Data: Submit truss plate connections, bearing plates, anchor connections, wind uplift connections, and bridging and bracing.

B. Shop Drawings: Indicate truss sizes, dimensions, spacing of trusses, associated components, uplift connectors, web and chord sizes, plate sizes, fastener descriptions and spacings, loads and truss cambers, and framed openings.

C. Design Calculations: Indicate design loads, truss reactions, and member forces, deflections, and stresses.

D. Manufacturer’s/Fabricator’s Certificate: Certify that products meet or exceed specified requirements.

E. Delegated Design Submittals: Submit signed and sealed Shop Drawings with design calculations and assumptions for sizes, dimensions, spacing of trusses, associated components, uplift connectors, web and chord sizes, plate sizes, fastener descriptions and spacings, design loads, truss cambers, and framed openings.

F. Qualifications Statements:
   1. Submit qualifications for manufacturer/fabricator, erector, and licensed professional.
   2. Submit manufacturer's/fabricator's approval of erector.

1.3 QUALITY ASSURANCE

A. Perform Work as follows:
   1. Lumber Grading: Certified by DOC PS 20.
   2. Plywood Grading Agency: Certified by APA/EWA.
   3. Lumber: Comply with DOC PS 20.
   4. Wood Structural Panels: DOC PS 1 or DOC PS 2.

C. Apply label from agency approved by authority having jurisdiction to identify each preservative-treated and fire-retardant-treated material.

D. Perform Work according to applicable standards.

E. Manufacturer/Fabricator: Company specializing in manufacturing products specified in this Section with three years’ experience.

F. Erector: Company specializing in performing Work of this Section with three years’ experience.


1.4 DELIVERY, STORAGE, AND HANDLING

A. Storage:
   1. Do not lay trusses flat.
   2. Store truss depth in vertical position resting on intermittent bearing pads.

1.5 EXISTING CONDITIONS

A. Field Measurements:
   1. Verify field measurements prior to fabrication.
   2. Indicate field measurements on Shop Drawings.

PART 2 PRODUCTS

2.1 PERFORMANCE AND DESIGN CRITERIA

A. Design Loads: As indicated on Drawings.

B. Maximum Deflection: As indicated on Drawings.

2.2 MATERIALS

A. Lumber Grading Rules: Comply with WWPA G-5.

B. Wood Members:
   1. Top Chord:
      b. Grade: #2.
      c. Size Classification: 2" & Wider.
   2. Bottom Chord:
b. Grade: #2.
c. Size Classification: 2" & Wider.
3. Webs:
   a. Species: as recommended by truss manufacturer/fabricator.
   b. Grade: as recommended by truss manufacturer/fabricator.
   c. Size Classification: 2" & Wider.
4. Moisture Content:
   a. Maximum: 19 percent.
   b. Minimum: 7 percent.

C. Steel Plate Connectors:
   1. Comply with TPI 1, Section 6.
   2. Die stamped with integral teeth.

D. Truss Bridging: Type, size, and spacing as recommended by truss manufacturer/fabricator.

2.3 FABRICATION

A. Fabricate trusses to achieve specified structural requirements.
B. Fabricate bottom and top chord extensions as indicated.
C. Frame special sized openings in web framing as indicated.

2.4 ACCESSORIES

A. Fasteners and Anchors:
   1. Material:
      a. High Humidity and Treated Wood Locations: ASTM A153, hot
dipped galvanized steel.
   2. Nails and Staples: Comply with ASTM F1667.
   3. Anchors Type: As indicated on Drawings.

B. Bearing Plates:
   1. Material: as recommended by truss manufacturer/fabricator.

2.5 SOURCE QUALITY CONTROL

A. Inspection: Inspect Work performed at manufacturer’s/fabricator’s facility to verify conformance to Contract Documents.

B. Certificate of Compliance:
   1. If manufacturer/fabricator is approved by authorities having jurisdiction, submit certificate of compliance indicating Work
performed at manufacturer's/fabricator's facility conforms to Contract Documents.

2. Specified shop tests are not required for Work performed by approved manufacturer/fabricator.

PART 3 EXECUTION

3.1 EXAMINATION

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

3.2 PREPARATION

A. Coordinate placement of bearing and support items.

3.3 ERECTION

A. Make provisions for erection loads and sufficient temporary bracing to maintain plumb and aligned structure until completion of erection and installation of permanent bracing.

B. Do not field cut or alter structural members without approval of Engineer.

C. Frame openings between trusses with lumber as specified in Section 06 10 00 - Rough Carpentry.

D. After erection, touch up damaged surfaces with primer consistent with shop coat.

3.4 TOLERANCES

A. Maximum Variation from Indicated Position:

1. Framing Members: 1/4 inch.

END OF SECTION
SECTION 06 40 00
ARCHITECTURAL WOODWORK

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Custom casework.
   2. Counter tops and Backsplashes.
      a. Solid Surface.
   3. Cabinet hardware.

1.2 REFERENCE STANDARDS

A. American National Standards Institute (ANSI):
   1. ANSI A135.4 – Basic Hardboard Standard.
   2. ANSI A208.1 – Particle Board.
   3. ANSI A208.2 – Medium Density Fiberboard.

B. American Society of Civil Engineers (ASCE):

C. ASTM International (ASTM):

D. Architectural Woodwork Standards (AWS):
   1. AWS Section 5 – Finishing.
   2. AWS Section 6 – Millwork.
   3. AWS Section 7 – Stairwork and Rails.
   4. AWS Section 10 – Casework.
   5. AWS Section 11 – Countertops.

E. Builders Hardware Manufacturers Association (BHMA):
   1. BHMA A156.9 – Cabinet Hardware.

F. Hardwood Plywood and Veneer Association (HPVA):
   1. HPVA HP-1 – American National Standard for Hardwood and Decorative Plywood.
G. National Electrical Manufacturers Association (NEMA):
   1. NEMA LD 3 – High-Pressure Decorative Laminates.

H. National Institute of Standards and Technology (NIST):

I. The Engineered Wood Association, formerly American Plywood Association (APA/EWA):
   1. PS 1 – Structural Plywood.

1.3 SUBMITTALS

A. Delegated Design Submittals: Required.

B. Source Quality-Control Submittals: Not required.

C. Field Quality-Control Submittals: Required.

1.4 MOCKUPS

PART 2 PRODUCTS

2.1 CUSTOM CASEWORK

A. Plastic-Laminate-Finished Custom Casework:
   1. **Frameless** construction.
   2. AWS Section 10
   3. Premium grade.
   4. Exterior and Interior Exposed Surfaces: High-pressure decorative laminate over particleboard.
   5. Semi-Exposed Surfaces: High-pressure decorative laminate over particleboard.

B. Casework Construction Details:
   1. Drawer Side Joinery: Multiple dovetailed.
   2. Drawer and Door Edge: Plastic Laminate.
   3. Toe Base Finish: Rubber Base.

C. Solid Surface Tops, Backsplashes and Window Stools:
   1. Architect shall select color from manufacturer’s full color range including stone look series.

2.2 CASEWORK MATERIALS

A. Softwood Lumber: [DOC PS 20;] [Douglas fir] [ponderosa pine] [sugar
B. Decorative Overlay Plywood: APA/EWA PS 1 and HPVA HP-1; particleboard.

2.3 FABRICATION

A. Fabricate interior finish carpentry to AWS Section 6 premium grade.
B. Fabricate casework to AWS Section 10 premium grade.
C. Fabricate solid surface counter tops to AWS Section 11 premium grade.
D. Shop-assemble casework for delivery to Site in units easily handled and to permit passage through building openings.
E. Cap exposed high-pressure decorative laminate finish edges with material of same finish and pattern.
F. Door and Drawer Fronts: 3/4 inch thick plywood with plastic laminate.
G. Apply high-pressure decorative laminate finish in full, uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners.
H. Apply wood laminate by grain matching adjacent sheets to book.
I. Apply laminate backing sheet to reverse side of plastic laminate-finished surfaces where required by AWS for specified grade.
J. Fabricate cabinets and counter tops with cutouts for plumbing fixtures inserts appliances outlet boxes fixtures and fittings. Verify locations of cutouts from on-Site dimensions. Prime paint and seal cut edges.

2.4 ACCESSORIES

A. Grommets: Plastic material for cutouts.
B. Hardware: European.
C. Shelf Rests: In-line bored holes top and bottom of opening with four support pins for each shelf.
D. Drawer and Door Pulls:
   1. Extruded aluminum 4” pull, full width of drawer, satin finish.
E. Catches: Magnetic

PART 3 EXECUTION
3.1 INSTALLATION

A. Install interior finish carpentry according to AWS Section 6 premium grade.

B. Install counter tops according to AWS Section 11 premium grade.

C. Set and secure casework, interior finish carpentry, and counter tops in place; rigid, plumb, and level.

D. Use fixture attachments in concealed locations for wall-mounted components.

E. Use concealed joint fasteners to align and secure adjoining cabinet units, counter tops, and woodwork.

F. Secure woodwork cabinet and counter bases to floor using appropriate angles and anchorages.

END OF SECTION
SECTION 07 11 13
BITUMINOUS DAMPPROOFING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Cold applied, emulsified-asphalt dampproofing.

1.2 REFERENCE STANDARDS

A. ASTM International (ASTM):

1.3 AMBIENT CONDITIONS

A. Do not apply dampproofing when air and surface temperatures are below 35 degrees F.
B. Do not apply to frozen concrete.
C. Do not apply when rain is imminent.

PART 2 PRODUCTS

2.1 DAMPPROOFING

A. Manufacturers: Subject to compliance with requirements. Manufacturers offering products that may be incorporated into Work include, but are not limited to:
   1. ChemMasters Corp.
   2. Degussa Building Systems; Sonneborn Brand Products.
   3. Gardner Gibson, Inc.
   6. Koppers Inc.
   7. Malarkey Roofing Products.

B. Emulsified Asphalt: ASTM D1227, Type III, Class 1, zero VOC content.

2.2 MISCELLANEOUS MATERIALS

A. Emulsified-Asphalt Primer: ASTM D1227, Type III, Class 1, except diluted with water as recommended by manufacturer.
PART 3 EXECUTION

3.1 PREPARATION

A. Clean substrates of projections and substances detrimental to work, fill voids, seal joints, and apply bond breakers if any, as recommended by material manufacturer.

B. Ventilation: Provide adequate ventilation during application of dampproofing in enclosed spaces. Maintain ventilation until dampproofing has cured.

3.2 APPLICATION

A. Comply with manufacturer’s written recommendations unless more stringent requirements are indicated or required by Project conditions to ensure satisfactory performance of dampproofing and protection course.

B. Apply dampproofing to footings and foundation walls where opposite side of wall faces building interior. Apply from finished grade line to top of footing, extend over top of footing, and down minimum of 6 inches over outside face of footing.

C. On concrete foundations apply dampproofing using one of following methods:
   1. Apply 2 brush or spray coats at not less than 1.5 gallon per 100 square foot for first coat and 1 gallon per 100 square foot for second coat.
   2. Apply 1 fibered brush or spray coat at not less than 3 gallons per 100 square foot.
   3. Apply 1 trowel coat at not less than 4 gallons per 100 square foot.

D. Backfill using care and caution to avoid damage to waterproofing system.

3.3 CLEANING

A. Remove dampproofing that is visible on foundation walls after final backfilling. Do not dampproof above final grade.

3.4 PROTECTION

A. Protect waterproofing system from damage. Make repairs as necessary and in accordance with manufacturer’s recommendations.

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. Includes But Not Limited To:
   1. Furnish and install roofing system as described in Contract Documents.

B. Products Installed But Not Furnished Under This Section:
   1. Roof flashing.

1.2 REFERENCES

A. Reference Standards:
   1. ASTM International:
      b. ASTM D412 - 06ae2, 'Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension.'
      d. ASTM D3018/D3018M-09, 'Standard Specification for Class A Asphalt Shingles Surfaced with Mineral Granules.'
      e. ASTM D3462/D3462M-09a, 'Standard Specification for Asphalt Shingles Made from Glass Felt and Surfaced with Mineral Granules.'
      f. ASTM D4869-05e1, 'Standard Specification for Asphalt-Saturated Organic Felt Underlayment Used in Steep Slope Roofing.'
   2. International Code Council (ICC):
      a. ICC / ESR-1322 (Issued August 1, 2008), 'Weather Watch, Leak Barrier and Stormguard Leak Barrier.'
      b. ICC / ESR-1492 (Reissued June 1, 2008), 'Certainteed Winterguard Series Roof Underlayment: Winterguard Granular, Winterguard HT and Winterguard Sand.'
   3. United Laboratories:
      a. UL 790, 'Standard Test Methods for Fire Tests of Roof Coverings.'

1.3 SUBMITTALS

A. Action Submittals:
   1. Product Data:
      a. Color and style selection.
2. Samples:
   a. Full size shingle.

B. Informational Submittals:
   1. Manufacturer Instructions:
      a. Manufacturer's installation instructions and details for installation of secondary underlayment at penetrations, dormers, eaves, rakes, etc, to fit environmental conditions at Project.

C. Closeout Submittals:
   1. Include following in Operations And Maintenance Manual
      a. Warranty Documentation:
         1) Include copy of final, executed warranties.
      b. Record Documentation:
         1) Manufacturers Documentation:
            a) Manufacturer’s literature.
            b) Color selections.
         2) Roofing Inspection Documentation:
            a) Include copy of roof inspection report.

D. Maintenance Material Submittals:
   1. Extra Stock Materials:
      a. Provide one square minimum of bundled shingles.

1.4 QUALITY ASSURANCE

A. Regulatory Agency Sustainability Approvals:
   1. Shingles:
      1) CertainTeed:
         a) Standard: Landmark Plus: NOA No.: 06-0914.05, Expiration Date: 02/28/12.
         b) Hip And Ridge Shingles: Shadow Ridge. NOA No.: 07 0907.09, Expiration Date:11/15/12.
      2) GAF-Elk:
         a) Standard: Timberline Prestique 40: NOA No.: 09-0922.12, Expiration Date:04/22/13.
         b) Hip And Ridge Shingles: TimberTex: NOA No.: 09-0604.15, Expiration Date:09/07/11.
   2. Underlayments:
      1) CertainTeed:
         a) WinterGuard HT, WinterGuard Granular, and WinterGuard Sand: NOA No.: 08-0807.18, Expiration Date 11/24/14.
      2) GAF-Elk:
         a) Weatherwatch and StormGuard: NOA No.: 07-1010.19, Expiration Date: 07/05/12.
      3) CertainTeed:
      4) GAF-Elk:
         a) Weatherwatch and StormGuard Underlayments: Approval #
1.5 FIELD CONDITIONS

A. Ambient Conditions:
   1. Do not install shingles at lower temperatures than allowed by Manufacturer for application.

1.6 WARRANTY

A. Warranty:
   1. Shingle Manufacturer’s special 20-year minimum labor and material warranty and 10 year history on product manufacturing.
      a. Roofing system will resist blow-offs in winds up to 110 mph for 5 years when installed as specified below.
      b. Contractor minimum workmanship warranty 5 years.
      c. Contractor must have 5 years experience as a roofer.
      d. Contractor must have 5 years experience with specified product.
      e. Contractor must be a manufacture certified installer of this roofing system.
      f. Contractor must document continuing education for the foreman that will daily oversee the work. (A minimum of 12 hours per year)
      g. Superintendent and foreman must be able to clearly communicate with building owner and architect.
      h. Contractor must provide a 24 hour phone number to project manager.
      i. Contractor must be licensed in Arizona and carry Liability Insurance as required by Utah State Law.

PART 2 - PRODUCTS

2.1 SYSTEM

A. Components:
   1. Shingles And Underlayment:
      a. Fiberglass mat shingles meeting or exceeding requirements of ASTM D3018/D3018M, Type I and UL Class A.
         1) Color as selected by Architect from Manufacturer’s full color line.
      b. Products And Manufacturers.
         1) CertainTeed Roofing Products, Valley Forge, PA.
            a) Shingles:
         2) GAF Materials Corp, Wayne, NJ.
            a) Shingles:
               (1) Standard: Timberline Prestique 40.
               (2) Underlayment Under Shingles:

2.2 ACCESSORIES

A. Fasteners:
   1. Underlayment:
      a. Corrosion resistant roofing nails with one inch (25 mm) diameter head and 3/4 inch (19 mm) long shank minimum.
         1) If shingles applied as underlayment is laid, use metal or plastic head Simplex nails or one inch (25 mm) long shingle roofing nails.
         2) If shingles not applied as underlayment is laid, use plastic head only.
   2. Shingles:
      a. Eleven gauge hot-dipped galvanized roofing nails with 3/8 inch (9.5 mm) nominal diameter head and of sufficient length to penetrate through roof sheathing 1/4 inch (6 mm) or 3/4 inch (19 mm) minimum into solid wood decking.
      b. Coil type non-corrosive gun-driven nails of same size as hand-driven nails are acceptable.
      c. Staples not permitted.

B. Elastomeric Roofing Sealant: Any manufacturer's product meeting requirements of ASTM D412 and acceptable to Shingle Manufacturer.
   1. Flexseal Commercial Grade Roofing Sealant by GAF.
   2. Flintbond SBS Modified Bitumen Caulk by CertainTeed.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification Of Conditions:
   1. Examine deck to determine if it is satisfactory for installation of roofing system. Conditions include, but are not limited to, moisture on deck, protruding deck fasteners, specified gaps between sheathing, and other items affecting issuance of roofing warranty.
   2. Report unsatisfactory conditions in writing to Architect.

3.2 PREPARATION

A. Protection Of In-Place Conditions:
   1. Install only as much roofing as can be made weathertight each day, including flashing and detailwork.

B. Surface Preparation:
   1. Clean roof sheathing, including removal of dirt and debris, before installation of underlayment.
3.3 INSTALLATION

A. General:
   1. Schedule and execute work without exposing interior building areas to effects of inclement weather. Protect existing building and its contents against all risks.

B. Underlayment:
   1. General:
      a. Do not use permanent underlayment installation as temporary roof. If temporary roof is used, remove completely before installation of permanent underlayment.
      b. Follow Roofing Manufacturer's recommendations for installation of primary and secondary underlayment, particularly at eaves, rakes, and penetrations, unless specified installation procedures and Drawing details are more stringent.
      c. Weather conditions:
         1) Do not leave underlayment exposed to weather more than 14 days after beginning of underlayment installation.
         2) If underlayment is exposed for more than 14 days after beginning of underlayment installation, treat as temporary roof under first paragraph above.
         3) If moisture is deposited on exposed underlayment, obtain written approval from Manufacturer's Representative before installing shingles.
      d. Install valley underlayment, and valley metal. Refer to valley details.
   2. Secondary:
      a. Under Shingles:
         1) Lap end joints 6 inches (150 mm) and side joints 3 inch (76 mm) minimum.
         2) Apply continuous 12 inches (300 mm) wide strip at edge of eaves and rakes before installing drip edge.
         3) Apply two 36 inch (900 mm) wide courses along eaves and rakes with first course overlapping drip edge and 12 inches (300 mm) wide previously applied strip.
   3. Valleys:
      a. Refer to valley details.
      b. Install 12 inches (300 mm) wide strips of secondary underlayment lapping nailed edge of formed valley metal 3 inches (75 mm).
   4. Primary:
      a. Apply 36 inch (900 mm) wide courses over complete deck, including areas covered with secondary underlayment unless specified otherwise.
         1) Maintain end laps of 8 inches (200 mm) and side laps of 19 inches (480 mm).
         2) Stop primary underlayment between 3 and 6 inches (75 and 150 mm) of inside edge of strip of secondary underlayment installed over edge of formed valley metal.
      b. Nailing:
         1) Secure primary underlayment to deck with roofing nails one inch (25
3.4 INSTALLATION

A. Shingles (Standard Shingle Installation):
   1. Before installing shingles, inspect underlayment and metal installation with Architect and Owner. Correct improperly installed and damaged material before beginning shingle installation.
   2. Starter shingles:
      a. Cut starter strip shingles on slotted end to 9 inch (230 mm) width.
      b. Nail to eave granule side up in continuous mastic bed with slot end down-slope and edge overhanging eave 3/8 inch (9 mm) so sealing tabs are at edge of eave.
      c. Install shingles with maximum exposure recommended by Manufacturer.
      d. Lay first course directly over starter strip with ends flush with starter strip at eaves and sojoints in starter strip are offset 4 inches (100 mm) minimum from joints in first course.
   3. Insure alignment by snapping chalk line at least each fifth course to control horizontal alignment.
   4. Lay shingles so end joints are offset in accordance with Manufacturer’s installation procedures.
   5. Nailing:
      a. Manufacturer’s recommender number of nails in each shingle.
      b. Place in relation to top edge of shingle as required by Shingle Manufacturer.
      c. Place nails one inch (25 mm) from each end of shingle and remainder evenly spaced between.
      d. Should any nail fail to penetrate sheathing by 1/4 inch (6 mm) minimum, drive additional nail nearby.
      e. Adjust nail gun pressure for nailing flush and tight to deck without cutting shingle surface.
      f. Drive nails perpendicular to shingle surface so nail head is flat against shingle.
      g. If ambient temperature or exposure to sun will not be sufficient to secure adhesive strip to underlying shingle within one week, hand seal shingles with elastomeric roofing sealant.
   6. Over valley metal:
      a. Do not drive nails through valley metal.
      b. Run chalk line so valley metal will be exposed 6 inches (150 mm) wide at top and diverge 3/32 inch (2.5 mm) per ft (300 mm) down to eaves.
      c. Neatly trim shingles to this line.
      d. Seal trimmed shingle edges to valley metal with continuous bead of elastomeric roofing sealant applied within one inch (25 mm) of shingle edge.
   7. Hip and ridge shingles:
      a. Install specified ridge vent style shingles in accordance with Shingle Manufacturer’s instructions.
      b. Run ridge shingles as directed by Architect.
   8. Vent pipe sleeve flange:

mm) if from edge and 18 inches (450 mm) on center.
2) Do not nail through metal flashing, except drip edge, when installing primary underlayment.
3) Nails must be driven properly. Improperly driven fasteners such as over-driving, under-driving and nails driven at an angle are not permitted.
a. Vent pipe sleeve flange minimum width 6 inches (150 mm).
b. Fit shingles under lower edge and over sides and upper edge.
c. Set vent pipe flange in elastomeric roofing sealant.
d. Embed shingles in elastomeric roofing sealant where they overlap flange.
e. Apply bead of elastomeric roofing sealant at junction of vent pipe and vent flashing.

9. Run courses true to line with end joints properly placed. Leave shingles flat without wave and properly placed.

3.5 CLEANING

A. General:
   1. All tools and unused materials must be collected at end of each workday and stored properly off finished roof surface and protected from exposure to elements.
   2. Leave metals clean and free of defects, stains, and damaged finish.
      a. Replace fascia metal that is scratched through finish to base metal.
   3. Properly clean finished roof surface after completion.
   4. Clean shingles and building of soiling caused by this installation.
   5. Clean and restore all damaged surfaces to their original condition.

B. Waste Management:
   1. Disposal:
      a. All work areas are to be kept clean, clear and free of debris at all times.
      b. Do not allow trash, waste, or debris to collect on roof. These items shall be removed from roof on a daily basis.
      c. Remove debris resulting from work of this Section from roof and site. Dispose of or recycle all trash and excess material in manner conforming to current EPA regulations and local laws.

   END OF SECTION
SECTION 07 9213
ELASTOMERIC JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. Includes But Not Limited To:
   1. Furnish and install sealants not specified to be furnished and installed under other Sections.
   2. Quality of sealants to be used on Project not specified elsewhere, including submittal, material, and installation requirements.

B. Related Requirements:
   1. Furnishing and installing of sealants is specified in Sections specifying work to receive new sealants.
   2. Section 07: Sealants for 3/8" stucco..

C. Products Furnished But not Installed Under This Section:
   1. Interior Ceramic Tile Joint Sealants:

D. Related Requirements:
   1. Section 09 3013: 'Ceramic Tiling'.

1.2 REFERENCES

A. Association Publications:
   1. American Architectural Manufacturers Association (AAMA):
      a. 'Voluntary Specifications and Test Methods for Sealants'.
   2. ASM International:
      b. Committee C24 on Building Seals and Sealants for various Specifications, Guides, Test Methods, and Practices related to sealant specifying and application.
      c. Committee E6 on Building Performance for various Specifications, Guides, Test Methods, and Practices related to sealant use with air barriers, vapor retarders, and exterior enclosure systems and materials.
      a. 'Sealants: The Professional's Guide'.
      b. 'Joint Sealants, Whole Building Design Guide'.

B. Definitions:
1. Adhere: To cause two surfaces to be held together by adhesion.
2. Adhesive: An adhesive, as defined by The American Society for Testing and Materials (ASTM), is 'a substance capable of holding materials together by surface attachment'.
3. Caulk: Caulks have variety of definitions but are generally recognized as materials used in applications where only minor elastomeric properties are needed.
4. Elastomer: Rubbery material which returns to approximately its original dimensions in short time after relatively large amount of deformation.
5. Flow: Movement of adhesive during bonding process before adhesive is set.
6. Joint: Location at which two substrates are held together with layer of adhesive.
7. Primer: Coating applied to surface, prior to application of an adhesive, to improve performance of the bond.
8. Sealant. Sealants are generally used in applications where elastic properties are needed while adhesives are generally used in applications where bonding strength and rigidity are needed. With technology advancements both sealants and adhesives can be used interchangeably depending on applications performance requirements.
9. Sealant Types and Classifications:
   a. ASTM Specifications:
      1) Type:
         a) Type S: Single-component sealant.
         b) Type M: Multi-component sealant.
      2) Grade:
         a) Grade P: Pourable or self-leveling sealant used for horizontal traffic joints.
         b) Grade NS: Non-sag or gunnable sealant used for vertical and non-traffic joints.
      3) Classes: Represent movement capability in percent of joint width.
         a) Class 100/50: Sealant that, when tested for adhesion or cohesion under cyclic movement shall withstand of at least 100 percent increase and decrease of at least 50 percent of joint width as measured at time of application.
         b) Class 50: Sealant that, when tested for adhesion or cohesion under cyclic movement shall withstand increase and decrease of at least 50 percent of joint width as measured at time of application.
         c) Class 25: Sealant that, when tested for adhesion or cohesion under cyclic movement shall withstand increase and decrease of at least 25 percent of joint width as measured at time of application.
         d) Class 12: Sealant that, when tested for adhesion and cohesion under cyclic movement shall withstand increase and decrease of at least 12 percent of joint width as measured at time of application.
      4) Use:
         a) T (Traffic): Sealant designed for use in joints in pedestrian and vehicular traffic areas such as walkways, plazas, decks and parking garages.
         b) NT (Non-Traffic): Sealant designed for use in joints in non-traffic areas.
c) I (Immersion): Sealant that meets bond requirements when tested by immersion (Immersion rated sealant applications require primer).

d) M (Mortar): Sealant that meets bond requirements when tested on mortar specimens.

e) G (Glass): Sealant that meets bond requirements when tested on glass specimens.

f) A (Aluminum): Sealant that meets bond requirements when tested on aluminum specimens.

g) O (Other): Sealant that meets bond requirements when tested on substrates other than standard substrates, being glass, aluminum, mortar.

b. Federal Specifications:

1) Type:
   a) Type I: Self-leveling, pour grade.
      (1) Compound which has sufficient flow to give smooth level surface when applied in horizontal joint at 40 deg F (4.4 deg C).
   b) Type II: Non-sag, gun grade
      (1) Compound which permits application in joints on vertical surfaces without sagging (slumping) at temperatures 40 deg F (4.4 deg C) and 122 deg. F (50 deg. C).
   c) Type NS: Non-sag, gun grade.
      (1) Non-sag shall be a compound which permits application in joints on vertical surfaces without sagging (slumping) at temperatures between -20 deg F and 122 deg. F (-29 and 50 deg. C).

2) Class:
   a) Class A: Compounds resistant to 50 percent total joint movement (includes Type I and Type II).
      (1) Capable of resisting compression-extension cycling of plus and minus 25 percent of nominal half inch width.
   b) Class B: Compounds resistant to 25 percent total joint movement (includes Type I and Type II).
      (1) Capable of resisting compression-extension cycling of plus and minus12 1/2 percent of nominal half inch width.

10. Shelf Life: Period of time, usually beginning with date of manufacture, during which stored adhesive will remain effective or useful.

11. Silicone: Any member of family of polymeric products whose molecular backbone is made up of alternating silicon and oxygen atoms and which has pendant hydrocarbon groups attached to silicon atoms. Used primarily as a sealant. Offers excellent resistance to water and large variations in temperature (minus 100 deg F to + 600 deg F) (minus 73.3 deg C to + 316 deg C).

12. Stability: Ability of material to remain unchanged.

13. Storage Life: Period of time during which packaged adhesive can be stored under specified temperature conditions and remain suitable for use.

14. Substrate: Material upon surface of which an adhesive-containing substance is spread for any purpose, such as bonding or coating.

15. Surface Preparation: Physical and/or chemical preparation of substrate to render it suitable for adhesive joining. Same as substrate preparation or pre-bond preparation.
16. Toxicity: Material shall have no adverse effect on health of personnel when used for its intended purpose.

C. Reference Standards:

1. ASTM International:
   b. ASTM C661-06(2011), 'Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer'.
   e. ASTM C794-10, 'Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants'.
   g. ASTM C1135-00(2011), 'Standard Test Method for Determining Tensile Adhesion Properties of Structural Sealants'.
   h. ASTM C1184-05, 'Standard Specification for Structural Silicone Sealants'.
   i. ASTM C1193-09, 'Standard Guide for Use of Joint Sealants'.
   j. ASTM C1248-08, 'Standard Test Method for Staining of Porous Substrate by Joint Sealants'.
   m. ASTM D412-06ae2, 'Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers - Tension'.
   n. ASTM D2202-00(2010), 'Standard Test Method for Slump of Sealants'.
   o. ASTM D2240-05(2010), 'Standard Test Method for Rubber Property-Durometer Hardness'.

2. Federal Specifications:
   b. TT-S-00230C (CON-NBS), 'Sealing compound: Elastomeric Type, Single Component (For Calking, Sealing, And Glazing In Buildings And Other Structures,' (2 Feb 1970).

3. Government Services Administration (GSA), Commercial Item Descriptions (CID):
   b. GSA CID A-A-1556, ‘Sealing Compound Elastomeric Type, Single Component (For

1.3 ADMINISTRATIVE REQUIREMENTS

A. Scheduling:
1. Schedule work so waterproofing, water repellents and preservative finishes are installed after sealants, unless sealant manufacturer approves otherwise in writing.
2. Ensure sealants are cured before covering with other materials.

1.4 QUALITY ASSURANCE

A. Qualifications:
   1. Manufacturer: Company specializing in manufacturing products specified in this section with minimum ten (10) years documented experience.
   2. Applicator Qualifications:
      a. Company specializing in performing work of this section.
      b. Provide if requested, reference of projects with minimum three (3) years documented experience, minimum three (3) successfully completed projects of similar scope and complexity, and approved by manufacturer.
      c. Designate one (1) individual as project foreman who shall be on site at all times during installation.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Delivery and Acceptance Requirements:
   1. Deliver and keep in original containers until ready for use.
   2. Inspect for damage or deteriorated materials.

B. Storage and Handling Requirements:
   1. Handle, store, and apply materials in compliance with applicable regulations and material safety data sheets (MSDS).
   2. Handle to prevent inclusion of foreign matter, damage by water, or breakage.
   3. Store in a cool dry location, but never under 40 deg F (4 deg C) or subjected to sustained temperatures exceeding 90 deg F (32 deg C) or as per Manufacturer's written recommendations.
   4. Do use sealants that have exceeded shelf life of product.

1.6 FIELD CONDITIONS

A. Ambient Conditions:
   1. Do not install sealant during inclement weather or when such conditions are expected. Allow wet surfaces to dry.
   2. Follow Manufacturer’s temperature recommendations for installing sealants.

1.7 WARRANTY

A. Manufacturer Warranty:
   1. Signed warranties against adhesive and cohesive failure of sealant and against infiltration of water and air through sealed joint for period of three (3) years from date of Substantial Completion.
a. Manufacturer's standard warranty covering sealant materials.
b. Applicator's standard warranty covering workmanship.

PART 2 - PRODUCTS

2.1 SYSTEMS

A. Manufacturers:
   1. Manufacturer Contact List:
      c. GE Sealants & Adhesives (see Momentive Performance Materials Inc.).
      h. Tremco, Beachwood, OH  www.tremcosealants.com or Tremco Ltd, Toronto, ON  (800) 363-3213.

B. Materials:
   1. Design Criteria:
      a. Compliance: Meet or exceed requirements of these standards:
         1) ASTM C920: Elastomeric joint sealant performance standard.
         2) ASTM C639 or ASTM D2202: Flow (sag or slump).
         3) ASTM C661 or ASTM D2240: Durometer hardness (shore A).
         4) ASTM C679 or ASTM C794: Tack free time.
         5) ASTM C719: Joint movement capability.
         6) ASTM C1135 or ASTM D412: Tensile adhesion strength.
         7) ASTM C1184: Structural silicone sealants.
         8) ASTM C1248: Staining.
         9) Federal Specification TT-S-001543A.
        10) Federal Specification TT-S-00230C.
        11) GSA CID A-A-272A.
      b. Comply with Manufacturer's ambient condition requirements.
      c. Sealants must meet Manufacturer's shelf-life requirements.
      d. Sealants must adhere to and be compatible with specified substrates.
      e. Sealants shall be stable when exposed to UV, joint movements, and particular environment prevailing at project location.
      f. Primers (Concrete, stone, masonry, and other nonporous surfaces typically do not require a primer. Aluminum and other nonporous surfaces except glass require use of a primer. Installer Option to use Adhesion Test to determine if primer is required or use primer called out in related sections):
         1) Adhesion Test:
a) Apply silicone sealant to small area and perform adhesion test to determine if primer is required to achieve adequate adhesion. If necessary, apply primer at rate and in accordance with Manufacturer’s instructions. See ‘Field Quality Control’ in Part 3 of this specification for Adhesive Test.

2) If Primer required, shall not stain and shall be compatible with substrates.

3) Allow primer to dry before applying sealant.

2. Sealants At Exterior Building Elements:
   a. Description:
      1) Weathersealing expansion, contraction, perimeter, and other movement joints which may include all or part of the following for project:
         a) Aluminum entrance perimeters and thresholds.
         b) Columns.
         c) Connections.
         d) Curtainwalls.
         e) Door frames.
         f) EIFS to metal joints.
         g) Joints and cracks around windows.
         h) Louvers.
         i) Masonry.
         j) Parapet caps.
         k) Wall penetrations.
         l) Other joints necessary to seal off building from outside air and moisture.

   b. Design Criteria:
      1) Meet following standards for Sealant:
         a) ASTM C920: Type S Grade NS, Class 50 Use A, G, M.

c. Approved Products:
   1) Dow Corning:
      a) Primer: 1200 Prime Coat.
      b) Sealant: 791 Silicone Weatherproofing Sealant.

   2) GE Sealants & Adhesives:
      a) Primer: SS4044 Primer.
      b) Sealant: Silpruf SCS 2000 Silicone Sealant.

   3) Tremco:
      a) Primer:
         (1) Metal surface: No. 20 primer.
         (2) Porous surfaces: No. 23 primer.
      b) Sealant: Spectrum 1 Silicone Sealant.

3. Sealants At Exterior Sheet Metal And Miscellaneous:
   a. Description:
      1) Weathersealing expansion, contraction, perimeter, and other movement joints which may include all or part of the following for project:
         a) Flashings.
         b) Gutters.
         c) Penetrations in soffits and fascias.
         d) Roof vents and flues.
b. Design Criteria:
   1) Meet following standards for Sealant:
      a) ASTM C920: Type S Grade NS, Class 25 (min) Use A.

c. Approved Products.
   1) Dow Corning: 790 Silicone Building Sealant.
   2) Tremco: Tremsil 600 Silicone Sealant.

4. Sealants At Exterior Concrete:

a. Expansion Joints:
   1) Design Criteria:
      a) Meet following standards for Sealant:
         1) ASTM C920: Type S Grade NS, Class 50 Use A, G, M, O.
   2) Weathersealing required at expansion for following areas:
      a) Between entryway slabs and building foundations.
      b) Between sidewalks and building foundations.
      c) Within curbs and gutters.
      d) Within flat drainage structures and at joints between flat drainage structures and other concrete elements.
   3) Weathersealing NOT required at expansion joints for following areas:
      a) Within aprons and where apron abuts building foundation and sidewalks.
      b) Within mow strips and where mow strip abuts building foundation and sidewalks.
      c) Within sidewalks.
   4) Approved Products:
      a) Dow Corning:
         1) Primer: 1200 Prime Coat.
         2) Sealant: 790 Silicone Building Sealant.
      b) GE Sealants & Adhesives:
         1) Primer: SS4044 Primer.
         2) Sealant: Silpruf SCS 2000 Silicone Sealant.

b. VOC Content of Interior Sealants:
   1) Provide sealants and sealant primers for use inside the weatherproofing system that comply with the following limits for VOC content when calculated according to 40 CFR 59, Part 59, Subpart D (EPA Method 24):
      a) Architectural Sealants: 250 g/L.
      b) Sealant Primers for Nonporous Substrates: 250 g/L.
      c) Sealant Primers for Porous Substrates: 775 g/L.

c. Non-Paintable Sealant (Installer Option A):
   1) Category Four Approved Product. See Section 01 6200 for definitions of Categories:
      a) Dow Corning: Tub, Tile, And Ceramic Silicone Sealant.
      b) Laticrete: Latasil Silicone Sealant.
      c) Sherwin Williams: White Lightning Silicone Ultra Low Odor Window and Door Sealant.
      d) Tremco: Tremsil 200 Silicone Sealant.
      e) Franklin International: Titebond 2601 (White) 2611 (Clear) 100% Silicone Sealant.
d. Paintable Sealant (Installer Option B):
   1) Category Four Approved Product. See Section 01 6200 for definitions of Categories:
      a) GE Sealants & Adhesives: GE Silicone II Paintable Silicone.

5. Sealants For Interior Joints:
   a. General:
      1) Countertops and backsplash to wall.
      2) Sinks and lavatories to countertops.
      3) Joints between plumbing fixtures and other substrates
   b. Interior Ceramic Tile Joints are furnished in Section 07 9213 and installed in Section 09 3013 'Ceramic Tiling' including the following:
      1) Ceramic tile inside corners.
      2) Ceramic tile and paver tile joints.
      3) Termination joints in showers.
   c. Description:
      1) One-part acetoxy cure silicone sealant with fungicides to resist mold and mildew.
   d. Design Criteria:
      1) Meet ASTM C920, Type S, Grade NS, NT, and Class 25 test requirements.
      2) 100 percent silicone sealant.
   e. Color: As selected by Architect from Manufacturer's standard colors.
   f. Category Four Approved Products. See Section 01 6200 for definitions of Categories:
      1) Dow Corning: Tub, Tile, And Ceramic Silicone Sealant.
      2) Laticrete: Lataasil Tile and Stone Silicone Sealant.
      3) Momentive: Sanitary SCS1700 Silicone Sealant.
      4) Tremco: Tremsil 200 Silicone Sealant.

2.2 ACCESSORIES

A. Bond Breaker Tape:
   1. Pressure sensitive tape as by Sealant Manufacturer to suit application.
   2. Provide tape to prevent adhesion to joint fillers or joint surfaces at back of joint and allow sealant movement.

B. Joint Backing:
   2. Flexible closed cell, non-gassing polyurethane or polylefin rod or bond breaker tape as recommended by Sealant Manufacturer for joints being sealed.
   3. Oversized 25 to 50 percent larger than joint width.

C. Joint Cleaner:
   1. Non-corrosive and non-staining type as recommended by Sealant Manufacturer, compatible with joint forming materials.

D. Masking Tape:
1. Non-staining, non-absorbent tape product compatible with joint sealants and adjacent joint surfaces.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification Of Conditions:
   1. Examine substrate surfaces and joint openings are ready to receive Work.
      a. Verify each sealant is compatible for use with joint substrates.
      b. Verify joint surfaces are clean and dry.
      c. Ensure concrete surfaces are fully cured.
   2. Sealants provided shall meet Manufacturer’s shelf-life requirements.
      a. Do not proceed until unsatisfactory conditions are corrected.
   4. Commencement of Work by installer is considered acceptance of substrate.

3.2 PREPARATION

A. Surface Preparation:
   1. Surfaces shall be clean, dry, free of dust, oil, grease, dew, or frost. Prepare substrates in accordance with Manufacturer’s instructions:
      a. Porous surfaces: Abrasive-clean followed by blasting with oil-free compressed air.
      b. Nonporous surfaces: Use two-cloth solvent wipe in accordance with ASTM C1193.
      c. High-pressure water cleaning: Exercise care that water does not enter through failed joints.
   2. Field test joints in inconspicuous location.
      a. Verify joint preparation and primer required to obtain optimum adhesion of sealants to joint substrate.
      b. When test indicates sealant adhesion failure, modify joint preparation primer, or both and retest until joint passes sealant adhesion test.
   3. Masking: Apply masking tape as required to protect adjacent surfaces and to ensure straight bead line and facilitate cleaning.

B. Joints:
   1. Prepare joints in accordance with ASTM C1193.
      a. Clean joint surfaces of contaminates capable of affecting sealant bond to joint surface using Manufacturer’s recommended instructions for joint preparation methods.
      b. Remove dirt, dust, oils, wax, paints, and contamination capable of affecting primer and sealant bond.
      c. Clean concrete joint surfaces to remove curing agents and form release agents.

C. Protection:
1. Protect elements surrounding the Work of this section from damage or disfiguration.

3.3 APPLICATION

A. General:
   1. Apply silicone sealant in accordance with Manufacturer’s instructions.
   2. Do not use damaged or deteriorated materials.
   3. Install primer and sealants in accordance with ASTM C1193 and Manufacturer’s instructions.
   4. Apply primer where required for sealant adhesion.
   5. Install sealants immediately after joint preparation.
   6. Do not use silicone sealant as per the following:
      a. Apply caulking/sealant at temperatures below 40 deg F (4 deg C).
      b. Below-grade applications.
      c. Brass and copper surfaces.
      d. Materials bleeding oils, plasticizers, and solvents.
      e. Structural glazing and adhesive.
      f. Surfaces to be immersed in water for prolonged time.

B. Joint Backing:
   1. Install joint backing to maintain sealant joint ratios recommended by Manufacturer.
   2. Install without gaps, twisting, stretching, or puncturing backing material. Use gage to ensure uniform depth to achieve correct profile, coverage, and performance.
   3. Rod for open joints shall be at least 1-1/2 times width of open joint and of thickness to give solid backing. Backing shall fill up joint so depth of sealant bite is no more than 3/8 inch (9.5 mm) deep.

C. Bond Breaker:
   1. Install bond breaker where joint backing is not used or where backing is not feasible.
      a. Apply bond-breaker tape in shallow joints as recommended by Sealant Manufacturer.

D. Sealant:
   1. Apply sealant with hand-caulking gun with nozzle of proper size to fit joints. Use sufficient pressure to insure full contact to both sides of joint to full depth of joint. Apply sealants in vertical joints from bottom to top.
   2. Fill joint opening to full and proper configuration.
   3. Apply in continuous operation.
   4. Tool joints immediately after application of sealant if required to achieve full bedding to substrate or to achieve smooth sealant surface. Tool joints in opposite direction from application direction, i.e., in vertical joints, from the top down. Do not ‘wet tool’ sealants.
   5. Depth of sealant bite shall be 1/4 inch (6 mm) minimum and 1/2 inch (12.7 mm) maximum, but never more than one half or less than one fourth joint width.
E. Caulk gaps between painted or coated substrates and unfinished or pre-finished substrates. Caulk gaps larger than \(\frac{3}{16}\) inch (5 mm) between painted or coated substrates.

3.4 TOLERANCES

A. Provide joint tolerances in accordance with Manufacturer’s printed instructions.

3.5 CLEANING

A. Remove masking tape and excess sealant.

B. Clean adjacent materials, which have been soiled, immediately (before setting) as recommended by Manufacturer.

C. Waste Management: Dispose of products in accordance with manufacturer’s recommendation.

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. Includes But Not Limited To:
   1. Quality of sealants to be used at perimeters of and penetrations through acoustically insulated walls and associated ceilings.

B. Related Requirements:
   1. Section 09 2900: Furnishing and installing of acoustical sealants.

1.2 REFERENCES

A. Association Publications:
   1. American Architectural Manufacturers Association (AAMA):
      a. “Voluntary Specifications and Test Methods for Sealants”.
   2. ASM International:
      b. Committee C24 on Building Seals and Sealants for various Specifications, Guides, Test Methods, and Practices related to sealant specifying and application.
      c. Committee E6 on Building Performance for various Specifications, Guides, Test Methods, and Practices related to sealant use with air barriers, vapor retarders, and exterior enclosure systems and materials.

B. Definitions:
   1. Adhesion: Bonding forces between two different materials (e.g. between an adhesive and substrate).
   2. Adhesive: An adhesive, as defined by The American Society for Testing and Materials (ASTM), is “a substance capable of holding materials together by surface attachment”.
   4. Caulk: Caulks have a variety of definitions but are generally recognized as materials used in applications where only minor elastomeric properties are needed.
   5. Primer: Coating applied to surface, prior to application of an adhesive, to improve performance of bond.
6. Sealant. Sealants are generally used in applications where elastic properties are needed while adhesives are generally used in applications where bonding strength and rigidity are needed. With technology advancements both sealants and adhesives can be used interchangeably depending on the applications performance requirements.

7. Sealant Types and Classes:
   a. Federal Specifications:
      1) Type I: Self-leveling, pour grade.
      2) Type II: Non-sag, gun grade.
      3) Type NS: Non-sag, gun grade.
      4) Class A: +25 percent, -25 percent expansion – contraction.
   b. ASTM Specifications:
      1) Type S: Single-component sealant.
      2) Type M: Multi-component sealant.
      3) Grade P: Pourable or self-leveling sealant for joints on horizontal surfaces.
      4) Grade NS: Non-sag or gunnable sealant for joints in vertical surfaces.
      5) Class 25: Sealant that, when tested for adhesion or cohesion under cyclic movement shall withstand increase and decrease of at least 25 percent of joint width as measured at time of application.
      6) Class 12: Sealant that, when tested for adhesion and cohesion under cyclic movement shall withstand increase and decrease of at least 12 percent of joint width as measured at time of application.
      7) T: Sealant designed for use in joints in pedestrian and vehicular traffic areas such as walkways, plazas, decks and parking garages.
      8) NT: Sealant designed for use in joints in non-traffic areas.
      9) M: Sealant will remain adhered to mortar.
     10) G: Sealant will remain adhered to glass.
     11) A: Sealant will remain adhered to aluminum.
     12) O: Sealant will remain adhered to substrates other than glass, aluminum, mortar.

8. Shelf Life: Usable storage time of material. Most adhesives have shelf-life of 6 to 12 months. Shelf-life of an adhesive may be increased by refrigeration and is usually shortened by exposure to heat.

9. Stability: Compound in original unopened container shall be stable for at least six months when stored at temperature not exceeding 80 degrees F. (26.7 degrees C.).

10. Toxicity: Material shall have no adverse effect on health of personnel when used for its intended purpose.

C. Reference Standards:
1. ASTM International:
   b. ASTM C919-12, ‘Standard Practice for Use of Sealants in Acoustical Applications’.
1.3 DELIVERY, STORAGE, AND HANDLING

A. Delivery And Acceptance Requirements:
   1. Deliver and keep in original containers until ready for use.
   2. Inspect for damage or deteriorated materials.

B. Storage And Handling Requirements:
   1. Handle to prevent inclusion of foreign matter, damage by water, or breakage.
   2. Store in cool, dry location, and at temperatures never under 40 deg F (4 deg C) nor exceeding 80 deg F (26.7 C).

1.4 FIELD CONDITIONS

A. Ambient Conditions:
   1. Do not apply caulking at temperatures below 40 deg F (4 deg C).

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Sealants:
   1. Design Criteria:
      a. Meet requirements of ASTM C834.
      b. Meet Class A flame spread rating.
   2. Approved Products:
      c. Acoustical Sealant by Tremco, Beachwood, OH  www.tremcosealants.com or Toronto, ON (800) 363-3213.
      d. Acoustical Sound Sealant by Titebond

2.2 ACCESSORIES

A. Bond Breaker: Pressure sensitive tape recommended by Sealant Manufacturer to suit application.
B. Joint Backing:
   1. Flexible closed cell polyurethane or polyolefin rod or bond breaker tape as recommended by Sealant Manufacturer for joints being sealed.
   2. Oversized 25 to 50 percent larger than joint width.

C. Joint Cleaner: Non-corrosive and non-staining type, recommended by Sealant Manufacturer, compatible with joint forming materials.

D. Masking Tape: Pressure sensitive tape recommended by Sealant Manufacturer to suit application.

E. Primer: Non-staining type, type, recommended by Sealant Manufacturer to suit application.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification Of Conditions:
   1. Examine substrate surfaces and joint openings are ready to receive Work.
   2. Sealants provided shall meet Manufacturer's shelf-life requirements.
      a. Do not proceed until unsatisfactory conditions are corrected.
   4. Commencement of Work by installer is considered acceptance of substrate.

3.2 PREPARATION

A. Surface Preparation:
   1. Prepare joints in accordance with ASTM C1193 and Manufacturer's instructions.
   2. Clean joint surfaces to remove dirt, dust, oils, wax, paints, and other contamination capable of affecting primer and sealant bond.
   3. Protect elements surrounding the Work of this section from damage or disfiguration. Apply masking tape to adjacent surfaces when required to prevent damage to finishes from sealant installation.

B. Surface Preparation:
   1. Remove existing sealants where specified.
   2. Clean joint surfaces of residual sealant and other contaminates capable of affecting sealant bond to joint surface.
   3. Surfaces shall be clean, dry, and free of dust, oil, grease, dew, or frost.

3.3 INSTALLATION

A. General:
1. Do not use damaged or deteriorated materials.
2. Install primer and sealants in accordance with ASTM C1193 and Manufacturer's instructions where required for sealant adhesion.
3. Install sealants immediately after joint preparation.
4. Do not apply caulking/sealant at temperatures below 40 deg F (4 deg C).

B. Joint Backing:
   1. Rod for open joints shall be at least 1-1/2 times width of open joint and of thickness to give solid backing. Backing shall fill up joint so depth of sealant bite is no more than 3/8 inch (9.5 mm) deep.
   2. Apply bond-breaker tape in shallow joints as recommended by Sealant Manufacturer.

C. Install at perimeter joints and mechanical and electrical penetrations in sound insulated rooms. Apply sealant with hand-caulking gun with nozzle of proper size to fit joints. Use sufficient pressure to insure full contact to both sides of joint to full depth of joint.

D. Tool joints immediately after application of sealant if required to achieve full bedding to substrate or to achieve smooth sealant surface.

E. Depth of sealant bite shall be 1/4 inch (6 mm) minimum and 1/2 inch (12.7 mm) maximum, but never more than one half or less than one fourth joint width.

3.4 FIELD QUALITY CONTROL

A. Inspection:
   1. Examine sealant joints to verify compliance with Contract Document requirements.

B. Non-Conforming Work. Non-conforming work as covered in the General Conditions applies, but is not limited to the following:
   1. Sealant material found to be contaminated or damaged or inadequate preparation of substrate results in deficiencies in joint sealant adhesion is considered defective or not complying with Contract Document requirements.
   2. Correct any work found defective or not-complying with Contract Document requirements at no additional cost to Owner.

3.5 CLEANING

A. General:
   1. Remove sealant from adjacent surfaces in accordance with Sealant Manufacturer and Substrate Manufacturer recommendations as work progresses.
   2. Remove masking tape and any other foreign material.
   3. Clean adjacent materials that have been soiled immediately (before setting) as recommended by Manufacturer.
B. Waste Management: Dispose of products in accordance with Sealant Manufacturer’s recommendation.

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. Includes But Not Limited To:
   1. Furnish and install door hardware and keying as described in Contract Documents.

1.2 REFERENCES

A. Definitions:
   2. Acoustic Seal: Attached to door to reduce external noise. Perimeter seals reduce potential for flanking noise, a term used to describe leakage of a sound across a barrier.
   3. Active Door (or leaf): In paired or double doors, hinged door leaf that opens first and the one to which the lock is applied.
   4. Astragal: Molding or strip whose purpose is to cover or close gap between edges of pair of doors. Astragals provide a weather or sound seal, minimize passage of light or retard passage of smoke or flame.
      a. Overlapping Astragal: One-piece astragal attached to one door only and overlapping other door when in closed position.
      b. Split Astragal: Two-piece astragal, one piece of which is surface mounted on each door and provided with means of adjustment to abut other piece and provide a seal.
   5. Builders Hardware Manufacturer's Association (BHMA) Hardware Functions:
      a. F-75 Passage Latch: Latch bolt operated by lever from either side at all times.
      b. F-76 Privacy Lock: Latch bolt operated by lever from either side. Outside lever locked by push button inside and unlocked by emergency key from outside or rotating lever from inside.
      c. F-81 Office Door Lock: Dead locking latch bolt operated by lever from either side, except when outside lever is locked by turn button in inside lever. When outside lever is locked, latch bolt is operated by key in outside lever or by rotating inside lever. Turn button must be manually rotated to unlock outside lever.
      d. F-84 Classroom Deadlock: Dead locking latch bolt operated by lever from either side, except when outside lever is locked, latch bolt is operated by key in outside lever or by rotating inside lever.
      e. F-86 Utility Space Door Lock: Dead locking latch bolt operated by key in outside lever or by rotating inside lever. Outside lever is always fixed.
f.  E-2142 Deadbolt:  Dead bolt operated by key from either side. bolt automatically dead locks when fully thrown.
g.  E-2152 Deadbolt:  Dead bolt operated by key from outside and turn unit from inside. bolt automatically dead locks when fully thrown.

6.  Change Key:  Key that operates only one cylinder or one group of keyed alike cylinders in a keying system.

7.  Closer:  Device or mechanism to control closing of swing door.  May be overhead or floor mounted and either exposed or concealed.

8.  Coordinator:  Device or mechanism which controls order of closing of pair of swing doors; used with doors equipped with overlapping astragals and certain panic and fire exit hardware which requires inactive leaf to close before active leaf.

9.  Cylinder:  Cylindrical-shaped assembly (complete operating unit) containing tumbler mechanism and keyway (plug, shell, tumblers, springs and actuating device), into which key is inserted to operate lock and can only be actuated by correct key.
   a.  Mortise:  Threaded surface which screws directly into a lock case, with a cam engaging lock mechanism.
   b.  Rim:  Mounted on surface of door independently of lock, usually by screws from reverse side, and engaging with lock mechanism by means of tailpiece or metal extension.

10.  Deadbolt (of a lock):  Lock bolt having no spring action nor bevel, and which is operated by key or turn piece.

11.  Dummy Trim:  Trim only, without lock; usually used on inactive door in pair of doors.

12.  Dust-Proof Strike:  Strike with spring plunger that completely fills bolt hole when bolt is not projected.


14.  Exit Device:  Latching mechanism for swinging doors designed to be operable in direction of egress travel and to provide exiting for occupants in emergency. Latching mechanism release through pressure on touch or cross bar mortised or mounted on push side of door.  There are two classifications:  Panic Exit Hardware and Fire Exit Hardware, and three types within each classification:
   a.  Mortise Type:  Lock mechanism mortised into edge of door or concealed with door.
   b.  Rim Type:  Lock mechanism mounted on interior face of door.
   c.  Vertical Rod:  Surface or concealed, having latches in or on top and/or bottom of door and activated by cross bar through rod linkage extending vertically on or in lock stile of door.

15.  Fire Exit Hardware:  Metal device attached to back of door frame jamb at its base, to secure frame to the floor, may be either fixed or adjustable in height.  See Exit Device.

16.  Flush Bolt:  Rods or bolts that are mounted flush with edge or face of inactive door to lock door to frame at head and/or sill.  Flush bolt mounted in edge is operated by means of recessed lever.  May be manual or automatic.

17.  Grand Master Key:  Key that operates locks in several groups, each of which has its own master key.
18. Handleset: Term describing lock trim with handle and thumbpiece on exterior of door, and knob/lever on interior.
19. Hardware: Any mechanism which is designed to perform operable function in use of door and frame.
20. Hinge: Two plates joined together by pin and attached to door and its frame whereby door is supported and is enabled to swing or move.
21. Holder: Device that holds door open at one or more selected positions.
22. Inactive Door (or leaf): Leaf of pair of doors that does not contain lock, but is bolted when closed, and to which strike is fastened to receive latch or bolt of active door.
23. Kick Plate: Protective plate applied on lower rail of door to prevent door from being marred.
24. Latch Bolt: Beveled spring bolt, usually operated when either knob or lever is turned, or when thumbpiece which operates handleset is pushed down.
25. Latchset: Non-locking device which contains only a latch bolt, a means of operating said latch and all required trim.
26. Leaf (of pair of doors): One of two doors forming pair of doors.
27. Lever Handle: Bar-like grip which is rotated about horizontal axis at one of its ends to operate a latch.
28. Lockset: Lock, complete with trim, such as knobs, escutcheons or handles.
29. Low-Energy Swing Door Operators: Device that operates swing door that opens or helps open door automatically, waits then closes it at reduced speed to levels deemed safe for disabled users. Commonly referred to as a Handicap door operator.
30. Master Key: Key that operates all master keyed locks or cylinders in group, each lock or cylinder usually operated by its own change key.
31. Mullion: Fixed or movable post dividing opening vertically.
32. Panic Exit Hardware: Hardware similar to Exit Hardware, but which has been tested and labeled or use only on emergency exit doors which are not fire doors. See Exit Device.
33. Passage Function: Knob or lever set most commonly used in hallways where locking feature is not required.
34. Pivot: Hinging device embodying fixed pin and single joint.
35. Pull: Handle of grip designed for attachment to door to facilitate opening and closing.
36. Push: Plate applied to lock stile to protect door against soiling and wear.
37. Single Cylinder Entrance Handleset: Key operates deadbolt from outside; turnpiece operates deadbolt from the inside.
38. Single Dummy: Knob/lever surface mounted on interior or exterior of door which does not turn any mechanism.
39. Silencer: Small piece of resilient material attached to stop on door frame to cushion closing of door.
40. Smoke Gasket: Brush seal used on doors to reduce passage of smoke and gasses.
41. Stop: Device to limit swing or movement of door at certain point.
42. Threshold: Strip fastened to floor beneath door, usually required to cover joint where two types of floor material meet.
43. Thumbpiece or Thumbturn: Lock trim component which typically is used to lock deadbolt from interior side of door.

44. Turnpiece: Small knob, lever or tee turn with spindle attached for operating deadbolt of lock or mortise bolt. Also termed Thumb Turn. Used only on single cylinder operations.

45. Weatherstrip: Material or device applied to door edges or to inner door frame edges to close clearance opening and minimize or restrict passage of air, moisture, sound, smoke, and/or dirt.

B. Reference Standards:
   1. Builders Hardware Manufacturer's Association (BHMA):
      a. BHMA A156.1, 'Butts and Hinges'.
      b. BHMA A156.16, 'Auxiliary Hardware'.
      c. BHMA A156.18, 'Materials and Finishes'.
      d. BHMA A156.2, 'Bored and Preassembled Locks and Latches'.
      e. BHMA A156.21, 'Thresholds'.
      f. BHMA A156.22, 'Door Gasketing and Edge Seal Systems'.
      g. BHMA A156.3, 'Exit Devices'.
      h. BHMA A156.4, 'Door Controls - Closers'.
      i. BHMA A156.5, 'Auxiliary Locks and Associated Products'.
      j. BHMA A156.6, 'Architectural Trim'.
      k. BHMA A156.7, 'Template Hinge Dimensions'.
      l. BHMA A156.8, 'Door Controls – Overhead Stops and Holders'.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Delivery And Acceptance Requirements:
   1. Materials shall be delivered in original, unopened packages with labels intact.

PART 2 - HARDWARE GROUPS

2.1 STOREFRONT ENTRY DOORS

A. Single Doors:
   1. Group ST2:
      a. 1 set: Pivots.
      b. 1 each: Exit Device with dogging capability.
         1) Optional: Interior dogging cylinder.
      c. 1 each: Closer.
      d. 1 each: Pull.
      e. 1 each: Threshold.
      f. 1 set: Weatherstrip.
      g. 1 each: Stop.
      h. 1 each: Kick Plate.
   2. Group ST3:
      a. 1 set: Pivots.
b. 1 each: Closer.
c. 1 each: Push.
d. 1 each: Pull.
e. 1 set: Weatherstrip.
f. 1 each: Stop.
g. 1 each: Kick Plate.

2.2 EXTERIOR DOORS

A. Single Exterior Doors:
   1. Group 2:
      a. 3 each: Hinges.
      b. 1 each: Emergency Egress Exit Device.
      c. 1 each: Closer.
      d. 1 each: Stop.
      e. 1 each: Threshold.
      f. 1 set: Weatherstrip.

2.3 INTERIOR DOORS

A. Single Interior Doors:
   1. Group 20:
      a. 3 each: Hinges.
      b. 1 each: Latchset Function F-75.
      c. 1 each: Stop.
      d. 1 set: Smoke Gaskets.
   2. Group 20C:
      a. 3 each: Hinges.
      b. 1 each: Lockset Function F-86.
      c. 1 each: Stop.
      d. 1 each: Kick Plate.
      e. 1 set: Smoke Gaskets.
   3. Group 23:
      a. 3 each: Hinges.
      b. 1 each: Lockset Function F-81.
      c. 1 each: Stop.
      d.
      e. 1 each: Acoustic Seal.
      f. 1 set: Smoke Gaskets.
   4. Group 25:
      a. 3 each: Hinges.
      b. 1 each: Exit Device.
      c. 1 each: Closer with hold open function.
      d. 1 each: Kick Plate.
      e. 1 each: Stop.
      f. 1 set: Smoke Gaskets.
   5. Group 26B:
a. 3 each: Hinges.
b. 1 each: Lockset, Function F-76.
c. 1 each: Stop.
d. 1 set: Smoke Gaskets.

END OF SECTION
SECTION 08 11 00
METAL DOORS AND FRAMES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Steel doors, frames and hardware.

B. Related Requirements:
   1. Section 09 90 00 – Painting and Coating.
   2. Section 09 91 13 – Exterior Pained Galvanized Metal
   3. Section 09 91 23 – Interior Painting.

1.2 REFERENCE STANDARDS

A. Americans with Disabilities Act (ADA).

B. Builders Hardware Manufacturers Association (BHMA):
   1. ANSI/BHMA A156.2 – American National Standard for Bored & Preassembled Locks and Latches.

1.3 SUBMITTALS

A. Product Data: Provide product information for doors, frames, hardware, closers.

1.4 QUALITY ASSURANCE

A. Doors, hardware and signs shall comply with ADA.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Accept doors on site in manufacturer’s packaging. Inspect for damage.

B. Protect units from damage by storing in dry, protected area.

PART 2 PRODUCTS

2.1 PRODUCTS

A. Steel Doors:
   1. Constructed of 18-gauge hot dipped galvanized steel sheets with no seams or external molding.
   2. Be reinforced and stiffened. Fill void spaces with rock wool or polyurethane installation.
   3. Mortised for three 4.5-inch template hinges.
4. Provide exterior doors with ANSI/BHMA A156.2 Series 4000, grade 1, mortised lockset and other hardware as indicated.
5. Finish: One coat baked on primer over bonderizing and two coats finish paint. Owner will select color.
6. Provide complete with hardware and weather stripping.
7. Where indicated, provide closures which allow door to be held in open position.

B. Steel Frames: Timely Knocked Down
   1. Constructed of 14-gauge hot dipped galvanized steel.
   2. Mitered, continuously welded, and ground smooth.
   3. Have mortised hinge and lock jambs.
   4. Provide minimum three anchors and silencers for each jamb.
   5. Finish: One coat primer and two coats finish paint to match door, unless indicated otherwise.

2.2 ACCESSORIES

A. Sealant: [In accordance with Section 07 90 00.] [Silicone base for exterior use.]

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify framing or opening is complete and ready for frame and door.

3.2 INSTALLATION

A. Install frames plumb and anchor securely.
   B. Install frames, doors, and hardware in accordance with manufacturer's recommendations.
   C. Paint doors and door frames.
   D. Apply sealant around door frames.

3.3 ADJUSTING

A. Adjust doors and hardware to open and close smoothly.

3.4 PROTECTION

A. Protect hardware, doors, and frames from damage until final acceptance.

END OF SECTION
SECTION 08 14 16
FLUSH WOOD DOORS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Factory finishing flush wood doors.

B. Related Requirements:
   1. Section 08 71 00 - Door Hardware.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of door. Include details of core and edge
   construction and trim for openings. Include factory-finishing specifications.

B. Shop Drawings: Indicate location, size, and hand of each door; elevation of
   each kind of door; construction details not covered in Product Data; and the
   following:
   1. Dimensions and locations of blocking.
   2. Dimensions and locations of mortises and holes for hardware.
   3. Dimensions and locations of cutouts.
   4. Undercuts.
   5. Requirements for veneer matching.
   6. Doors to be factory finished and finish requirements.
   7. Fire-protection ratings for fire-rated doors.

C. Samples for Initial Selection: For factory-finished doors.

1.3 INFORMATIONAL SUBMITTALS

A. Sample Warranty: For special warranty.

B. Quality Standard Compliance Certificates: AWI Quality Certification
   Program certificates.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Comply with requirements of referenced standard and manufacturer’s
   written instructions.

B. Package doors individually in plastic bags or cardboard cartons.

C. Mark each door on bottom rail with opening number used on Shop
   Drawings.

1.5 FIELD CONDITIONS
A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during remainder of construction period.

1.6 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Warping (bow, cup, or twist) more than 1/4 inch in a 42-by-84-inch section.
      b. Telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch span.
   2. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Algoma Hardwoods, Inc.
   2. Eggers Industries.
   5. Mohawk Doors; a Masonite company.
   6. Oshkosh Door Company.
   7. VT Industries, Inc.
   8. Or equal.

B. Source Limitations: Obtain flush wood doors from single manufacturer.

2.2 Flush wood doors, general

A. Quality Standard: In addition to requirements specified, comply with AWI's, AWMAC's, and WI's "Architectural Woodwork Standards."

B. WDMA I.S.1-A Performance Grade: Heavy Duty.

C. Fire-Rated Wood Doors: Doors complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.
   1. Cores: Provide core specified or mineral core as needed to provide fire-protection rating indicated.
2. Edge Construction: Provide edge construction with intumescent seals concealed by outer stile. Comply with specified requirements for exposed edges.

3. Pairs: Provide fire-retardant stiles that are listed and labeled for applications indicated without formed-steel edges and astragals. Provide stiles with concealed intumescent seals. Comply with specified requirements for exposed edges.

D. Structural-Composite-Lumber-Core Doors:
      a. Screw Withdrawal, Face: 700 lbf.
      b. Screw Withdrawal, Edge: 400 lbf.

2.3 VENEER-FACED DOORS FOR TRANSPARENT FINISH

A. Interior Solid-Core Doors:
   1. Grade: Premium, with Grade A faces.
   2. Species: Walnut
   5. Assembly of Veneer Leaves on Door Faces: Center-balance match.
   6. Pair and Set Match: Provide for doors hung in same opening or separated only by mullions.
   7. Room Match: Provide door faces of compatible color and grain within each separate room or area of building.
   8. Exposed Vertical Edges: Same species as faces - edge Type A.
   9. Core: Particleboard
   10. Construction: Five plies. Stiles and rails are bonded to core, then entire unit is abrasive planed before veneering. Faces are bonded to core using a hot press.
   11. Construction: Seven plies, either bonded or nonbonded construction.
   12. WDMA I.S.1-A Performance Grade: Heavy Duty.

2.4 FABRICATION

A. Factory fit doors to suit frame-opening sizes indicated. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.
   1. Comply with NFPA 80 requirements for fire-rated doors.

B. Factory machine doors for hardware that is not surface applied. Locate hardware to comply with DHI-WDHS-3. Comply with final hardware schedules, door frame Shop Drawings, BHMA-156.115-W, and hardware templates.
   1. Coordinate with hardware mortises in metal frames to verify dimensions and alignment before factory machining.
2.5 FACTORY FINISHING

A. General: Comply with referenced quality standard for factory finishing. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.
   1. Finish faces, all four edges, edges of cutouts, and mortises. Stains and fillers may be omitted on bottom edges, edges of cutouts, and mortises.

B. Factory finish doors.

C. Transparent Finish:
   1. Grade: Premium.
   2. Finish: AWI's, AWMAC's, and WI's "Architectural Woodwork Standards" System 11, catalyzed polyurethane.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine doors and installed door frames, with Installer present, before hanging doors.
   1. Verify that installed frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
   2. Reject doors with defects.

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

3.2 INSTALLATION

A. Hardware: For installation, see Section 08 71 00.

B. Installation Instructions: Install doors to comply with manufacturer's written instructions and referenced quality standard, and as indicated.
   1. Install fire-rated doors according to NFPA 80.

C. Job-Fitted Doors: Align and fit doors in frames with uniform clearances and bevels as indicated below; do not trim stiles and rails in excess of limits set by manufacturer or permitted for fire-rated doors. Machine doors for hardware. Seal edges of doors, edges of cutouts, and mortises after fitting and machining.
D. Clearances: Provide 1/8 inch at heads, jambs, and between pairs of doors. Provide 1/8 inch from bottom of door to top of decorative floor finish or covering unless otherwise indicated. Where threshold is shown or scheduled, provide 1/4 inch from bottom of door to top of threshold unless otherwise indicated.
   1. Comply with NFPA 80 for fire-rated doors.
      a. Bevel non-fire-rated doors 1/8 inch in 2 inches at lock and hinge edges.
      b. Bevel fire-rated doors 1/8 inch in 2 inches at lock edge; trim stiles and rails only to extent permitted by labeling agency.

E. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.

F. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

3.3 ADJUSTING

A. Operation: Rehang or replace doors that do not swing or operate freely.

B. Finished Doors: Replace doors that are damaged or that do not comply with requirements. Doors may be repaired or refinished if Work complies with requirements and shows no evidence of repair or refinishing.

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. Includes But Not Limited To:
   1. Furnish and install aluminum storefront entry and window systems, including
      hardware, glazing, and caulking, as described in Contract Documents and
      including the following:

B. Related Requirements:
   1. Section 07 9213: Elastomeric Joint Sealants.
   2. Section 08 8100: Quality of glass glazing.

1.2 REFERENCES

A. Association Publications:
   1. American Architectural Manufacturers Association (AAMA):
      a. AAMA 506-06, 'Voluntary Specifications for Hurricane Impact and Cycle
         Testing of Fenestration Products.'
         Clear Anodic Finishes for Architectural Aluminum'.
      c. AAMA 611-98, 'Voluntary Standards for Anodized Architectural Aluminum'.
      d. AAMA 701/702-04, 'Voluntary Specification for Pile Weatherstripping and
         Replaceable Fenestration Weatherseals'.
   3. National Association of Architectural Metal Manufacturers (NAAMM):
      a. Metal Finishes Manual for Architectural and Metal Products.

B. Definitions:
   1. Activation Device: Device that, when actuated, sends electrical signal to door
      operator to open door.
   2. Glass Surface:
      a. Insulated glass unit:
         1) Surface 1: Exterior surface of outer lite.
         2) Surface 2: Interspace-facing surface of outer lite.
         3) Surface 3: Interspace-facing surface of inner lite.
         4) Surface 4: Interior surface of inner lite.
      b. Monolithic glass:
         1) Surface 1: Exterior surface.
         2) Surface 2: Interior surface.
   3. Safety Device:
a. Device that prevents door from opening or closing, as appropriate.

C. Reference Standards:
   1. American National Standards Institute / Builders Hardware Manufacturers Association:
      a. ANSI/BHMA A156.5-2010, ‘Auxiliary Locks and Associated Products’.
      b. ANSI/BHMA A156.18-2006, ‘Materials and Finishes’.
   2. ASTM International:
      d. ASTM E2112-07, 'Standard Practice for Installation of Exterior Windows, Doors and Skylights'.
      a. Chapter 10, 'Means of Egress'.
   4. International Code Council / American National Standards Institute:
   5. National Fenestration Rating Council (NFRC):
   6. National Fire Protection Association / American National Standards Institute:

1.3 QUALITY ASSURANCE

A. Qualifications: Requirements of Section 01 4301 applies, but not limited to following:
   1. Manufacturer Qualifications:
      a. Provide aluminum entrances and storefront systems produced by a firm experienced in manufacturing systems that are similar to those indicated for this project and that have a record of successful in service performance.
   2. Fabricator Qualifications:
      a. Provide aluminum entrances and storefront systems fabricated by a firm experienced in producing systems that are similar to those indicated for this Project, and that have a record of successful in service performance.
      b. Fabricator shall have sufficient production capacity to produce components required without causing delay in progress of the Work.
   3. Installer Qualifications:
      a. Minimum three (3) years experience in storefront installations.
      b. Minimum five (5) satisfactorily completed projects of comparable quality, similar size, and complexity in past three (3) years before bidding.
      c. Upon request, submit documentation.
1.4 DELIVERY, STORAGE, AND HANDLING

A. Delivery And Acceptance Requirements:
   1. Deliver all parts of door, together with hardware, in original, unopened packages with labels intact to Project at same time.

B. Storage And Handling Requirements:
   1. Store in clean, dry location, indoors in Manufacturer’s unopened packaging until ready for installation and in accordance with Manufacturer’s instructions.
   2. Stack framing components in a manner that will prevent bending and avoid significant or permanent damage.
   3. Protect materials and finish from damage during handling and installation.

1.5 WARRANTY

A. Manufacturer Warranty:
   1. Storefront Entrances:
      a. Manufacturer’s Warranty to be free of defects in material and workmanship.
      b. Manufacturer’s Warranty against deterioration or fading.
      c. Manufacturer’s Lifetime Warranty for Door Construction for normal use.
   2. Closers:
      a. Closer Manufacturer’s standard warranty, 10 years minimum.

PART 2 - PRODUCTS

2.1 ASSEMBLIES

A. Manufacturers:
   1. Manufacturers.

B. Materials:
   1. Frames:
      a. Aluminum:
         1) 6063-T5 aluminum alloy or meet requirements of ASTM B221, alloy GS 10A-T6 or T6.
      b. Sills:
         1) Match height of door bottoms.
      c. Sealer Tape:
         1) 3M.
      d. Fasteners:
         1) Aluminum or non-magnetic stainless steel.
         2) Concealed fastenings shall be cadmium or zinc-plated steel.
      e. Finish:
         1) Match doors.
f. Approved Products.
   1) Double Glazed:
      a) Trifab ‘451’ by Kawneer.
      b) Series FG3000 2x4-1/2 by Oldcastle.

2. Manually Operated Doors:
   a. Aluminum:
      1) 6063 T5 aluminum alloy, or meet requirements of ASTM B221, alloy GS 10A-T6 or T6.
   b. Stiles:
      1) 3-1/2 inches by 1-3/4 inches by 0.125 inches (89 mm by 45 mm by 3.175 mm) thick nominal.
   c. Top Rails and Mid Rail:
      1) 5-3/4 inches minimum by 1-3/4 inches by 0.125 inches (146 mm minimum by 45 mm by 3.175 mm) thick nominal.
   d. Bottom Rails:
      1) 10 inches minimum by 1-3/4 inches by 0.125 inches (254 mm minimum by 45 mm by 3.175 mm) thick nominal.
   e. Construction:
      1) Manufacturer’s standard.
   f. Glazing Stops:
      1) Snap-in type with neoprene bulb-type glazing. Units shall be glazed from exterior side.
   g. Weatherstripping:
      1) Neoprene bulb-type.
      2) Approved Products.
         a) Sealair by Kawneer.
         b) D125 by Oldcastle.
   h. Framing System Gaskets and Sealants:
      1) Manufacturer’s standard, recommended by manufacturer for joint type.
         a) Provide sealants for use inside of the weatherproofing system that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
   i. Finish:
      1) Dark bronzed anodized

3. Hardware:
   a. See Hardware Groups

C. Fabrication:
   1. Construction shall meet Manufacturer’s recommendations.
   2. Fabricate in factory to dimensions required to fit framed openings detailed on Contract Documents. Joints shall be tightly closed.
   3. Mortise in manner to give maximum hardware-door connection strength and neatness of appearance. Adequately reinforce with backplates or rivnuts to hold pivots and closers.

D. Hardware Finishes:
   1. Finishes for steel, brass, or bronze hardware items shall be dark bronze. Chromium plated, satin.
2. Materials other than steel, brass, or bronze shall be finished to match the appearance of dark bronze.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification Of Conditions:
   1. Verify that framed openings will accommodate factory-fabricated storefront entry and window frames of dimensions agreed upon by Owner and Manufacturer and shown on Standard Plan documents.
   2. Verify floor is level across entire width of automatic door opening.
   3. Verify sill conditions are level and/or sloped away from openings as specified.
   4. Notify Architect and Owner in writing if framed openings are not as agreed upon.
      a. Do not install storefront entry and window frames until deficiencies in framed openings have been corrected to allow installation of standard entries and windows.
      b. Commencement of Work by installer is considered acceptance of substrate.

3.2 INSTALLATION

A. General:
   1. Installation shall meet or exceed all applicable federal, state and local requirements, referenced standards and conform to codes and ordinances of authorities having jurisdiction.
   2. All installation shall be in accordance with manufacturer’s published recommendations.
   3. Do not install damaged components. Fit frame joints tight, free of burrs and distortion. Rigidly secure non-movement joints.
   4. Isolate metal surfaces in contact with incompatible metal or corrosive substrates, including wood, by applying sealer tape to prevent electrolytic action.

B. Set plumb, square, level, and in correct alignment and securely anchor to following tolerances:
   1. Variation from plane: Limit to 1/8 inch (3 mm) in 12 feet (3.6 meters); 1/4 inch (6 mm) over total length.
   2. Offset from Alignment: For surfaces abutting in line, limit offset to 1/16 inch (1.6 mm).
   3. Offset at Corners: For surfaces meeting at corner, limit offset to 1/32 inch (0.8 mm).
   4. Diagonal measurements: Limit difference between diagonal measurements to 1/8 inch (3 mm).
   5. Sidelites: Line up horizontal rail in sidelight with door rail.

C. Install doors without warp of rack. Adjust doors and hardware to provide 90 degree operation, tight fit at contact points and smooth operation.
D. Install exterior window units with through wall sill flashing.

E. Thresholds:
   1. Accurately cut thresholds to fit profile of storefront frame. Bed exterior thresholds in specified sealant at contact points with floor and make watertight.

F. Sealants:
   1. Apply in accordance with Section 07 9213 ‘Elastomeric Joint Sealant’.
   2. Caulk joints between frames and walls, both interior and exterior to provide weather tight installation.

G. Glazing Characteristics:
   1. Interior Vestibule Glazing: Clear.
   2. Exterior Storefront Doors And Sidelights Opening Into vestibule:
      a. Solarban 70.
   3. All Other Exterior Storefront Doors And Storefront:
      a. Obscure interior pane with pattern on surface 3 and Clear exterior pane with Low E treatment on surface 2.

3.3 FIELD QUALITY CONTROL

A. Field Tests And Inspections:
   1. Pull test doors to ensure security of opening.
   2. Pull test doors, especially pairs of single doors separated by permanent mullions, to ensure security of opening.

B. Non-Conforming Work:: Non-conforming work as covered in the General Conditions applies, but is not limited to the following:
   1. Correct any work found defective or not complying with contract document requirements including removal and replacement of glass that has been broken, chipped, cracked, abraded, or damaged during construction period at no additional cost to the Owner.

3.4 ADJUSTING

A. Adjust doors for proper operation after glazing entry. After repeated operation of completed installation, re-adjust door for optimum operating condition and safety if required.

3.5 PROTECTION

A. During Installation:
   1. Installer’s Responsibility:
      a. During installation, all adjacent work shall be protected from damage.

B. After Installation:
   1. General Contractor’s Responsibility:
a. Institute protective measures required throughout remainder of construction period to ensure that aluminum entrances and storefronts will be without damage or deterioration, other than normal weathering, at time of acceptance.

3.6 CLEANING

A. General:
   1. Installer's Responsibility:
      a. Follow Manufacturer's written recommendations for cleaning and maintenance or guidelines of AAMA Publications #609 and #610-2 ‘Cleaning and Maintenance Guide for Architecturally Finished Aluminum’ (combined documents).
      b. Clean glass and aluminum surfaces, inside and out, promptly after installation. Remove excess glazing and sealant compounds, dirt, and other substances. Exercise care to avoid damage to coatings.
      c. Remove nonpermanent labels, protective films, and clean surfaces following recommended procedures.
         1) Do NOT remove permanent ANSI/AAMA/CSA or NFRC labels.

B. Waste Management:
   1. Upon completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION
SECTION 08 51 13
ALUMINUM WINDOWS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Extruded aluminum windows.
   2. Factory glazing including infill panels.
   3. Operating hardware.
   4. Insect screens.

B. Related Requirements:
   1. 
   2. Section 08 81 00 - Glazing.

1.2 REFERENCE STANDARDS

A. American Architectural Manufacturers Association (AAMA):
   2. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum.

B. American Society of Civil Engineers (ASCE):

C. ASTM International (ASTM):

D. Glass Association of North America (GANA):
   1. GANA Glazing Manual.

E. International Code Council (ICC):

F. National Fenestration Rating Council (NFRC):
   1. NFRC 100 - Procedure for Determining Fenestration Product U-factors.

G. The Society for Protective Coatings (SSPC).

1.3 SUBMITTALS

A. Product Data: Submit for each type of aluminum window indicated.

B. Shop Drawings: Include plans, elevations, sections, details, hardware, attachments to other work, operational clearances, and installation details.

C. Samples: Submit sample for each exposed finish.

D. Product Schedule: Use same designations indicated on Drawings.

E. Manufacturer’s Certificate: Certify that products meet or exceed specified requirements. Provide supporting documentation and test reports.
F. Maintenance Data. Provide manufacturer’s recommended maintenance information.

1.4 QUALITY ASSURANCE

A. Aluminum Windows: Fabricate window assemblies according to AAMA 101 for types of windows required.

B. Manufacturer: Company specializing in manufacturing commercial aluminum windows with minimum three years’ experience.

C. Glazing: Comply with published recommendations of glass manufacturers and with GANA Glazing Manual unless more stringent requirements are indicated.

D. Installer: Manufacturer or company specializing in installation of industrial commercial windows with minimum three years’ experience.

1.5 FIELD CONDITIONS

A. Do not install sealants when ambient temperature is less than 40 degrees Fahrenheit. Maintain minimum temperature during and after installation of sealants.

1.6 WARRANTY

A. Furnish five-year manufacturer’s warranty for insulated glass units from seal failure, interpane dusting and misting, and replacement of glass.

B. Include coverage for degradation of color finish.

PART 2 PRODUCTS

2.1 ALUMINUM WINDOW

A. Product Description: Aluminum windows thermally broken;] applied glass stops of screw fastened type, sash, glass and glazing, operating hardware, and insect screen.


B. Window Configuration: Conform to AAMA 101 designations for windows required for Project; HS-horizontal sliding, sash.

C. Performance / Design Criteria:

   1. Primary Performance Requirements: Provide aluminum windows meeting minimum performance criteria for AAMA 101 Designation CW30 Commercial
2. System Design: Design and size components to withstand dead loads and live loads caused by positive and negative wind loads acting normal to plane of window as calculated according to applicable code and as tested according to ASTM E330.
4. Assembly: To accommodate, without damage to components or deterioration of seals, movement between window and perimeter framing, deflection of lintel.
5. Air and Vapor Seal: Maintain continuous air barrier and vapor retarder throughout assembly, primarily in line with inside pane of glass and heel bead of glazing compound. Position thermal insulation on exterior surface of air barrier and vapor retarder.
6. System Internal Drainage: Drain water entering joints, condensation occurring in glazing channels, and migrating moisture occurring within system, to exterior by weep drainage network.
7. Air Infiltration: Limit air infiltration through assembly to 0.3-cubic feet per minute per square feet of wall area, measured at reference differential pressure across assembly of 1.57-pounds per square foot when tested according to ASTM E283.
8. Vapor Seal: Limit vapor seal with interior atmospheric pressure of 1-inch static pressure, 72 degrees Fahrenheit, 40 percent RH without seal failure.
9. Thermal Performance:
   a. Condensation Resistance Factor (CRF) Class of not less than C45 when measured according to AAMA 1503.
   b. Thermal Transmittance of Assembly: Maximum U-value of 0.69-British thermal units per square foot per hour per degree Fahrenheit when measured according to AAMA 1503.
   c. Comply with ICC IEEC for climate zone in which project is located. Measure according to AAMA 1503.
10. Water Leakage: None, when measured according to ASTM E331 with test pressure difference as defined by AAMA 101.
11. Forced Entry Resistance: Conform to ASTM F588 Type [?], Grade 20.

2.2 COMPONENTS

A. Extruded Aluminum: ASTM B221; 6063 alloy, T5 temper.

B. Sheet Aluminum: ASTM B209; 5005 alloy, H15 or H34 temper.

C. Steel Sections: Profiled to suit mullion sections.

D. Insulating Glass: See Glazing Spec
   1. Refer to Glazing Specification.

E. Hardware:
1. Sash lock: Lever handle with cam lock. Furnish pole handle of size to allow access to sash locks and operable windows where over 5-feet above floor.
2. Operator: Lever action handle fitted to projecting sash arms with limit stops.
3. Sash lock: Lever handle with cam lock.

F. Sills: Extruded aluminum; sloped for positive wash; fit under sash leg 1/2-inch beyond wall face; one-piece full width of opening jamb angles to terminate sill end.

G. Operable Sash Weather Stripping: Wool pile; permanently resilient, profiled to effect weather seal.

H. Insect Screen Frame: Rolled aluminum frame of rectangular sections; fit with adjustable hardware; nominal size similar to operable glazed unit.

I. Insect Screens: ASTM D3656, Class 2, 18 by 14 mesh, charcoal color.

2.3 FABRICATION

A. Permit internal drainage weep holes and channels to migrate moisture to exterior. Furnish internal drainage of glazing spaces to exterior through weep holes.

B. Assemble insect screen frame, miter and reinforce frame corners. Fit mesh taut into frame and secure. Fit frame with four spring loaded steel pin retainers.

C. Double weatherstrip operable units.

D. Factory glaze window units. Install glass and infill panels according to Section 08 80 00, to glazing method required to achieve performance criteria exterior wet/dry method of glazing.

2.4 FINISHES

A. Finish Coatings: Conform to AAMA 2603.AAMA 2604 or 2605. AAMA 611.


C. Interior Surfaces: Anodized, dark bronze finish.

D. Locks, Operators, and Exposed Hardware: Enameled to match window finish.

E. Pull Handles: Anodized aluminum, dark bronze finish.
F. Screens: Black color.

PART 3 EXECUTION

3.1 INSTALLATION

A. Comply with Drawings, Shop Drawings, and manufacturer’s written instructions for installing windows, hardware, accessories, and other components.

B. Install windows level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction.

C. Set sill members in bed of sealant or with gaskets, as indicated, for weathertight construction.

D. Install windows and components to drain condensation, water penetrating joints, and moisture migrating within windows to exterior.

E. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

F. Clean aluminum surfaces immediately after installing windows. Avoid damaging protective coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.

G. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

3.2 TOLERANCES

A. Maximum Variation from Level or Plumb: 1/16-inch every 3-feet non-cumulative or 1/8-inches per 10-feet, whichever is less.

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. Products Furnished But Not Installed Under This Section:
   1. Hinges for flush wood and hollow metal doors.

B. Related Requirements:
   1. Section 08 7101: Common Hardware Requirements.

PART 2 - PRODUCTS

2.1 MANUFACTURED UNITS

A. Manufacturers:
   1. Manufacturer Contact List:

B. Hinges:
   1. Sizes:
      a. 1-3/4 inch (45 mm) doors and fire-rated doors in metal frames:
         1) Standard: 4-1/2 inches by 4-1/2 inches (115 mm by 115 mm).
         2) Wide Throw: 4-1/2 inches (115 mm) by width required.
      b. 1-3/4 inch 44.5 mm non-fire-rated wood doors in wood frames: 4 inches by 4 inches (100 mm by 100 mm).
   2. Use non-removable pins on exterior opening doors.
   3. Hinges on exterior doors shall be solid brass, plated to achieve specified finish.
   4. Approved Products.
      a. Interior:
         1) Hager: BB 1279.
         2) Ives: 5BBl.
         4) MacPro / McKinney: MPB79.
         5) PBB: BB81.
         6) Stanley: FBB 179.
      b. Exterior:
         1) Hager: BB 1191.
         2) Ives: 5BBl.
         3) McKinney: TA 2314.
         4) PBB: BB21.
         5) Stanley: FBB 191.
PART 3 - EXECUTION: Not Used

END OF SECTION
SECTION 08 7103
SECURING DEVICES

PART 1 - GENERAL

1.1 SUMMARY

A. Products Furnished But Not Installed Under This Section:
   1. Items for architectural wood or hollow metal doors:
      a. Locksets and latchsets.
      b. Deadbolts.
      c. Cylinders.
      d. Interior exit devices.

B. Related Requirements:
   1. Section 08 7101: Common Hardware Requirements.

PART 2 - PRODUCTS

2.1 MANUFACTURED UNITS

A. Manufacturers:
   1. Manufacturer List:
      e. Precision Hardware, Romulus, MI www.precisionhardware.com.
      i. Von Duprin, Indianapolis, IN www.vonduprin.com.

B. General:
   1. Backsets shall be 2-3/4 inches (70 mm).
   2. Furnish lead shields where required.

C. Locksets And Latchsets:
   1. Lever Operated:
      a. Approved Products.
      1) 7 Series by Sargent.
      2) AL Series by Schlage.
      3) 5300LN by Yale.

D. Deadbolts:
   1. Approved Products.
      a. Match manufacturer of locksets.

E. Standard Cylinders:

F. Exit Devices:
   1. Use operable lever trim.
2. Provide labeled hardware where required by local code authority.
3. Approved Products.
   a. Apex Series by Precision.
   b. 80 Series by Sargent.
   c. 99 or 98 Series by Von Duprin.
   d. 7100 Series by Yale.

PART 3 - NOT USED

END OF SECTION
SECTION 08 7106
CLOSING DEVICES

PART 1 - GENERAL

1.1 SUMMARY

A. Products Furnished But Not Installed Under This Section:
   1. Closers for flush wood doors and hollow metal doors.

B. Related Requirements:
   1. Section 08 7101: 'Common Finish Hardware Requirements'.
   2. Section 08 7108: 'Stops And Holders'.

1.2 SUBMITTALS

A. Closeout Submittals:
   1. Include following in Operations And Maintenance Manual
      a. Warranty Documentation:
         1) Manufacturer's final, executed copy of warranty.

1.3 WARRANTY

A. Manufacturer Warranty:
   1. Manufacturer's Standard Warranty, five (5) years minimum.

PART 2 - PRODUCTS

2.1 MANUFACTURED UNITS

A. Manufacturers:
   1. Approved Manufacturers.

B. Surface-Mounted Overhead Door Closers:
   1. Closers provided under this Section shall be from same Manufacturer.
   2. Provide parallel arms on closers unless door position in relation to adjacent wall requires otherwise. Provide covers.
   3. Door Closers on doors that swing 180 degree as shown on Contract Documents:
      a. Closers shall allow for 180 degree opening and not be used as a stop. Wall stop or Floor stop is specified in Door Schedule and Section 08 7108, 'Stops And Holders'.
      b. Closers shall have following features:
         1) Adjustable sweep speed.
         2) Adjustable backcheck.
         3) Non-handed, non-sized.
   4. Door Closers on doors that swing 90 degree as shown on Contract Documents:
      a. Closers shall allow for 100 degree opening and not be used as a stop.
      b. Closers shall have following features:
1) Adjustable sweep speed.
2) Adjustable backcheck.
3) Non-handed, non-sized.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Mount closers on stop side of door wherever conditions permit.

B. Through-bolt hardware-to-door connections.

3.2 ADJUSTING

A. Adjust closers to provide maximum opening force as required by governing code authority and proper backcheck and sweep speed.

END OF SECTION
SECTION 08 7107

PROTECTIVE PLATES AND TRIM

PART 1 - GENERAL

1.1 SUMMARY

A. Products Furnished But Not Installed Under This Section:

B. Related Requirements:
   1. Section 08 7101: Common Hardware Requirements and VMR Suppliers.

PART 2 - PRODUCTS

2.1 MANUFACTURED UNITS

A. Manufacturers:
   1. Type Two Acceptable Manufacturers:
      b. Hager, St Louis, MO  (800) 255-3590 or (314) 772-4400  www.hagerhinge.com.
      e. Equal as approved by Architect before installation.  See Section 01 6200.

B. Protective Plates:
   1. Material: 0.050 inch (1.27) mm thick Stainless Steel.
   2. Sizes:
      a. Kick Plates: 10 inches (255) mm high by width of door less 3/4 inch (19 mm) on each side.

PART 3 - EXECUTION: Not Used

END OF SECTION
SECTION 08 7108
STOPS AND HOLDERS

PART 1 - GENERAL

1.1 SUMMARY

A. Products Supplied But Not Installed Under This Section:
   1. Door stops.
   2. Door stops and holders.

B. Related Sections:
   1. Section 08 7101: Common Hardware Requirements.

PART 2 - PRODUCTS

2.1 MANUFACTURED UNITS

A. Manufacturers:
   1. Manufacturer Contact List:
      e. Sargent, New Haven, CT  (800) 906-6606 or (203) 562-2151  www.sargentlock.com.

B. Stops:
   1. Use wall type stops unless indicated otherwise on Door Schedule.
   2. Provide model appropriate for substrate. Wall stops may be either cast or wrought.
   3. Type Two Acceptable Products:
      a. Hager: 236W, 255W, 243F
      b. Ives: WS407CCV, WS447, FS438
      c. Rockwood: 409, 474 / 475, 440 / 441
      d. Glynn Johnson
      e. Sargent
      g. Equal as approved by Architect before Installation. See Section 01 6200.

C. Door Stops And Holders:
   1. Acceptable Products:
      a. Hager: 268F, 268S or 256S, 256W.
      d. Equal as approved by Architect before Installation.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Interface With Other Work: When using overhead stops, coordinate installation with door closer and other door hardware.
PART 1 - GENERAL

1.1 SUMMARY

A. Products Furnished But Not Installed Under This Section:
   1. Door Silencers.
   2. Smoke Gaskets.
   3. Thresholds (metal) where required for wood doors and hollow metal doors.
   4. Weatherstripping for exterior hollow metal doors.

B. Related Requirements:
   1. Section 08 4113: 'Thresholds for Aluminum-Framed Entrances And Storefronts'.
   2. Section 08 7101: Common Hardware Requirements and Approved Suppliers.
   3. Section 09 3013: Ceramic Tiling

1.2 REFERENCES

A. Association Publications:
   1. American Architectural Manufacturers Association (AAMA):
         Finishes for Architectural Aluminum'.
      b. AAMA 611-98, 'Voluntary Standards for Anodized Architectural Aluminum'.
      c. AAMA 701/702-04 Voluntary Specification for Pile Weatherstripping and Replaceable
         Fenestration Weatherseals.
   2. National Association of Architectural Metal Manufacturers (NAAMM):
      a. Metal Finishes Manual for Architectural and Metal Products.

B. Reference Standards:
   1. American National Standards Institute / Builders Hardware Manufacturers Association:
      a. ANSI / BHMA A156.18-2006, 'Materials and Finishes'.
      b. ANSI / BHMA A156.21-2009, 'American National Standard for Thresholds'.

PART 2 - PRODUCTS

2.1 MANUFACTURED UNITS

A. Manufacturers:
   1. Manufacturer Contact List:

B. Door Silencers:
   1. Quality Standards:
      a. For Metal Frames:
         1) 307D by Hager.
         2) SR64 by Ives.
C. Smoke Gaskets:
   1. Color as selected by Architect.
   2. Acceptable Products:
      a. 726 by Hager.
      b. 5050 by NGP.
      c. PK55 by Pemko.
      d. Equal as approved by Architect before bidding.

D. Weatherstripping:
   1. Acceptable Products:
      a. Perimeter:
         1) 800S by Hager.
         2) A625A by NGP.
         3) 35041CP by Pemko.
      b. Bottom:
         1) Equal by Hager.
         2) 198NA by NGP.
         3) Equal by Pemko.
      c. Equal as approved by Architect before bidding.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install smoke gaskets eals in manner to give continuous air-tight fit.
   1. Install smoke gaskets as per Manufacturer’s installation requirements:
      a. Hinge Jamb: Install smoke gaskets on jamb face of door frame so door will compress
         smoke gasket.
      b. Header and Strike Jamb: Install smoke gaskets on face of stop of door frame so door will
         compress smoke gasket.
   2. Install acoustical seal with seal under door.

END OF SECTION
SECTION 08 8100
GLASS GLAZING

PART 1 - GENERAL

1.1 SUMMARY

A. Includes But Not Limited To:
   1. Quality of glazing used in entries, doors, windows and side lites.

B. Related Requirements:
   1. Sections Under 08 1000 Heading: Furnishing and installing of flush wood door lites in new doors.
   2. Section 08 4113: Furnishing and installing of glazing in aluminum-framed storefront.
   3. Section 08 5113 or 08 5313: Furnishing and installing of glazing in windows.

1.2 REFERENCES

A. Association Publications:
   1. Glass Association of North America (GANA):
      b. ‘Laminated Glass Design Guide’.
      c. ‘Engineering Standards Manual’.
   2. The Insulating Glass Manufactures Alliance (IGMA):
      a. IGMA TB-3001 ‘Sloped Glazing Guidelines.

B. Definitions:
   1. Airspace: Space between lites of insulating glass unit that contains dehydrated air or other inert specified gas.
   2. Emissivity: Ability of surface to absorb heat and to reflect it. Lower emissivity, the less room heat is absorbed and more heat is reflected back into the room.
   3. Glass Surface:
      a. Insulated glass unit:
         1) Surface 1: Exterior surface of outer lite.
         2) Surface 2: Interspace-facing surface of outer lite.
         3) Surface 3: Interspace-facing surface of inner lite.
         4) Surface 4: Interior surface of inner lite.
      b. Monolithic glass:
         1) Surface 1: Exterior surface.
         2) Surface 2: Interior surface.
   4. Insulation Glass: Two pieces of glass spaced apart and hermetically sealed to form single-glazed unit with air space between. Heat transmission through this type of glass may be as low as half that without air space. Also called double glazing, double pane, insulated unit, and thermal pane.
5. Laminated Glass: Two or more sheets with inner layer of transparent plastic to which glass adheres if broken. Used for overhead, safety glazing, and sound reduction.

6. Low-Emissivity Glass (Low-E): Reduces wintertime heat loss from interior with thin, almost colorless metallic coating that reflects heat back inside structure. Allows moderate solar heat gain while reducing harmful ultraviolet light in any season. Minimizes summertime air conditioning loss by reflecting radiated heat to outside. May be tempered for where safety glass is required. Available in single strength clear, gray and bronze (brown) color.

7. Muntins: Decorative design in cut-ups of glass lites, such as painted muntin grids (enamelite) applied to interior lite of glass in sealed insulating glass unit to simulate cut-ups of glass lites either in colonial or diamond patterns, or use of aluminum muntin bar between lites of glass in sealed insulating glass unit to simulate glass cut-ups, or use of actual vertical and horizontal bars to divide windows into smaller lites of glass. Bars are termed muntin bars.

8. Obscure Glass: Adds privacy where window coverings are impractical or undesirable. Various colors and texture patterns provide translucent or semi-opaque effect. May be tempered for use where safety glass is required.

9. Shading Coefficient: Ratio of solar heat gain passing through a glazing system to solar heat gain that occurs under the same conditions if the window was made of clear, unshaded double strength glass. Lower SC number, the better solar control efficiency of glazing system.

10. Solar Absorptance: Percent of incident solar radiation that is absorbed by window film/glass system. Lower the number, the less solar radiation absorbed.

11. Solar Heat Gain Coefficient (SHGC): Ratio of total solar heat passing through a given window relative to the solar heat incident on the projected window surface at normal solar incidence. (Percentage of solar energy directly transmitted or absorbed and re-radiated into a building). Lower SHGC, the better it is able to reduce heat.

12. Solar Reflectance (R): Percent of incident solar radiation that is reflected by window film/glass system. Lower the number, the less solar radiation reflected.

13. Solar Transmittance (T): Percent of incident solar radiation that is transmitted through window film/glass system. Lower the number, the less solar radiation transmitted.

14. Tempered Glass: Glass strengthened through process of heating, creating tensile strength that causes glass to resist breakage, yet disintegrate into small pieces if break occurs. Tempered glass is type of safety glass.

15. Tinted Glass: Special type glass with additives, usually metallic particles that reduce passage of sunlight. Tinted glass can be bronze, gray, green or blue as well as other more exotic colors.

16. U-Factor: Overall heat transfer coefficient of glazing system. Measure of heat transfer that occurs through glazing system, and its outer and inner surfaces. This value is a function of temperature, and is expressed in BTU per square foot per hour per degree Fahrenheit (BTU/sq ft/hr deg F). Lower the U-Factor, the better insulation qualities of glazing system.

17. U-Value: Measurement of heat transfer through film due to outdoor/indoor temperature differences. Lower U-value, less heat transfers. When using performance data, the lower U-value, better insulating qualities of window film/glass system.
18. Ultraviolet Transmittance: Percent of ultraviolet light (UV) that is transmitted by window film/glass system. Lower the number, the less ultraviolet transmitted.

19. Visible Light Transmitted (VLT): Percent of total visible light (380-780 nanometers) that passes through glass. Lower the number, the less visible light transmitted.

C. Reference Standards:
   1. American Architectural Manufacturers Association / Window & Door Manufacturers Association / Canadian Standards Association:
      a. AAMA 800-10, 'Voluntary Specifications and Test Methods for Sealants'.
   2. American National Standards Institute:
      a. ANSI Z97.1 Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test'.
   3. ASTM International:
      a. ASTM C1036-11, 'Standard Specification for Flat Glass'.
      b. ASTM C1048-04, 'Standard Specification for Heat-Treated Flat Glass - Kind H, Kind FT Coated and Uncoated Glass'.
      c. ASTM C1172-09e1, 'Standard Specification for Laminated Architectural Flat Glass'.
      d. ASTM C1281-03(2009), 'Standard Specification for Preformed Tape Sealants for Glazing Applications'.
      e. ASTM E2190-10, 'Standard Specification for Insulating Glass Unit Performance and Evaluation'.
   4. National Fenestration Rating Council (NFRC):
      a. NFRC 100 - Procedure for Determining Fenestration Product Thermal Properties.
      c. NFRC 300 - Procedures for Determining Solar Optical Properties of Simple Fenestration Products.

1.3 SUBMITTALS

A. Action Submittals:
   1. Product Data:
      a. Manufacturer’s data sheets for each glass product and glazing material.

B. Informational Submittals:
   1. Qualification Statement:
      a. Installer:
         1) Provide Qualification documentation if requested by Architect or Owner.

C. Closeout Submittals:
   1. Include following in Operations And Maintenance Manual specified in Section 01 7800:
      a. Warranty Documentation:
1.4 QUALITY ASSURANCE

A. Regulatory Agency Sustainability Approvals:
   2. Comply with published recommendations of glass product Manufacturers and organizations, except where more stringent requirements are indicated.

B. Qualifications:
   1. Installer: Requirements of Section 01 4301 applies, but not limited to following:
      a. Satisfactorily completed at least three (3) installations of similar size, scope, and complexity in each of past two (2) years and be approved by glass product Manufacturer before bidding.
      b. Upon request, submit documentation.

C. Certifications:
   1. Labels showing strength, grade, thickness, type, and quality are required on each piece of glass.
   2. Manufacturers/Fabricators certifying products furnished comply with project requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Delivery And Acceptance Requirements:
   1. Follow Manufacturer’s instruction for receiving, handling, and protecting glass & glazing materials to prevent breakage scratching, damage to seals, or other visible damage.
   2. Deliver materials in manufacturer’s original, unopened, undamaged containers with identification labels intact.

B. Storage And Handling Requirements:
   1. Follow Manufacturer’s instruction for storing and protecting glass & glazing materials.
   2. Store materials protected from exposure to harmful environmental conditions and at temperatures and humidity conditions recommended by Manufacturer.
   3. Protect edge damage to glass, and damage/deterioration to coating on glass.

1.6 FIELD CONDITIONS

A. Ambient Conditions:
   1. Do not proceed with glazing when ambient and substrate temperature conditions are outside the limits permitted by glazing material manufacturer or when joint substrates are wet due to rain, frost, condensation or other causes.
1.7 WARRANTY

A. Manufacturer Warranty:
   1. Insulating Glass Warranty:
      a. Manufacturer’s standard form, signed by insulating-glass product
         Manufacturer/Fabricator, agreeing to replace insulating-glass units that
         exhibit failure of hermetic seal under normal use evidenced by obstruction of
         vision by dust, moisture, or film on interior surfaces of glass, for ten [10]
         years of date of installation.
   2. Installer’s Warranty:
      a. Form acceptable to Owner, signed by glass product Installer, agreeing to
         replace glass products that deteriorate, or that exhibit damage or
deterioration of glass or glazing products due to faulty installation, for two (2)
         years from date of installation.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Manufacturers:
   1. Manufacturer Contact List for Low E Glazing:
      d. PPG Industries, Pittsburgh, PA  www.ppgglass.com or PPG Canada Ltd,
         Glass Division, Toronto, ON  (416) 789-3331.

B. Exterior Window and Storefront Glazing:
   1. Thickness: ¼ inch minimum, Double Strength.
   2. Exterior Glazing shall have following characteristics:
      a. Low-Emissivity (or Low E):
         1) Design Criteria:
            a) Clear:
            b) Insulated Glass.
            c) Meet requirements of ASTM C1036, Type I, Class I, Quality Q3.
            d) Location: Surface 2.
         2) Type Two Acceptable Product:
            a) Performance Standard:
               (1) 40 percent Visible Light Transmission (VLT).
               (2) 0.26 U-value winter. Night Time.
               (3) 0.21 Solar Heat Gain Coefficient (SHGC).
               (4) LSG 1.90
               (5) 7 percent Visible Light Reflectance.Exterior W112 Interior.
            b) Quality Standard:
               (1) Solarban 70 XL Solar Bronze and Clear
               (2) Other low E glazing system standard with window manufacturer
                   that meets or exceeds performance characteristics of specified
glazing is acceptable as approved by Architect before bidding. See Section 01 6200.

3) Acceptable Manufacturers:
   a) AFG.
   b) Guardian.
   c) LOF.
   d) PPG.
   e) Visteon.
   f) Vitro.

b. Glazing in Windows within 24 inches (600 mm) of Exterior Doors:
   1) Design Criteria:
      a) Tempered.
      b) Meet requirements of ASTM C1048, Kind FT, Condition A, Type I, Class I, Quality Q3.

C. Interior Glazing:
   1. Thickness: 1/4 inch (6 mm).
   2. Glazing shall have following characteristics:
      a. Clear:
      b. Tempered within 24 inches of doors or below 18 inches from floor.
         1) Acceptable Manufacturers:
            a) AFG.
            b) Guardian.
            c) LOF.
            d) PPG.
            e) Visteon.
            f) Vitro.

D. Rated Glazing
   1. Provide 1 HR fire glazing in doors and side lites of rated doors.

E. Fabrication:
   1. Except where glass exceeds 66 inches (1 675 mm) in width, cut clear glass so any wave will run horizontally when glazed.
   2. Sealed, Insulating Glazing Units:
      a. Double pane, sealed insulating glass units. Install at exterior windows and exterior aluminum-framed storefront.
      b. Unit Thickness: 5/8 inch (16 mm) minimum, one inch (25 mm) maximum.
      c. Type Seal:
         1) Metal-to-glass bond and separated by 1/2 inch (12.7 mm) dehydrated air space.
         2) Use non-hardening sealants.
      d. Approved Fabricators.
         1) Members of Sealed Insulating Glass Manufacturer's Association.

2.2 ACCESSORIES

A. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
B. Glazing Tape: Butyl-based elastomeric tape with integral resilient tube spacer, 10 to 15 Shore A durometer hardness, black color, coiled on release paper; widths required for specified installation, complying with ASTM C1281 and AAMA 800 for application.

PART 3 - EXECUTION: Not Used

END OF SECTION
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
   1. Resilient metal ceiling channels.

B. Related Requirements:

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate non-load-bearing steel framing, provide materials and construction identical to those tested in assembly indicated, according to ASTM E119 by an independent testing agency.

B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated on Drawings, according to ASTM E90 and classified according to ASTM E413 by an independent testing agency.

C. Horizontal Deflection: For [composite] [non-composite] wall assemblies, limited to [1/240] [1/360] of the wall height based on horizontal loading of [5 lbf/sq. ft. (239 Pa)] [10 lbf/sq. ft. (480 Pa)] <Insert value>.

2.2 FRAMING SYSTEMS

A. Resilient Furring Channels: 1/2-inch- (13-mm-) deep, steel sheet members designed to reduce sound transmission.
PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Installation Standard: ASTM C754.

B. Install framing and accessories plumb, square, and true to line, with connections securely fastened.

3.2 INSTALLING FRAMED ASSEMBLIES

A. Install framing system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
   1. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.
   2. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.

END OF SECTION
PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Work includes all labor, materials, and equipment necessary to install all aspects of the Diamond Wall One Coat Stucco System.

B. Related Sections
   1. 06 11 00 – Wood Framed Construction
   2. 06 16 00 – Sheathing
   3. 07 00 00 – Joint Sealers
   4. 09 29 00 – Gypsum Board

1.2 REFERENCES

A. ASTM C150 – Portland Cement
B. ASTM C79/C1396 - Gypsum Sheathing
C. ASTM A641 - Zinc-Coated (Galvanized) Carbon Steel Wire
D. ASTM C847 - Standard Specification for Metal Lath
E. ASTM C897/C144 - Aggregate for Job-Mixed Portland Cement-Based Plaster
F. ASTM C1032 - Woven Wire Plaster Base
G. ASTM C920 - Elastomeric Joint Sealants
H. ICC-ES ESR-1194
I. Omega Diamond Wall One Coat Systems Details (DWS)

1.3 SYSTEM DESCRIPTION

A. General: The Diamond Wall One Coat System is an exterior stucco system and is comprised of sheathing, a liquid water-resistive barrier, metal lath, Diamond Wall base coat, and an acrylic precolored finish coat.

B. Methods: The Diamond Wall systems are applied directly to a structure at the construction site or may be applied to prefabricated panels.
1.4 SUBMITTALS

A. Product Data: All product data sheets, evaluation reports, details, and warranty information that pertain to the project in accordance with Section 01 30 00 Submittal Procedures.

B. Samples: Submitted upon request.
   1. Samples of the finish coat shall be of an adequate size as required to represent each color and texture to be utilized on the project and produced using the same techniques and tools required to complete the project.
   2. Retain approved samples at the construction site throughout the application process.

1.5 QUALITY ASSURANCE

A. Qualifications:
   1. Manufacturer: System component materials shall be manufactured or approved by Omega Products International, Inc. and shall be distributed by the same or its authorized dealers.

B. Plastering Contractor:
   1. Shall specialize in cement plasterwork with documented experience.
   2. Shall provide proof of current contractor’s license and bond where required.

C. On-Site Mock-Ups: Produced upon request.
   1. Prior to commencement of work, provide a mock-up for approval.
   2. Mock-up suitable to represent the products to be installed for each color and texture constructed using the same tools and techniques to be utilized on the project.
   3. Retain approved mock-up at job site throughout the application process.
      a. Where acceptable to the Architect, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver all materials to the construction site in their original, unopened packaging with labels intact.

B. Inspection: Inspect the materials upon delivery to assure that specified products have been received. Report defects or discrepancies to the responsible party according to the construction documents; do not use reported material for application.
C. Storage: Store all products per manufacturer's recommendations. Generally, store materials in a cool, dry location; away from direct contact with the ground and/or concrete; out of direct sunlight; and protect from weather and other damage.

1.7 PROJECT CONDITIONS

A. Environmental Requirements: Follow product manufacturer's recommendations for environmental conditions and surface preparation.
   1. Temperatures: Before, during and following the application of the Diamond Wall One Coat System, the ambient and surface temperatures must remain above 40°F (4°C) for a minimum period of 24 hours. Protect stucco from uneven and excessive evaporation, especially during hot, dry, and/or windy weather. Protect Diamond Wall stucco from freezing for a period of not less than 24-hours after set has occurred.
   2. Substrates: Prior to installation, inspect the wall for surface contamination or other defects that may adversely affect the performance of the materials, and shall be free of residual moisture. Do not apply Diamond Wall stucco to substrates whose temperature are less than 40°F (4°C) or contain frost or ice.
   3. Inclement Weather: Protect applied material from inclement weather until dry.

B. Existing Conditions:
   1. Jobsite Resources: Provide access to electrical outlets, clean, potable water, and a suitable work area at the construction site throughout the application of the Diamond Wall One Coat System.

1.8 SEQUENCING AND SCHEDULING

A. Sequencing: Coordinate the installation of the Diamond Wall One Coat System with all other construction trades. To reduce the likelihood of the stucco cracking, it is recommended the building carry a minimum of 90 percent of the dead building load and the interior gypsum be installed prior to installation of the stucco.

B. Staffing: Provide sufficient manpower to ensure continuous operation, free of cold joints, scaffolding lines, variations in texture, etc.

1.9 WARRANTY

A. System Warranty: Submit documentation on Diamond Wall’s standard system warranties. At completion of work, provide written system warranty documentation.

B. Warranty Length: Ten (10) years commencing at the time of substantial completion. [See Omega Product’s System Warranties for more
information. The warranty length depends upon the combination of products used in the system.]

1.10 MAINTENANCE

A. The following materials shall be presented to the owner following the application of the Diamond Wall One Coat System:
   1. One container of finish for each color and texture utilized on the project.
   2. A maintenance program for finishes as required.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Omega Products International, Inc.

2.2 ONE COAT STUCCO BASE COAT

A. Diamond Wall Concentrate: A factory prepared blend of portland cement complying with C150, chopped fibers, and proprietary ingredients manufactured by Omega Products International, Inc.

   OR

B. Diamond Wall Sanded: A factory prepared blend of portland cement complying with C150, sand, chopped fibers, and proprietary ingredients manufactured by Omega Products International, Inc.

C. Sand:
   1. Sand must be clean and free from deleterious amounts of loam, clay, silt, soluble salts and organic matter.
   2. Sampling and testing must comply with ASTM C144 or C897.
   3. Sand must be graded in accordance with ASTM C144 or C897 or within the following limits:

<table>
<thead>
<tr>
<th>RETAINED ON U.S. STANDARD SIEVE</th>
<th>PERCENT RETAINED BY WEIGHT ± 2 PERCENT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Natural Sand</td>
</tr>
<tr>
<td></td>
<td>Min. / Max.</td>
</tr>
<tr>
<td>No. 4</td>
<td>0 / 0</td>
</tr>
<tr>
<td>No. 8</td>
<td>0 / 10</td>
</tr>
<tr>
<td>No. 16</td>
<td>10 / 40</td>
</tr>
<tr>
<td>No. 30</td>
<td>30 / 65</td>
</tr>
<tr>
<td>No. 50</td>
<td>70 / 90</td>
</tr>
</tbody>
</table>
D. Water: Clean and potable without foreign matter.
   1. [AkroLoc: A 100% acrylic polymer bonder or admixture manufactured by Omega Products International, Inc.]
      OR
   2. [PolyLoc: Poly-vinyl acetate (PVA) bonder or admixture manufactured by Omega Products International, Inc.]
      OR
   3. [Admix 500: A 100% acrylic polymer admixture manufactured by Omega Products International, Inc.]
      OR
   4. [OmegaCure: A non-corrosive liquid admixture for accelerating the hydration of cement plaster manufactured by Omega Products International, Inc.]

2.3 WATER-RESISTIVE BARRIER
   1.

B. Over Wood-based Sheathing:

2.4 LATH
   A. Woven-Wire Lath: Nominal No. 17 gauge (0.058 inch), 1.5-inch opening, galvanized steel complying with ASTM C1032. Furring crimps shall be provided at maximum 6-inch (152mm) intervals each way and shall fur the body of the lath a minimum of 1/4-inch (6.4mm) from the substrate after installation.

2.5 SHEATHING
   A. Wood-based Structural Panels: 1/2-inch-thick OSB. OSB must be Exposure 1 and comply with DOC PS-2, or UBC Standard 23-3, as applicable. [Wood-based structural panels must be minimum 5/16-inch-thick (7.9 mm) plywood or OSB, for studs spaced 16 inches (406 mm) on center, and must be a minimum 3/8-inch-thick (9.5 mm) plywood or OSB for studs spaced 24 inches (610 mm) on center. Insert the thickness and choose plywood or OSB references.]

2.6 ACCESSORIES
   A. Caulking: Acrylic latex complying with ASTM C834. Polyurethane, polyurethane modified, polysulfide, or silyl-terminated polyether elastomeric sealant complying with ASTM C920.
B. Flashing: Flashing complying with UBC Section 1404.2, IBC Section 1405.3 or IRC Section R703.8, as applicable, must be provided. Where membrane flashing is used, it must be a self-adhering, flexible rubberized asphalt and polyethylene material, 0.020 inch (0.5 mm) thick minimum, shingle-lapped with the water-resistive barrier. Rigid flashings must be sloped towards the exterior, with an upturned leg on the interior side and at the ends, and must extend beyond the surface of the exterior wall.

C. Fasteners: Nails, staples, or screws used to rigidly secure lath and associated accessories shall be corrosion-resistant and meet the minimum requirements of ICC-ES ESR-1194.

D. Zinc and Zinc-Coated (Galvanized) Accessories: The following accessories shall be fabricated from zinc.
   1. Corner Aid: Minimum 26-gauge thick; expanded flanges shaped to permit complete embedding in plaster; minimum 2 in. wide; Square-edge style; use unless otherwise indicated.
   2. Strip Mesh: Metal Lath, 3.4 lb/yd² expanded metal; 6 in. wide x 18 in. long.
   3. Vent Screed: Minimum 26-gauge thick; thickness governed by plaster thickness; minimum 2-inch (102 mm) width, double “V” profile, with perforated expanse between “V’s” of longest possible lengths.
   4. Casing Bead: Minimum 26-gauge thick; thickness governed by plaster thickness; maximum possible lengths; expanded metal flanges, with square edges.
   5. Drip Screed: Minimum 26-gauge thick, depth governed by plaster thickness, minimum 3-1/2 in. high flange, maximum possible lengths.
   6. Control and Expansion Joints: Depth to conform to plaster thickness; use maximum practical lengths.
      a. Control Joints: One-piece-type, U-shape ¾” reveal width painted configuration; removable protective tape on plaster face of control joint.

2.7 FOAM ARCHITECTURAL DETAILS

A. Foam: EPS foam, 1.0 lb/ft² minimum density.

B. Foam Mesh: Alkali resistant, 2.0 oz. or 4.5 oz., woven glass fiber fabrics specially manufactured by Omega Products International, Inc.

C. Foam Base coat and Adhesive: DryBond, StyroGlue DryBond, StyroGlue, or Foamtek manufactured by Omega Products International, Inc.
2.8 PRIMER

A. [Primer is optional, but is recommended when using acrylic-based finishes. Delete this section if primer will not be used on the project. The use of primer will increase the Diamond Wall standard warranty by three years.] OmegaFlex or AkroFlex primer manufactured by Omega Products International, Inc.

2.9 FINISHES

A. [OmegaFlex <insert finish name>: 100% acrylic-based finish manufactured by Omega Products International, Inc. [Standard system warranty is 7 years. See Omega Product’s System Warranties for additional information.]]

B. [AkroFlex <insert finish name>: 100% acrylic-based finish manufactured by Omega Products International, Inc. [Standard system warranty is 7 years. See Omega Product’s System Warranties for additional information.]]

C. Color and Texture: Color and finish texture shall be as selected by the Architect.

2.10 MIXES

A. Diamond Wall Base Coat: Mixing requirements are contained in the Diamond Wall Concentrate product data sheets by Omega Products International, Inc. and the ICC-ES ESR-1194.

PART 3 EXECUTION

3.1 EXAMINATION

A. Substrates:
   1. Acceptable substrates must be securely fastened per applicable building code requirements.
   2. Acceptable substrates and adjacent materials must be dry, clean, and sound. Substrate surface must be flat, free of fins or planar irregularities greater than 1/4-inch in 10-feet (6mm in 3m).
   3. Insure wood-based sheathing is properly gapped per APA guidelines.

B. Flashings: All flashing around windows, at deck attachments, utility penetrations, roof lines, etc. and all kick-out flashing must be properly installed prior to application of Omega Diamond Wall One Coat System.

C. Unsatisfactory conditions shall be reported to the general contractor and/or builder and/or architect and/or owner. Do not proceed until all unsatisfactory conditions have been corrected.
3.2 PREPARATION

A. Substrate: Clean the substrate to which the Diamond Wall One Coat System is to be applied, ensuring that there are no foreign materials present; including, but are not limited to, oil, dirt, dust form release agents, efflorescence, paint, wax, water repellants, moisture, frost, and or extended nails that may rupture the water-resistive barrier.

B. Surrounding Areas: Protect surfaces near the work of this section from damage, disfiguration, and overspray. Mask off all dissimilar materials.

3.3 INSTALLATION

A. General Installation: Refer to ICC-ES ESR-1194 or the appropriate manufacturer’s product data sheet for additional installation requirements and recommendations.

3.4 INSTALLING WEATHER PROTECTION

A. Water-Resistive Barrier: Apply water-resistive barrier complying with Section 1404.2 of the IBC, Section R703.2 of the IRC or Section 1402.1 of the UBC.

B. Flashing: Install flashing and trim per

3.5 INSTALLING LATH

A. General: The lath must be properly furred. When end laps occur between supports, lace or wire tie the ends of the sheets with 0.0475-inch (1.2 mm) galvanized annealed steel wire.

1. Wood Studs: Use No. 11 gage galvanized roofing nails or No. 16 gage corrosion-resistant staples spaced a maximum of 6 inches (152 mm) on center with a minimum 1-inch (25 mm) penetration into the wood studs. Staples must have a minimum crown width of 7/16-inch (11.1 mm). The wood species must have a minimum specific gravity of .42, such as Spruce-pine fir. Care must be taken to avoid overdriving fasteners.

B. Soffits: Use 3.4 lb/yd² metal lath or rib lath. Metal lath fastening must comply with ASTM C926 or C1063 (IBC), Section R703.6 of the IRC, or Table 25-C of the UBC, except the fastener length must be increased by the thickness of any substrate. [Delete this section if soffits are not needed.]

3.6 INSTALLING DIAMOND WALL BASE COAT

A. Application: The exterior cementitious coating is applied by hand-troweling or machine-spraying, in one coat, to a minimum 3/8-inch (9.5 mm) thickness, unless noted otherwise. Nominal thickness around penetrations
is 3/8-inch (9.5 mm), backed by framing or blocking. The lath must be embedded in the minimum coating thickness and therefore cannot be exposed.

B. Moist Curing: Moist curing must be provided for a minimum 24 hours after coating applications. The length of time and most effective procedure for moist curing will depend on climatic and job conditions.

3.7 INSTALLING CRACK ISOLATION SYSTEM

A. [Brown Coat Method: Before final set has occurred, fully embed mesh into the brown coat. A minimum two-inch overlap is required. Brown coat surface shall be left suitable for the application of the finish.]

OR

B. [Base Coat Method: After brown coat has properly cured, apply base coat to wall and fully embed mesh into base coat. See the appropriate Omega product data sheet for mixing and application instruction. A minimum two-inch (51 mm) overlap is required at all mesh joints. Base coat surface shall be left suitable for the application of the finish.]

3.8 INSTALLING FOAM ARCHITECTURAL DETAILS

A. Attaching Foam: Apply foam shapes after Diamond Wall stucco has set. Use foam adhesive to attach EPS foam shapes to Diamond Wall. See base coat product data sheet for additional information.

B. Coating Foam: Apply foam base coat and embed mesh. Overlap mesh onto Diamond Wall stucco a minimum of 1.5-inches (38mm).

3.9 INSTALLING FINISH COAT

A. General: Apply per manufacturer’s product data sheet.

B. Verification: Verify the desired color and texture match the approved sample and/or mock-up prior to installation.

3.10 CLEANING

A. Cleaning: Remove any and all materials used, overspray from adjacent surfaces, and all protective masking.

3.11 PROTECTION

A. Protection: Protect applied material from inclement weather until dry and prevent it from freezing for a minimum of 24-hours after set and/or until dry. Refer to manufacturer’s product data sheet for additional requirements.
SECTION 09 29 00
GYPSUM BOARD

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Interior gypsum board.
   2. Tile backing panels.
   3. Textured finishes.

B. Related Requirements:
   1. Section 07 00 00 - Thermal Insulation.
   2. Section 09 91 23 - Interior Painting.

1.2 SUBMITTALS

A. Product Data: Submit data on gypsum board, joint tape; decorative finish, and acoustic accessories.

B. Samples: Submit one sample of textured surfacing; 24x24 inch in size illustrating textured finish.

1.3 DELIVERY, STORAGE AND HANDLING

A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

1.4 FIELD CONDITIONS

A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.

B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.

C. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.
   1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
   2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 PRODUCTS
2.1 PERFORMANCE REQUIREMENTS

A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

2.2 GYPSUM BOARD, GENERAL

A. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.3 INTERIOR GYPSUM BOARD

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. American Gypsum.
   2. CertainTeed Corp.
   3. Georgia-Pacific Gypsum LLC.
   5. USG Corporation.

B. Gypsum Board, Type X: ASTM C 1396/C 1396M.
   1. Thickness: 5/8 inch.
   2. Long Edges: Tapered and featured (rounded or beveled) for prefilling.

C. Gypsum Ceiling Board: ASTM C 1396/C 1396M Type X at Rated Ceilings.
   1. Thickness: 5/8 inch.
   2. Long Edges: Tapered.

D. Moisture- and Mold-Resistant Gypsum Board: ASTM C 1396/C 1396M. With moisture- and mold-resistant core and paper surfaces.
   1. Core: 5/8 inch, Type X.
   2. Long Edges: Tapered.
   3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

2.4 TILE BACKING PANELS

A. Water-Resistant Gypsum Backing Board: ASTM C 1396/C 1396M, with manufacturer's standard edges.
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. American Gypsum.
      b. CertainTeed Corp.
      c. Georgia-Pacific Gypsum LLC.
      d. USG Corporation.
   2. Core: 5/8 inch, Type X.
TRIM ACCESSORIES

A. Interior Trim: ASTM C 1047.
   1. Shapes:
      a. Cornerbead.
      b. Resilient ceiling channels at 16 inches on center.

JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475/C 475M.

B. Joint Tape:
   1. Interior Gypsum Board: Paper.
   2. Tile Backing Panels: As recommended by panel manufacturer.

C. Joint Compound for Interior Gypsum Board: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
   1. Prefilling: At open joints, rounded or beveled panel edges, and damaged surface areas, use setting-type taping compound.
   2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use drying-type, all-purpose compound.
   3. Fill Coat: For second coat, use drying-type, all-purpose compound.
   4. Finish Coat: For third coat, use drying-type, all-purpose compound.
   5. Skim Coat: For final coat of Level 5 finish, use drying-type, all-purpose compound.

D. Joint Compound for Tile Backing Panels:
   1. Water-Resistant Gypsum Backing Board: Use setting-type taping compound and setting-type, sandable topping compound.

AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.

B. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.
   1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch thick.

C. Sound-Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.
D. Acoustical Joint Sealant: Manufacturer’s standard nonsag, paintable, non-staining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   a. Accumetric LLC.
   b. Grabber Construction Products.
   c. Pecora Corporation.
   d. Specified Technologies, Inc.
   e. USG Corporation.

E. Thermal Insulation: In accordance with Section 07 00 00.

F. PART 3 EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates including welded hollow-metal frames and framing, with Installer present, for compliance with requirements and other conditions affecting performance.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

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

3.2 APPLYING AND FINISHING PANELS, GENERAL

A. Comply with ASTM C 840.

B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.

D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends.
Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

E. Form control and expansion joints with space between edges of adjoining gypsum panels.

F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
   1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
   2. Fit gypsum panels around ducts, pipes, and conduits.
   3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch- wide joints to install sealant.

G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

H. Wood Framing: Install gypsum panels over wood framing, with floating internal corner construction. Do not attach gypsum panels across the flat grain of wide-dimension lumber, including floor joists and headers. Float gypsum panels over these members or provide control joints to counteract wood shrinkage.

I. Install sound attenuation blankets before installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

J. Acoustical Sealant: In walls and partitions containing sound attenuation blankets, seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and with manufacturer's written instructions for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.

3.3 APPLYING INTERIOR GYPSUM BOARD

A. Install interior gypsum board in the following locations:
   1. Type X: Vertical surfaces unless otherwise indicated.
   2. Ceiling Type: Ceiling surfaces. Type X at Rated Ceilings.
   3. Moisture- and Mold-Resistant Type: As indicated on Drawings.

B. Single-Layer Application:
1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.
2. On partitions/walls, apply gypsum panels horizontally (perpendicular to framing) unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.
   a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
   b. At high walls, install panels horizontally unless otherwise indicated or required by fire-resistance-rated assembly.
3. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

3.4 APPLYING TILE BACKING PANELS
   A. Water-Resistant Backing Board: Install where indicated with 1/4-inch gap where panels abut other construction or penetrations.
   B. Where tile backing panels abut other types of panels in same plane, shim surfaces to produce a uniform plane across panel surfaces.

3.5 INSTALLING TRIM ACCESSORIES
   A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer’s written instructions.
   B. Control Joints: Install control joints according to ASTM C 840 and in specific locations approved by Architect for visual effect.
   C. Interior Trim: Install in the following locations:
      1. Cornerbead: Use at outside corners unless otherwise indicated.
   D. Install resilient channels at 16 inches on center on rated ceiling.

3.6 FINISHING GYPSUM BOARD
   A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.
   B. Prefill open joints, rounded or beveled edges, and damaged surface areas.
   C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.
D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:

1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
2. Level 2: Panels that are substrate for tile.
3. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated.
   a. Primer and its application to surfaces are specified in Section 09 91 23.
4. Level 5: Meeting Room.
   a. Primer and its application to surfaces are specified in Section 09 91 23.

E. Texture:

1. Ceilings: Troweled
2. Walls Exposed to View: Troweled

3.7 PROTECTION

A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.

B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

C. Remove and replace panels that are wet, moisture damaged, and mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION
SECTION 09 30 00

TILING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Ceramic tile.
   2. Stone thresholds.
   3. Waterproof membrane.
   5. Tile backing panels.

B. Related Requirements:
   1. Section 07 00 00 - Joint Protection.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.
   1. Samples:
      a. Each type and composition of tile and for each color and finish required.
      b. Assembled samples, with grouted joints, for each type and composition of tile and for each color and finish required.
      c. Stone thresholds in 6-inch lengths.

1.3 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering and identified with labels describing contents.

B. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed for each type, composition, color, pattern, and size indicated.

1.4 QUALITY ASSURANCE

PART 2 PRODUCTS

2.1 TILE PRODUCTS

A. ANSI Ceramic Tile Standard: Provide Standard grade tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.

B. Tile Type: Nonslip floors 2'x2" porcelain.
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   a. American Olean; Division of Dal-Tile International Inc.
   b. Crossville, Inc.
   c. Daltile; Division of Dal-Tile International Inc.
   d. Deutsche Steinzeug America, Inc.
   e. Interceramic.
   f. Lone Star Ceramics Company.
   g. Grupo Porcelanite.
   h. Portobello America, Inc.
   i. Seneca Tiles, Inc.

2. Composition: Porcelain.


4. Thickness: 1/4 inch.

5. Face: Plain with cushion edges.


7. Retain first subparagraph below for glazed tile. Descriptions are defined in ASTM C 242.

8. Tile Color and Pattern: Dark grey or black.

9. Grout Color: Coordinate with Architect/Owner from manufacturer's full range.

10. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable. Provide shapes as follows, selected from manufacturer's standard shapes:

C. Tile Type: Porcelain wall tile:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   a. Basis of Design
   b. Daltile-Volume 1.0
   c. Field Color= Degrees
   d. Silver Volume 71
   e. Agency Color- Amplify
   f. Black Volume 70 or equal
   g. American Marazzi Tile, Inc.
   h. American Olean; Division of Dal-Tile International Inc.
   i. Daltile; Division of Dal-Tile International Inc.
   j. Deutsche Steinzeug America, Inc.
   k. Florida Tile Industries, Inc.
   l. Florim USA.
   m. Laufen.
   n. Grupo Porcelanite.
   o. Portobello America, Inc.
   p. Seneca Tiles, Inc.
   q. United States Ceramic Tile Company.
3. Thickness: 5/16 inch.
4. Face: Plain with modified square edges or cushion edges.
5. Finish: Mat, opaque glaze.
6. Grout Color: As selected by Architect from manufacturer's full range.
7. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile. Provide shapes as follows, selected from manufacturer's standard shapes:
   a. Base: Coved, module size 12 by 12 inches.
   b. External Corners: Sled metal corner.
   c. Internal Corners: Field-butted square corners. For coved base and cap use angle pieces designed to fit with stretcher shapes.

D. Accessories: Provide vitreous china accessories of type and size indicated, suitable for installing by same method as adjoining wall tile.
   1. One soap holder with grab handle for each shower.
   2. Color and Finish: Match adjoining glazed wall tile.

2.2 THRESHOLDS

A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.

B. Bevel edges at 1:2 slope, with lower edge of bevel aligned with or up to 1/16 inch above adjacent floor surface. Finish bevel to match top surface of threshold. Limit height of threshold to 1/2 inch or less above adjacent floor surface.

C. Marble Thresholds: ASTM C 503, with a minimum abrasion resistance of 10 per ASTM C 1353 or ASTM C 241 and with honed finish.

D. Description: Uniform, black in color

2.3 TILE BACKING PANELS

A. Cementitious Backer Units: ANSI A118.9 or ASTM C 1325.
   1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
      a. C-Cure; C-Cure Board 990.
      b. Custom Building Products; Wonderboard.
      c. FinPan, Inc.; Util-A-Crete Concrete Backer Board.
      d. USG Corporation; DUROCK Cement Board.
   2. Thickness: 5/8 inch.

2.4 WATERPROOF MEMBRANE
A. General: Manufacturer’s standard product, selected from the following, that complies with ANSI A118.10 and is recommended by the manufacturer for the application indicated.

   1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
      a. Boiardi Products, a QEP company; Elastiment 344 Reinforced Waterproofing and Anti-Fracture/Crack Suppression Membrane.
      b. Bonsal American, an Oldcastle company; B 6000 Waterproof Membrane with Glass Fabric.
      c. Bostik, Inc.; Hydroment Blacktop 90210.
      d. Custom Building Products; 9240 Waterproofing and Anti-Fracture Membrane.
      e. Laticrete International, Inc.; Laticrete 9235 Waterproof Membrane.
      f. MAPEI Corporation; Mapelastic HPG with MAPEI Fiberglass Mesh.
      g. Mer-Kote Products, Inc.; Hydro-Guard 2000.
      h. Summitville Tiles, Inc.; S-9000.

C. Latex-Portland Cement: Flexible mortar consisting of cement-based mix and latex additive.
   1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
      a. Boiardi Products, a QEP company; Elastiment 323 Cement Based Waterproofing, Anti-Fracture/Crack Suppression Membrane.
      b. C-Cure; UltraCure 971.
      c. MAPEI Corporation; Mapelastic (PRP 315).
      d. Southern Grouts & Mortars, Inc.; Southcrete 1100.
      e. TEC, a subsidiary of H. B. Fuller Company; Triple Flex Waterproofing, Crack Isolation Membrane & Mortar.


2.5 CRACK ISOLATION MEMBRANE

A. General: Manufacturer’s standard product, selected from the following that complies with ANSI A118.12 for standard performance and is recommended by the manufacturer for the application indicated.
   1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
      a. Boiardi Products, a QEP company; Elastiment 344 Reinforced Waterproofing and Anti-Fracture/Crack Suppression Membrane.
      b. Bonsal American, an Oldcastle company; B 6000 Waterproof Membrane with Glass Fabric.
      c. Bostik, Inc.; Hydroment Blacktop 90210.
      d. Custom Building Products; 9240 Waterproofing and Anti-Fracture Membrane.
      e. Laticrete International, Inc.; Laticrete Blue 92 Anti-Fracture Membrane.
      f. MAPEI Corporation; Mapelastic HPG with MAPEI Fiberglass Mesh.
      g. Mer-Kote Products, Inc.; Hydro-Guard 2000.
      h. Summitville Tiles, Inc.; S-9000.

C. Latex-Portland Cement: Flexible mortar consisting of cement-based mix and latex additive.
   1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
      a. C-Cure; UltraCure 971.
      b. MAPEI Corporation; Mapelastic (PRP 315).
      c. TEC, a subsidiary of H. B. Fuller Company; Triple Flex Waterproofing, Crack Isolation Membrane & Mortar.

2.6 SETTING MATERIALS


   1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
      a. Boiardi Products; a QEP company.
      b. Bonsal American; an Oldcastle company.
      c. Bostik, Inc.
      d. C-Cure.
      e. Custom Building Products.
      f. Jamo Inc.
      g. Laticrete International, Inc.
      h. MAPEI Corporation.
      i. Southern Grouts & Mortars, Inc.
2. For wall applications, provide nonsagging mortar.

   1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
      a. Boiardi Products; a QEP company.
      b. Bonsal American; an Oldcastle company.
      c. Bostik, Inc.
      d. C-Cure.
      e. Custom Building Products.
      f. Jamo Inc.
      g. Laticrete International, Inc.
      h. MAPEI Corporation.
      i. Mer-Kote Products, Inc.
      j. Southern Grouts & Mortars, Inc.
      k. Summitville Tiles, Inc.
      l. TEC; a subsidiary of H. B. Fuller Company.
   2. For wall applications, provide nonsagging mortar.

2.7 GROUT MATERIALS


   1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
      a. Boiardi Products; a QEP company.
      b. Bonsal American; an Oldcastle company.
      c. Bostik, Inc.
      d. C-Cure.
      e. Custom Building Products.
      f. Jamo Inc.
      g. Laticrete International, Inc.
      h. MAPEI Corporation.
      i. Mer-Kote Products, Inc.
      j. Southern Grouts & Mortars, Inc.
      k. Summitville Tiles, Inc.
      l. TEC; a subsidiary of H. B. Fuller Company.

2.8 ELASTOMERIC SEALANTS

A. One-Part, Mildew-Resistant Silicone Sealant: ASTM C 920; Type S; Grade NS; Class 25; Uses NT, G, A, and, as applicable to nonporous joint
substrates indicated, O; formulated with fungicide, intended for sealing interior ceramic tile joints and other nonporous substrates that are subject to in-service exposures of high humidity and extreme temperatures.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
   a. DAP Inc.; 100 percent Silicone Kitchen and Bath Sealant.
   b. Dow Corning Corporation; Dow Corning 786.
   c. GE Silicones, a division of GE Specialty Materials; Sanitary 1700.
   e. Pecora Corporation; Pecora 898 Sanitary Silicone Sealant.
   f. Tremco Incorporated; Tremsil 600 White.

2.9 MISCELLANEOUS MATERIALS

A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.

B. Grout Sealer: Manufacturer’s standard silicone product for sealing grout joints and that does not change color or appearance of grout.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
   a. Bonsal American, an Oldcastle company; Grout Sealer.
   b. Bostik, Inc.; CeramaSeal Grout & Tile Sealer.
   c. C-Cure; Penetrating Sealer 978.
   d. Custom Building Products; Surfaceguard Sealer.
   e. Jamo Inc.; Matte Finish Sealer.
   f. MAPEI Corporation; KER 003, Silicone Spray Sealer for Cementitious Tile Grout.
   g. Southern Grouts & Mortars, Inc.; Silicone Grout Sealer.
   i. TEC, a subsidiary of H. B. Fuller Company; TA-256 Penetrating Silicone Grout Sealer.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.

1. Verify that substrates for setting tile are firm, dry, clean, free of coatings that are incompatible with tile-setting materials including curing
compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.

3.2 PREPARATION

A. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with adhesives or thin-set mortar with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.

B. Where indicated, prepare substrates to receive waterproofing by applying a reinforced mortar bed that complies with ANSI A108.1A and is sloped 1/4 inch per foot toward drains.

C. Blending: For tile exhibiting color variations, use factory blended tile or blend tiles at Project site before installing.

D. Field-Applied Temporary Protective Coating: If indicated under tile type or needed to prevent grout from staining or adhering to exposed tile surfaces, precoat them with continuous film of temporary protective coating, taking care not to coat unexposed tile surfaces.

3.3 INSTALLATION

A. Comply with TCA's "Handbook for Ceramic Tile Installation" for TCA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 Series "Specifications for Installation of Ceramic Tile" that are referenced in TCA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.

1. For the following installations, follow procedures in the ANSI A108 Series of tile installation standards for providing 95 percent mortar coverage:

   a. Tile floors in wet areas.

B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

D. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.
E. Jointing Pattern: See drawings.

F. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:
   2. Glazed Wall Tile: 1/16 inch.

G. Stone Thresholds: Install stone thresholds in same type of setting bed as adjacent floor unless otherwise indicated.
   1. At locations where mortar bed (thickset) would otherwise be exposed above adjacent floor finishes, set thresholds in latex-portland cement mortar (thin set).

H. Grout Sealer: Apply grout sealer to cementitious grout joints in tile floors according to grout-sealer manufacturer’s written instructions. As soon as grout sealer has penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.

I. Install cementitious backer units and treat joints according to ANSI A108.11 and manufacturer's written instructions for type of application indicated. Use latex-portland cement mortar for bonding material unless otherwise directed in manufacturer's written instructions.

J. Install waterproofing to comply with ANSI A108.13 and manufacturer's written instructions to produce waterproof membrane of uniform thickness and bonded securely to substrate.

K. Install crack isolation membrane to comply with ANSI A108.17 and manufacturer's written instructions to produce membrane of uniform thickness and bonded securely to substrate.

3.4 INTERIOR TILE INSTALLATION SCHEDULE

A. Interior Floor Installations, Concrete Subfloor:
   1. Tile Installation F111: Cement mortar bed (thickset) with cleavage membrane; TCA F111.
      a. Tile Type: Unglazed mosaic.

B. Interior Wall Installations, Wood Studs or Furring:
   1. Tile Installation W245: Thin-set mortar on coated glass-mat, water-resistant gypsum backer board; TCA W245.
      a. Tile Type: Glazed wall tile.
      b. Thin-Set Mortar: Dry-set portland cement mortar.
END OF SECTION
SECTION 09 65 13
RESILIENT BASE AND ACCESSORIES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Resilient base.
   2. Resilient molding accessories.

1.2 REFERENCE STANDARDS

A. ASTM International (ASTM):

1.3 FIELD CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer in spaces to receive resilient products.

B. Until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer.

PART 2 PRODUCTS

2.1 RESILIENT BASE

A. Resilient Base:
   1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into Work include, but are not limited to, following:
      a. Allstate Rubber Corp.; Stoler Industries.
      b. Armstrong World Industries, Inc.
      c. Burke Mercer Flooring Products; Division of Burke Industries, Inc.
      d. Endura Rubber Flooring; Division of Burke Industries, Inc.
      e. Estrie Products International; American Biltrite (Canada) Ltd.
      f. Flexco, Inc.
      g. Johnsonite.
      h. Mondo Rubber International, Inc.
      i. Musson, R. C. Rubber Co.
      j. Nora Rubber Flooring; Freudenberg Building Systems, Inc.
      k. PRF USA, Inc.
      l. Roppe Corporation, USA.
      m. VPI, LLC; Floor Products Division.
   1. Material Requirement: Type TS (rubber, vulcanized thermostet) or Type TP (rubber, thermoplastic).
   4. Minimum Thickness: 0.125 inch.
   5. Height: 4 inches.
   10. Colors and Patterns: As selected by Architect from full range of industry colors.

2.2 RESILIENT MOLDING ACCESSORY

A. Resilient Molding Accessory:
   1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into Work include, but are not limited to, following:
      a. Burke Mercer Flooring Products; Division of Burke Industries, Inc.
      b. Flexco, Inc.
      c. Johnsonite.
      d. R.C.A. Rubber Company (The).
      e. Roppe Corporation, USA.
      f. VPI, LLC; Floor Products Division.

B. Resilient Molding Accessory Standard:
   1. Description: Carpet edge for glue-down applications and nosing for carpet transition strips.
   3. Profile and Dimensions: As required.
   4. Colors and Patterns: As selected by Architect from full range of industry colors.

2.3 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.
PART 3 EXECUTION

3.1 PREPARATION

A. Install resilient products after other finishing operations, including painting, have been completed.

B. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.

C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound and remove bumps and ridges to produce uniform and smooth substrate.

D. Do not install resilient products until resilient products are at same temperature as space intended for installation.
   1. Move resilient products and installation materials into spaces intended for installation at least 48 hours in advance of installation.

E. Clean substrates to be covered by resilient products immediately before installation. Clean by sweeping and vacuuming.

3.2 RESILIENT BASE INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient base.

B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

C. Install resilient base in lengths as long as practicable. Install resilient base without gaps at seams and with tops of adjacent pieces aligned.

D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

E. Do not stretch resilient base during installation.

F. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of carpet that would otherwise be exposed.

3.3 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protection of resilient products.

B. Cover resilient products until Substantial Completion.
END OF SECTION
PART 1 GENERAL

1.1 SUMMARY

A. Section includes modular, tufted carpet tile.

1.2 REFERENCE STANDARDS

A. ASTM International (ASTM):
   2. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.

B. Carpet and Rug Institute, The (CRI):
   1. CRI 104 - Standard for Installation of Commercial Carpet.


D. Environmental Protection Agency (EPA):
   1. EPA Method 24 - Determination of Volatile Organic Compound (VOC) Content in Paints, Inks, and Related Coating Products.

E. National Fire Protection Association (NFPA):

1.3 ACTION SUBMITTALS

A. Product Data: Provide for each type of product indicated.

B. Samples: Provide for each exposed product and for each color and texture specified.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Installer with minimum 3 years’ experience and who is certified by International Certified Floorcovering Installers Association at Commercial II certification level.
B. Fire-Test-Response Ratings: Where indicated, provide carpet tile identical to those of assemblies tested for fire response according to NFPA 253 by qualified testing agency.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Comply with CRI 104.

1.7 FIELD CONDITIONS

A. Comply with CRI 104 for temperature, humidity, and ventilation limitations.

1.8 WARRANTY

A. Special Warranty for Carpet Tiles: Manufacturer agrees to repair or replace components of carpet tile installation that fail in materials or workmanship within specified warranty period.
   1. Warranty does not include deterioration or failure of carpet tile due to unusual traffic, failure of substrate, vandalism, or abuse.
   2. Failures include, but are not limited to, more than 10 percent edge raveling, snags, runs, dimensional stability, excess static discharge, loss of tuft bind strength, loss of face fiber, and delamination.
   3. Warranty Period: 10 years from date of Substantial Completion.

PART 2 PRODUCTS

2.1 CARPET TILE

A. Basis-of-Design Product: Sidestrip-Live and Learn by Mohawk.
   1. Substitutions Permitted.

B. Tile Carpeting:
   2. Pattern:
   5. Antimicrobial Treatment: Manufacturer's standard material.

2.2 INSTALLATION ACCESSORIES

A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet tile manufacturer.

B. Adhesives:
   1. Water-resistant, mildew-resistant, non-staining, pressure-sensitive type to suit products and subfloor conditions indicated, complies with
flammability requirements for installed carpet tile and is recommended by carpet tile manufacturer for releasable installation.

2. VOC content of 50-grams per liter or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting carpet tile performance. Examine carpet tile for type, color, pattern, and potential defects.

B. Concrete Subfloors: Verify that concrete slabs comply with ASTM F710.

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

3.2 PREPARATION

A. Preparation: Comply with CRI 104, Section 6.2 - Site Conditions; Floor Preparation, and with carpet tile manufacturer’s written installation instructions for preparing substrates indicated to receive carpet tile.

3.3 INSTALLATION

A. Comply with CRI 104, Section 14 - Carpet Modules, and with carpet tile manufacturer’s written installation instructions.

B. Use installation method recommended in writing by carpet tile manufacturer.

C. Maintain dye lot integrity. Do not mix dye lots in same area.

D. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet tile manufacturer.

E. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.

F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on finish flooring as marked on subfloor. Use nonpermanent, non-staining marking device.
G. Install pattern parallel to walls and borders.

3.4 CLEANING

A. Perform following operations immediately after installing carpet tile:
   1. Remove excess adhesive, seam sealer, and other surface blemishes using cleaner recommended by carpet tile manufacturer.
   2. Remove yarns that protrude from carpet tile surface.

3.5 PROTECTION

A. Protect installed carpet tile to comply with CRI 104, Section 16 - Protecting Indoor Installations.

END OF SECTION
SECTION 09 9001
COMMON PAINTING AND COATING REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Includes But Not Limited To:
   1. Common procedures and requirements for field-applied painting and coating.

B. Related Requirements:
   1. Section 05 0000: Quality of shop priming of steel and iron.
   2. Section 07 9213: Quality of Elastomeric Joint Sealants.
   3. Sections under 09 9000 heading ‘Paints and Coatings’.
   4. Divisions 22 and 23: Painting of plumbing and HVAC identification, refrigerant line insulation, and duct interiors.
   5. Section 32 1723: ‘Pavement Marking’.

1.2 REFERENCES

A. Definitions:
   1. Damage Caused By Others: Damage caused by individuals other than those under direct control of Painting Applicator (MPI(a), PDCA P1.92).
   2. Gloss Levels:
      a. Specified paint gloss level shall be defined as sheen rating of applied paint, in accordance with following terms and values, unless specified otherwise for a specific paint system.

<table>
<thead>
<tr>
<th>Gloss Level</th>
<th>Traditional matte finish - flat</th>
<th>0 to 5 units at 60 degrees to 10 units maximum at 85 degrees.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gloss Level</td>
<td>'1'</td>
<td>Traditional eggshell-like finish</td>
</tr>
<tr>
<td>Gloss Level</td>
<td>'2'</td>
<td>'Satin-like' finish</td>
</tr>
<tr>
<td>Gloss Level</td>
<td>'3'</td>
<td>Traditional semi-gloss</td>
</tr>
<tr>
<td>Gloss Level</td>
<td>'5'</td>
<td>Traditional gloss</td>
</tr>
<tr>
<td>Gloss Level</td>
<td>'6'</td>
<td>High gloss</td>
</tr>
</tbody>
</table>

   3. Properly Painted Surface:
      a. Surface that is uniform in appearance, color, and sheen and free of foreign material, lumps, skins, runs, sags, holidays, misses, strike-through, and
insufficient coverage. Surface free of drips, spatters, spills, and overspray caused by Paint Applicator. Compliance will be determined when viewed without magnification at a distance of 5 feet (1.50 m) minimum under normal lighting conditions and from normal viewing position (MPI(a), PDCA P1.92).

4. Latent Damage: Damage or conditions beyond control of Painting Applicator caused by conditions not apparent at time of initial painting or coating work.

B. Reference Standards:
1. The latest edition of the following reference standard shall govern all painting work:
   a. MPI(a), 'Architectural Painting Specification Manual' by Master Painters Institute (MPI), as issued by local MPI Accredited Quality Assurance Association having jurisdiction.

1.3 SUBMITTALS
1. Samples: Provide two 4 inch by 6 inch (100 mm by 150 mm) minimum draw-down cards for each paint or coating color selected for this Project.

B. Informational Submittals:
1. Manufacturer Instructions:
   a. Manufacturer's substrate preparation instructions and application instruction for each painting system used on Project.

C. Maintenance Materials Submittals:
1. Extra Stock Materials:
   a. Provide painting materials in Manufacturer's original containers and with original labels in each color used. Label each can with color name, mixture instructions, date, and anticipated shelf life.
   b. Provide one (1) quart of each finish coat and one (1) pint of each primer and of each undercoat in each color used.

1.4 QUALITY ASSURANCE

A. Regulatory Agency Sustainability Approval:
1. Conform to workplace safety regulations and requirements of those authorities having jurisdiction for storage, mixing, application and disposal of all paint and related hazardous materials.
2. Paint and painting materials shall be free of lead and mercury, and have VOC levels acceptable to local jurisdiction.
3. Master Painters Institute (MPI) Standards:
   a. Products: Comply with MPI standards indicated and listed in 'MPI Approved Products List'.

B. Qualifications:
1. Applicator:
a. Minimum five (5) years experience in painting installations.
b. Minimum five (5) satisfactorily completed projects of comparable quality, similar size, and complexity in past three (3) years before bidding.
c. Maintain qualified crew of painters throughout duration of the Work.
d. Upon request, submit documentation.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Delivery And Acceptance Requirements:
   1. Deliver specified products in sealed, original containers with Manufacturer’s original labels intact on each container.
   2. Deliver amount of materials necessary to meet Project requirements in single shipment.

B. Storage And Handling Requirements:
   1. Store materials in single place.
   2. Keep storage area clean and rectify any damage to area at completion of work of this Section.
   3. Maintain storage area at 55 deg F (13 deg C) minimum.

1.6 FIELD CONDITIONS

A. Ambient Conditions:
   1. Perform painting operations at temperature and humidity conditions recommended by Manufacturer for each operation and for each product for both interior and exterior work.
   2. Apply painting systems at lighting level of 540 Lux (50 foot candles) minimum on surfaces to be painted.
      a. Inspection of painting work shall take place under same lighting conditions as application.
      b. If painting and coating work is applied under temporary lighting, deficiencies discovered upon installation of permanent lighting will be considered latent damage as defined in MPI Manual, PDCA P1-92.

PART 2 - PRODUCTS

2.1 SYSTEMS

A. Performance:
   1. Design Criteria:
      a. Provide materials for use within each coating system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
      b. All materials, preparation and workmanship shall conform to requirements of ‘Architectural Painting Specification Manual’ by Master Painters Institute (MPI).
c. All paint manufacturers and products used shall be as listed under Approved Product List section of MPI Painting Manual.
d. Provide products of same manufacturer for each coat in coating system.
e. Color Levels:
   1) Color Level III:
      a) Number and placement of interior and exterior paint colors and gloss levels shall be Color Level III from MPI Manual, PDCA P3-93 as modified in following paragraph.
      b) Two several paint colors or gloss levels will be selected for same substrate within designated interior rooms 1 or 4 walls in each room will be an accent color.

B. Materials:
   1. Materials used for any painting system shall be from single manufacturer unless approved otherwise in writing by painting system manufacturers and by Architect. Include manufacturer approvals in Product Data submittal.
   2. Linseed oil, shellac, turpentine, and other painting materials shall be pure, be compatible with other coating materials, bear identifying labels on containers, and be of highest quality of an approved manufacturer listed in MPI manuals. Tinting color shall be best grade of type recommended by Manufacturer of paint or stain used on Project.
   3. All paints and coatings used shall comply with VOC content limits.

PART 3 - EXECUTION

3.1 APPLICATORS

A. Approved Applicators:
   1. Meet Quality Assurance Applicator Qualifications as specified in Part 1 of this specification.

3.2 EXAMINATION

A. Verification Of Conditions:
   1. Directing applicator to begin painting and coating work will indicate that substrates to receive painting and coating materials have been previously inspected as part of work of other Sections and are complete and ready for application of painting and coating systems as specified in those Sections.

B. Pre-Installation Testing:
   1. Before beginning work of this Section, examine, and test surfaces to be painted or coated for adhesion of painting and coating systems.
   2. Report in writing to Architect of conditions that will adversely affect adhesion of painting and coating work.
   3. Do not apply painting and coating systems until party responsible for adverse condition has corrected adverse condition.
C. Evaluation And Assessment:
   1. Report defects in substrates that become apparent after application of primer or
      first finish coat to Architect in writing and do not proceed with further work on
      defective substrate until such defects are corrected by party responsible for
      defect.

3.3 PREPARATION

A. Protection Of In-Place Conditions:
   1. Protect other finish work and adjacent materials during painting. Do not splatter,
      drip, or paint surfaces not intended to be painted. These items will not be spelled
      out in detail but pay special attention to the following:
      a. Do not paint finish copper, bronze, chromium plate, nickel, stainless steel,
         anodized aluminum, or monel metal except as explicitly specified.

B. Surface Preparation:
   1. Prepare surfaces in accordance with MPI requirements and requirements of
      Manufacturer for each painting system specified, unless instructed differently in
   2. Fill minor holes and cracks in wood surfaces to receive paint or stain.
   3. Surfaces to be painted shall be clean and free of loose dirt. Clean and dust
      surfaces before painting or finishing.
   4. Do no exterior painting while surface is damp, unless recommended by
      Manufacturer, nor during rainy or frosty weather. Interior surfaces shall be dry
      before painting. Moisture content of materials to be painted shall be within
      tolerances acceptable to Paint Manufacturer.
   5. Sand woodwork smooth in direction of grain leaving no sanding marks. Clean
      surfaces before proceeding with stain or first coat application.

3.4 APPLICATION

A. Interface With Other Work:
   1. Coordinate with other trades for materials and systems that require painting
      before installation.
   2. Schedule painting and coating work to begin when work upon which painting and
      coating work is dependent has been completed. Schedule installation of pre-
      finished and non-painted items, which are to be installed on painted surfaces,
      after application of final finishes.

B. Paint or finish complete all surfaces to be painted or coated as described in Contract
   Documents, including but not limited to following items.
   1. Paint mechanical, electrical, and audio/visual items that require field painting as
      indicated in Contract Documents. These include but are not limited to:
      a. Gas pipe from gas meter into building.
      b. Mechanical flues and pipes penetrating roof.
      c. Electrical panel and disconnect enclosures.
      d. Metal protective structures for refrigerant lines.
   2. Metal reveals at ceiling access doors.
C. Apply sealant in gaps 3/16 inch (5 mm) and smaller between two substrates that are both to be painted or coated. Sealants in other gaps furnished and installed under Section 07 9213.

D. In multiple coat paint work, tint each succeeding coat with slightly lighter color, but approximating shade of final coat, so it is possible to check application of specified number of coats. Tint final coat to required color.

E. Spread materials smoothly and evenly. Apply coats to not less than wet and dry film thicknesses and at spreading rates for specified products as recommended by Manufacturer.

F. Touch up suction spots after application of first finish coat.

G. Paint shall be thoroughly dry and surfaces clean before applying succeeding coats.

H. Use fine sandpaper between coats as necessary to produce even, smooth surfaces.

I. Make edges of paint adjoining other materials or colors clean, sharp, and without overlapping.

J. Finished work shall be a 'Properly Painted Surface' as defined in this Section.

3.5 FIELD QUALITY CONTROL

A. Non-Conforming Work:
   1. Correct deficiencies in workmanship as required to leave surfaces in conformance with 'Properly Painted Surface,' as defined in this Section.
   2. Correction of 'Latent Damage' and 'Damage Caused By Others,' as defined in this Section, is not included in work of this Section.

3.6 CLEANING

A. General:
   1. As work proceeds and upon completion of work of any painting Section, remove paint spots from floors, walls, glass, or other surfaces and leave work clean, orderly, and in acceptable condition.

B. Waste Management:
   1. Remove rags and waste used in painting operations from building each night. Take every precaution to avoid danger of fire.
   2. Paint, stain and wood preservative finishes and related materials (thinners, solvents, caulking, empty paint cans, cleaning rags, etc.) shall be disposed of subject to regulations of applicable authorities having jurisdiction.
   3. Remove debris caused by work of paint Sections from premises and properly dispose.
   4. Retain cleaning water and filter out and properly dispose of sediments.
SECTION 09 9113
EXTERIOR PAINTED METAL

PART 1 - GENERAL

1.1 SUMMARY

A. Includes But Not Limited To:
   1. Preparing and painting new exterior exposed metal surfaces

B. Related Requirements:
   1. Section 09 9001: 'Common Painting And Coating Requirements':

PART 2 - PRODUCTS

2.1 SYSTEM

A. Manufacturers:
   1. Approved Products and Manufacturers.
      a. Products listed in edition of MPI Approved Product List current at time of bidding and later are approved, providing they meet VOC requirements in force where Project is located.

B. Description:
   1. Entry steel column and beams.
      a. New Surfaces: Use MPI(a) EXT 5.3H Latex Finish system.

C. Performance:
   1. Design Criteria:
      a. New Surfaces: MPI Premium Grade finish requirements.

D. Materials:
   1. Latex:
      a. Waterborne Primer Coat: MPI Product 134: ' Primer, Galvanized, Water Based'.
      b. Finish Coats: MPI Product 11: ' Latex, Exterior Semi-Gloss (MPI Gloss Level 5)'.

PART 3 - EXECUTION

3.1 APPLICATION

A. General: See appropriate paragraphs of Section 09 9001.

B. New Surfaces:
   1. Clean surfaces to be painted with mineral spirits or product recommended by Paint Manufacturer. Change to clean rags or wiping cloths regularly to reduce possibility of re-contamination of surface.
   2. Apply prime coat.
   3. Apply finish coats.

END OF SECTION
SECTION 10 1116
FIXED MARKERBOARDS

PART 1 - GENERAL

1.1 SUMMARY

A. Products Furnished and Installed
  1. Markerboard units:
     a. 4’ x 4’ in Intake 128
     b. 4’ x 8’ in Conference Room 104

1.2 REFERENCES

A. Association Publications:
     a. PEI-1002, Manual and Performance Specifications for Porcelain Enamel
        Writing Surfaces (Whiteboards and Chalkboards) 2002.

1.3 SUBMITTALS

A. Informational Submittals:
  1. Manufacturer Instructions:
     a. Published installation instructions.
     b. Printed cleaning instructions.

B. Closeout Submittals:
  1. Include following in Operations And Maintenance Manual
     a. Operations and Maintenance Data:
        1) Maintenance instructions.
        2) Printed cleaning instructions.
     b. Warranty Documentation:
        1) Manufacturer Warranty.
     c. Record Documentation:
        1) Manufacturer’s documentation:
           a) Manufacturer’s product literature.

1.4 WARRANTY

A. Manufacturer Warranty:
  1. Letter from Manufacturer certifying Contract Documents have been complied with
     and guarantee against faulty workmanship and materials for five (5) years.
PART 2 - PRODUCTS

2.1 OWNER FURNISHED PRODUCTS

A. National Contract Manufacturers.
   1. Basis of Design Platinum Visual Systems, Corona, CA  www.pvusa.com or equal

B. Description:

C. Markerboard:
   1. Face shall be steel, 28 ga (0.4 mm) minimum, coated two (2) sides with fused ground coat, and finished one (1) side with vitreous porcelain enamel.
   2. Coatings shall meet requirements of PEI-1002:
      a. All Rooms:
         1) Coatings shall be for marker use.
   3. Core shall be mat-formed particleboard.
      a. 3/8 inch (9.5 mm) thick medium-density.
      b. 1/2 inch (12.7 mm) thick low-density minimum.
   4. Backing:
      a. Backing shall be 0.005 inch (0.13 mm) minimum aluminum foil.
   5. Trim:
      a. Extruded 6063-T5 alloy aluminum with satin etched, natural aluminum anodized finish.
      b. Extrusions shall match thickness of units without wedging.
      c. Round all sharp edges.
      d. 2 inch (50 mm) high map rail.
   6. Trays:
      a. Provide 2 inch (50 mm) radius rounded ends on marker trays.
      b. Marker trays with squared, sharp ends are not acceptable.
   7. Map Clips:
      a. Manufacturer’s standard.
      b. Provide two map clips on markerboards.
   8. Mounting Hardware:
      a. Suitable for wall conditions.

D. Fabrication:
   1. Prefabricate units at factory and ship to jobsite in one piece, except for marker trays.
   2. Units shall be of first quality and lamination done by approved standards of industry.
   3. Furnish printed cleaning instructions with each shipment.
PART 3 - EXECUTION

3.1 INSTALLATION

A. Mount boards square and level.
   1. Shim as necessary to provide permanent installation and smooth operation.
   2. Anchor boards securely to wall following Manufacturer’s printed installation instructions.
   3. Anchor concealed hangers with screws at 24 inches (600 mm) on center.

B. Mounting fasteners shall penetrate framing lumber or blocking 1-1/2 inch (38 mm) minimum. Use toggle bolts or expansion bolts in masonry walls.

C. After attaching map clips, apply permanently attached end cap or screw to prevent removal of map clips.

END OF SECTION
SECTION 10 21 23
CUBICLE CURTAINS AND TRACK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
   1. Cubicle-curtain tracks and carriers.
   2. Cubicle curtains.

B. Related Requirements:
   1. Section 061000 "Rough Carpentry" "Miscellaneous Rough Carpentry" for supplementary wood framing and blocking for mounting items requiring anchorage.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.
   1. For each type of curtain fabric indicated, include durability, laundry temperature limits, fade resistance, applied curtain treatments, and fire-test-response characteristics.

B. Samples for Initial Selection: For each type of curtain material indicated.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For curtains, tracks, and hardware to include in operation and maintenance manuals.
1. Curtain Carriers and Track End Caps: Full-size units for each size indicated.
2. Curtains: Full-size units equal to for each size indicated.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Cubicle Curtains: Provide curtain fabrics with the following characteristics:
1. Flame Resistance: Provide fabrics identical to those that have passed NFPA 701 when tested by a qualified testing agency acceptable to authorities having jurisdiction.
   a. Identify fabrics with appropriate markings of a qualified testing agency.

2.2 CUBICLE-CURTAIN SUPPORT SYSTEMS

A. Extruded-Aluminum Curtain Track: Not less than 1-1/4 inches wide by 3/4 inch high.
   1. Track Minimum Wall Thickness: 0.062 inch (1.57 mm), Manufacturer's standard. Finish: Clear anodized

B. Curtain Track Accessories: Fabricate splices, end caps, connectors, end stops, coupling and joining sleeves, wall flanges, brackets, ceiling clips, and other accessories from same material and with same finish as track.
   1. End Stop: Nonremovable.

C. Curtain Roller Carriers: Two nylon rollers and nylon axle with chrome-plated steel hook.

D. Exposed Fasteners: Stainless steel.

2.3 CURTAINS

A. Fabric: Curtain manufacturer's standard, 100 percent polyester; inherently and permanently flame resistant, stain resistant, and antimicrobial.

B. Curtain Grommets: Two-piece, rolled-edge, rustproof, nickel-plated brass; spaced not more than 6 inches (152 mm) o.c.; machined into top hem.

C. Mesh Top: Not less than 20-inch- (508-mm-) > high mesh top.
   1. Mesh: No. 40 nylon mesh.
D. Curtain Tieback: Nickel-plated brass chain; one at each curtain termination.

2.4 CURTAIN FABRICATION

A. Continuous Curtain Panels:
   1. Width: Equal to track length from which curtain is hung plus 10 percent of added fullness, but not less than 12 inches (305 mm) of added fullness.
   2. Length: 6'-10"
   3. Top Hem: Not less than 1 inch (25.4 mm) and not more than 1-1/2 inches (38 mm) wide, triple thickness, reinforced with integral web, and double lockstitched.
   4. Mesh Top: Top hem of mesh not less than 1 inch (25.4 mm) and not more than 1-1/2 inches (38 mm) wide, triple thickness, reinforced with integral web, and double lockstitched. Double lockstitch bottom of mesh directly to 1/2-inch (13-mm) triple thickness, top hem of curtain fabric.
   5. Bottom Hem: Not less than 1 inch (25.4 mm) and not more than 1-1/2 inches (38 mm) wide, triple thickness, reinforced, and double lockstitched.
   6. Side Hems: Not less than 1/2 inch (13 mm) and not more than 1-1/4 inches (32 mm) wide, with triple turned edges, and single lockstitched.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

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

3.2 INSTALLATION

A. Install tracks level and plumb, according to manufacturer's written instructions.

B. For tracks of up to 20 feet (6.0 m) in length, provide track fabricated from single, continuous length.

   1. Curtain-Track Mounting: Suspended

C. Suspended-Track Mounting: Install track with manufacturer's standard tubular aluminum suspended supports at intervals and with fasteners recommended by manufacturer. Fasten supports to structure. Provide supports at each splice and
tangent point of each corner. Secure ends of track to wall with flanged fittings or brackets.

D. Track Accessories: Install splices, end caps, connectors, end stops, coupling and joining sleeves, and other accessories as required for a secure and operational installation.

END OF SECTION
SECTION 10 28 00
TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Public-use washroom accessories.
   2. Custodial accessories.
   3. ADA Seat.

1.2 REFERENCE STANDARDS

A. ASTM International (ASTM):

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.
   1. Identify locations using room designations indicated.
   2. Identify products using designations indicated.

C. Maintenance data.

D. Warranty: Sample of special warranty.

1.4 WARRANTY

A. Special Mirror Warranty: Manufacturer's standard form in which manufacturer agrees to replace mirrors that develop visible silver spoilage defects and that fail in materials or workmanship within specified warranty period.
   1. Warranty Period: 15 years from date of Substantial Completion.

PART 2 PRODUCTS

2.1 PUBLIC-USE WASHROOM ACCESSORIES

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated in schedule or comparable product by one of following:
   1. A & J Washroom Accessories, Inc.
   2. American Specialties, Inc.
5. GAMCO Specialty Accessories; division of Bobrick Washroom Equipment, Inc.
6. Tubular Specialties Manufacturing, Inc.

B. Toilet Tissue (Roll) Dispenser: Owner Furnished, Owner Installed

C. Paper Towel (Folded) Dispenser: Owner Furnished, Owner Installed

D. Liquid-Soap Dispenser: Owner Furnished, Owner Installed

E. Grab Bar:
   1. Basis-of-Design Product: Bobrick B-6806 x 18, B-6806 x 36, and B-6806 x 42.
   3. Material: Stainless steel, 0.05 inch thick.
   4. Finish: Smooth, No. 4 finish (satin).
   6. Configuration and Length: As indicated on Drawings.

F. Sanitary-Napkin Disposal Unit: Owner Furnished, Owner Installed

G. Mirror Unit: Over every lavatory
   2. Frame: Stainless-steel channel.
      a. Corners: Mitered and mechanically interlocked.
   3. Integral Shelf: 5 inches deep.
      a. Wall bracket of galvanized steel, equipped with concealed locking devices requiring special tool to remove.
   5. Size: 24 inches by 36 inches. Bottom at 40” above finished floor

2.2 CUSTODIAL ACCESSORIES

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of following:
   1. A & J Washroom Accessories, Inc.
   2. American Specialties, Inc.
   5. GAMCO Specialty Accessories; division of Bobrick Washroom Equipment, Inc.
   6. Tubular Specialties Manufacturing, Inc.

B. Mop and Broom Holder:
2. Description: Unit with shelf, hooks, holders, and rod suspended beneath shelf.
3. Length: 36 inches.
5. Mop/Broom Holders: Six, spring-loaded, rubber hat, cam type.
   a. Shelf: Not less than nominal 0.05-inch thick stainless steel.
   b. Rod: Approximately 1/4-inch diameter stainless steel.

2.3 SHOWER INSERT

A. Basis of Design or Equal
   1. Architecstral Inc.
   2. Barrier Free (877-717-7033) Model #: 61-PH3201
      a. Dimensions: 32” x 21”

PART 3 EXECUTION

3.1 INSTALLATION

A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.

B. Grab Bars: Install to withstand downward load of at least 250 pounds, when tested according to ASTM F446.

END OF SECTION
SECTION 10 4400
FIRE PROTECTION SPECIALTIES

PART 1 - GENERAL

1.1 SUMMARY

A. Products Furnished But Not Installed Under This Section:
   1. Extinguishers with cabinets.

1.2 QUALITY ASSURANCE

A. Regulatory Agency Sustainability Approvals:
   1. Fire extinguishers shall be inspected and have annual inspection tag attached before Substantial Completion.

1.3 WARRANTY

A. Manufacturer Warranty:
   1. Manufacturer's standard, written warranty on fire extinguisher.

PART 2 - PRODUCTS

2.1 EQUIPMENT

A. Manufacturers:
   1. Fire Extinguishers:
      a. Approved Manufacturers.
         4) Extinguishers private-labeled by manufacturers approved above are approved, with appropriate documentation.
   2. Cabinets And Brackets:
      a. Type One Acceptable Manufacturers:
6) Samson Products Inc, City of Commerce, CA
7) Seton Inc, Richmond Hill, ON (905) 764-1122.
8) Equal as approved by Architect before bidding. See Section 01 6200.

B. Fire Extinguishers:
   1. Ten pound dry chemical ABC stored pressurized type equipped with pressure
gauge and which does not need recharging except after use.
   2. Instructions for repairs, maintenance, and recharging shall be attached.
   3. Unit shall be tested and approved by UL and have minimum 4A:60-B:C UL
      rating. UL rating shall appear on extinguisher labels and be attached to and a
      part of fire extinguisher units.

C. Fire Extinguisher Cabinets:
   1. Two-piece, semi-recessed or flush type depending on wall thickness, and have
      white baked enameled steel tubs with white baked enamel return trim and doors,
      clear acrylic glazing, 'Safe-T-Lock,' and cylinder locks.
   2. Supply each cabinet with one specified fire extinguisher.

D. Wall-Mounted Brackets:
   1. Design Standard: No. 846 by Larsen’s.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Special Techniques:
   1. Securely mount cabinets and hangers plumb with wall surfaces.
   2. Trim for cabinets shall be neat in appearance.

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. Products Installed But Not Furnished Under This Section:
   1. Electrical stove with oven drop-in style- Owner Furnished, Owner Installed.
   2. Dish washer- Owner Furnished, Owner Installed.
   3. Refrigerator and microwave- Owner Furnished, Owner Installed.

B. Related Sections:
   1. Division 26: Outlets, range cord sets, and electrical service.

PART 2 - PRODUCTS

2.1 OWNER-FURNISHED PRODUCTS

PART 3 - EXECUTION: Not Used

END OF SECTION
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
   1. Solid surface material countertops.
   2. Solid surface material backsplashes.
   3. Solid surface material end splashes.

B. Related Requirements:
   1. Section 22 “Plumbing Fixtures”

1.3 ACTION SUBMITTALS

A. Product Data: For countertop materials

B. Samples for Initial Selection: For each type of material exposed to view.

C. Samples for Verification: For the following products:
   1. Countertop material, 6 inches (150 mm) square.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For fabricator.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For solid surface material countertops to include in maintenance manuals. Include Product Data for care products used or
recommended by Installer and names, addresses, and telephone numbers of local sources for products.

1.6 QUALITY ASSURANCE

A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate countertops similar to that required for this Project, and whose products have a record of successful in-service performance.

B. Installer Qualifications: Fabricator of countertops.

1.7 FIELD CONDITIONS

A. Field Measurements: Verify dimensions of countertops by field measurements after base cabinets are installed but before countertop fabrication is complete.

1.8 COORDINATION

A. Coordinate locations of utilities that will penetrate countertops or backsplashes.

PART 2 - PRODUCTS

2.1 SOLID SURFACE COUNTERTOP MATERIALS

A. Solid Surface Material: Homogeneous-filled plastic resin complying with ICPA SS-1.
   1. Colors and Patterns: Stone patterns

B. Plywood: Exterior softwood plywood complying with DOC PS 1, Grade C-C Plugged, touch sanded.

2.2 COUNTERTOP FABRICATION

A. Fabricate countertops according to solid surface material manufacturer’s written instructions and to the AWI/AWMAC/WI's "Architectural Woodwork Standards."

   1. Grade: Premium.

B. Configuration:

   1. Front: Straight, slightly eased at top.
   2. Backsplash: Straight, slightly eased at corner.
C. Countertops: 1/4-inch- (6.4-mm-) thick, solid surface material laminated to 3/4-inch- (19-mm-) thick particleboard with exposed edges built up with 3/4-inch- (19-mm-) thick, solid surface material.

D. Backsplashes: 1/2-inch- (12.7-mm-) thick, solid surface material.

E. Fabricate tops with shop-applied edges and backsplashes unless otherwise indicated. Comply with solid surface material manufacturer’s written instructions for adhesives, sealers, fabrication, and finishing.

1. Fabricate with loose backsplashes for field assembly.

F. Joints: Fabricate countertops without joints.

G. Joints: Fabricate countertops in sections for joining in field.

1. Joint Locations: Not within 18 inches (450 mm) of a sink or cooktop and not where a countertop section less than 36 inches (900 mm) long would result, unless unavoidable.

H. Cutouts and Holes:

1. Undercounter Plumbing Fixtures: Make cutouts for fixtures using template or pattern furnished by fixture manufacturer. Form cutouts to smooth, even curves.
   a. Provide vertical edges, rounded to 3/8-inch (10-mm) radius at juncture of cutout edges with top surface of countertop, slightly eased at bottom, and projecting 3/16 inch (5 mm) into fixture opening.


3. Fittings: Drill countertops in shop for plumbing fittings, undercounter soap dispensers, and similar items.


2.3 INSTALLATION MATERIALS

A. Adhesive: Product recommended by solid surface material manufacturer.

B. Sealant for Countertops: Comply with applicable requirements in Section 079200 "Joint Sealants."
PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates to receive solid surface material countertops and conditions under which countertops will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of countertops.

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

3.2 INSTALLATION

A. Install countertops level to a tolerance of 1/8 inch in 8 feet (3 mm in 2.4 m), 1/4 inch (6 mm) maximum. Do not exceed 1/64-inch (0.4-mm) difference between planes of adjacent units.

B. Fasten countertops by screwing through corner blocks of base units into underside of countertop. Predrill holes for screws as recommended by manufacturer. Align adjacent surfaces and, using adhesive in color to match countertop, form seams to comply with manufacturer’s written instructions. Carefully dress joints smooth, remove surface scratches, and clean entire surface.

C. Fasten subtops to cabinets by screwing through subtops into corner blocks of base cabinets. Shim as needed to align subtops in a level plane.

D. Secure countertops to subtops with adhesive according to solid surface material manufacturer’s written instructions. Align adjacent surfaces and, using adhesive in color to match countertop, form seams to comply with manufacturer’s written instructions. Carefully dress joints smooth, remove surface scratches, and clean entire surface.

E. Bond joints with adhesive and draw tight as countertops are set. Mask areas of countertops adjacent to joints to prevent adhesive smears.
   1. Clamp units to temporary bracing, supports, or each other to ensure that countertops are properly aligned and joints are of specified width.

F. Install backsplashes and end splashes by adhering to wall and countertops with adhesive. Mask areas of countertops and splashes adjacent to joints to prevent adhesive smears.

G. Install aprons to backing and countertops with adhesive. Mask areas of countertops and splashes adjacent to joints to prevent adhesive smears. Fasten
by screwing through backing. Predrill holes for screws as recommended by manufacturer.

H. Complete cutouts not finished in shop. Mask areas of countertops adjacent to cutouts to prevent damage while cutting. Make cutouts to accurately fit items to be installed, and at right angles to finished surfaces unless beveling is required for clearance. Ease edges slightly to prevent snipping.

1. Seal edges of cutouts in particleboard subtops by saturating with varnish.

I. Apply sealant to gaps at walls; comply with Section 079200 "Joint Sealants."

END OF SECTION
SECTION 31 3116
TERMITE CONTROL

PART 1 - GENERAL

1.1 SUMMARY

A. Includes But Not Limited To:
   1. Furnish and install complete soils treatment with termiticide under and adjacent to building to provide uniform toxic barrier continuous treated zone in all routes of termite entry.

B. Related Requirements:
   1. Section 31: Earthwork.
      a. Section 31 0501: ‘Common Earthwork Requirements’.
      b. Section 31 1123: ‘Aggregate Base’:
         1) Installation of below-grade vapor retarder.
      c. Section 31 2216: ‘Fine Grading’.

1.2 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate soil treatment application with excavation, filling, grading, and concreting operations. Treat soil under footings, grade beams, and ground-supported slabs before construction.
   2. Interior slab-on-grade concrete:
      a. Coordinate work so vapor retarder can be installed as soon as possible after application of termite protection on top of soil base or aggregate base.

B. Pre-Installation Conference:
   1. Participate in mandatory pre-installation conference.
   2. Schedule pre-installation conference for new Projects after completion of Fine Grading specified in Section 31 2216, but before beginning Aggregate Base as specified in Section 31 1123. This conference may be held jointly with pre-installation conference for Common Planting Requirements specified in Section 32 9001.
   3. In addition to agenda items specified in Section 01 3100, review following:
      a. Review Applicator Qualification requirements.
      b. Review Ambient Conditions for acceptability for application of termiticide products.
      c. Review Delivery, Storage, and Handling requirements.
      d. Review Examination, Preparation, and Application requirements as called out in Part 3 Execution.
      e. Review Field Quality Control and Protection requirements as called out in Part 3 Execution.

C. Sequencing:
1. Application OPTION A:
   a. Apply termite protection on top of soil base before aggregate base and vapor retarder is installed.
2. Application OPTION B:
   a. Install vapor retarder after application of termite protection on top of aggregate base.
   b. Increase application rate for volume as per Manufacturer’s instruction.
   c. Install below-grade vapor retarder on top of soil base or aggregate base.

1.3 SUBMITTALS

A. Action Submittals:
   1. Product Data:
      a. Submit Chemical Manufacturer's printed literature regarding chemical composition, concentration, and rates and method of application.
      b. Submit MSDS information.

B. Informational Submittals:
   1. Certificates:
      a. Provide certificates required by any authorities having jurisdiction (AHJ).
   2. Design Data Submittals:
      a. Certified Applicator’s statement indicating total amount of chemical required for Project to provide required amount of mix solution at specified concentration and application rates.
      b. Certified Applicator to submit take-off showing amounts of square foot and lineal foot application at specified application rate. Also indicate total amount of mix solution required for Project.
   3. Manufacturers’ Instructions:
      a. Manufacturer’s printed label on product regarding chemical composition, concentration, and rates and method of application.
   4. Qualification Submittals:
      a. Provide BASF Partner Number and evidence of license from authorities having jurisdiction (AHJ).

C. Closeout Submittals:
   1. Include following in Operations And Maintenance Manual specified in Section 01 7800:
      a. Warranty Documentation:
         1) Include copy of final, executed warranty.
      b. Record Documentation:
         1) Soil Treatment Application Report: After application of termiticide is complete, submit report including the following:
            a) Date and time of application.
            b) Moisture content of soil before application.
            c) Termiticide brand name and batch number of concentrate.
            d) Mix rate and quantity of diluted termiticide used.
            e) Areas of application.
            f) Weather at time of application.
            g) Water source for application.
1.4 QUALITY ASSURANCE

A. Regulatory Agency Sustainability Approvals:
   1. Formulate and apply termiticides and termiticide devices according to the EPA-Registered Label.

B. Qualifications:
   1. Applicator: Requirements of Section 01 4301 applies but not limited to the following:
      a. Applicator shall be licensed pest professional according to regulations of authorities having jurisdiction (AHJ) with Manufacturer’s Certification training in correct application methods to apply termite control treatment and products in jurisdiction where Project is located.

C. Source Limitations:
   1. Obtain termite control products from single source from single manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Delivery, Storage, and Handling:
   1. Certified Applicator responsible for delivery, storage, handling, and dispose of specified products of this section.

B. Storage And Handling Requirements:
   1. Storage:
      a. Keep containers closed when not in use.
      b. Store unused product in original container only, out of reach of children and animals.
      c. Do not store near food or feed.
      d. Protect from freezing.
   2. Spills or leaks:
      a. General:
         1) In case of spill or leak on floor or paved surfaces, soak up with sand, earth, or synthetic absorbent.
         2) Avoid skin contact.
         3) Remove residue to chemical waste area.
         4) Ensure adequate decontamination of tools and equipment following cleanup.
      b. All leaks resulting in application of this product in locations other than those prescribed must be cleaned up prior to leaving application site.
         1) DO NOT allow people or pets to contact contaminated areas until cleanup is completed.

C. Packaging Waste Management:
   1. Disposal:
      a. Dispose of empty containers in accordance with Manufacturer’s and regulatory agency’s requirements.
      b. Do not contaminate water, food, or feed by storage or disposal.
1.6 FIELD CONDITIONS

A. Ambient Conditions
   1. Comply with EPA-Registered Label and requirements of authorities having jurisdiction (AHJ) and Manufacturer’s written recommendations regarding environmental conditions under which termiticide shall be applied.

B. Environmental Limitations:
   1. To ensure penetration, do not treat soil that is water saturated or frozen.
   2. Do not treat soil (or aggregate base) while precipitation is occurring or movement from treatment area (site) is likely to occur.
   3. Do not treat soil (or aggregate base) while large precipitation is expected to occurring within two to four (2-4) hours after application.

1.7 WARRANTY

A. Manufacturer Warranty:
   1. Provide Manufacturer’s written warranty:
      a. Warranty shall guarantee effectiveness of treatment against subterranean termite infestation for five years minimum from acceptance date of Project and be signed by applicator and Contractor as co-guarantors.
      b. If subterranean termite activity or damage is discovered during warranty period, re-treat soil and repair or replace damage caused by termite infestation.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Termiticide:
   1. Description:
      a. Provide EPA-Registered termiticide, complying with requirements of authorities having jurisdiction (AHJ), in aqueous solution formulated to prevent termite infestation.
      b. Provide quantity required for application at label volume and rate for maximum termicide concentration allowed for each specific use, according to product’s EPA-Registered Label.
   2. Design Criteria:
      a. Undetectable:
         1) Non-repellent or undetectable chemical technology.
      b. Transfer Effect:
         1) Slow-acting treatment allowing individual termite’s ample time to transfer treatment to other termites as they come in contact within the colony.
      c. Service Life of Treatment:
         1) Soil treatment termicide that is effective for not less than five (5) years against infestation of subterranean termites.
   3. Mixes:
a. Mix chemicals and water at Manufacturer's recommended requirements.

4. Approved Product. (No substitution of specified product or alteration of Manufacturer’s application requirements is allowed):
   a. Termidor by BASF Professional Pest Control, Research Triangle Park, NC
      www.termidorhome.com, or www.pestcontrol.basf.us.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Evaluation And Assessment:
   1. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements for moisture content of soil per termiticide label requirements, interfaces with earthwork, slab and foundation work, landscaping, utility installation, and other conditions affecting performance of termite control.
   2. Proceed with application only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Protection Of In-Place Conditions:
   1. Allow no disturbance of treated soil (aggregate base) between application of solution and placing of concrete. (Disturbed defined as removing fill and/or replacing fill).
   2. Protect neighboring property, water sources, and personnel on site from contamination.
      a. Use anti-backflow equipment or procedures.
      b. Do not treat soil beneath structures that contain wells or cisterns.
      c. Take extreme care to avoid runoff. Do not treat soil that is water-saturated or frozen.
   3. Maintain, on job site, empirical name of chemical, Manufacturer's precautions, and phone numbers of proper authorities to notify in case of spillage or other accident.

B. General Preparation:
   1. Comply with the most stringent requirements of authorities having jurisdiction (AHJ) and with Manufacturer's written instructions for preparation before beginning application of termite control treatment.
   2. Remove all extraneous sources of wood cellulose and other edible materials such as wood debris, tree stumps and roots, stakes, formwork, trash, and construction waste wood from soil within and around foundations.
   3. Do not apply application of termite control until location of air ducts, vents, water, and sewer lines are known and identified. Take extreme caution to avoid contamination of these structural elements and airways.

C. Soil Treatment Preparation:
1. Remove foreign matter and impermeable soil materials that could decrease treatment effectiveness on areas to be treated.
2. Loosen, rake, and level soil to be treated except previously compacted areas under slabs and footings.
3. Termiticides may be applied before placing compacted fill under slabs if recommended in writing by termiticide manufacturer.
4. Fit filling hose connected to water source at site with backflow preventer, complying with requirements of authorities having jurisdiction (AHJ).

3.3  APPLICATION

A. Interface With Other Work:
1. Interior slab-on-grade concrete:
   a. Installation of vapor retarder, geomembrane if used, and aggregate base.

B. General:
1. Comply with the most stringent requirements of authorities having jurisdiction (AHJ) and with Manufacturer’s EPA-Registered Label for products.
   a. Application Restrictions:
      1) Do not apply while precipitation is occurring or large precipitation is expected to occurring within two to four (2-4) hours after application’.
      2) Do not contaminate water, food or feed. Cover or remove all exposed food, feed and drinking water.
      3) Do not apply with 15 feet (4.50 m) of bodies of fresh water lakes, reservoirs, rivers, permanent streams, marshes, and natural ponds.
      4) Do not allow residents, children, other persons or pets into immediate area during application.
      5) Do not allow residents, children, other persons or pets into treated area until sprays have dried. After application, applicator is required to check for leaks resulting in deposition of treatment dilution in locations other than those prescribed.

2. Application OPTION B as specified in Sequencing of this specification in Part 1 General:
   a. Increase application rate for volume as per Manufacturer’s instruction.

C. Applying Soil Treatment:
1. Mix treatment termiticide solution to a uniform consistency.
2. Provide quantity required for application at the label volume and rate for the maximum specified concentration of termiticide, according to manufacturer’s EPA-Registered Label so that a continuous horizontal and vertical termiticidal barrier or treated zone is established around and under building construction. Distribute treatment evenly.
3. If impervious soils make reduction in volume of solution necessary, increase percentage of toxicant used in proportion to insure same amount of insecticide be used per linear or square foot (meter).
4. Apply overall treatment to entire surface to be covered by concrete slab.

D. Pre-Construction Treatment:
1. For Slab-on-Grade Construction:
a. 4 gallons per 10 linear ft (15 liters per 3 000 linear mm) along outside of exterior foundation.
b. 2 gallons per 10 linear ft (7.5 liters per 3 000 linear mm) in voids of unit masonry foundation walls or piers.
c. One gallon per 10 sq ft (3.5 liters per one sq m) as overall treatment under slab and attached porches.
d. 4 gallons per 10 linear ft (15 liters per 3 000 linear mm) along inside of exterior foundation walls, both sides of interior partition foundation walls, and around utility services and other features that will penetrate slab or where there will be break in concrete (grade changes, zip strips, cold joints, etc.).

3.4 RE-APPLICATION

A. Reapply treatment solution to areas disturbed by subsequent excavation, grading, landscaping, or other construction activities following application.

3.5 FIELD QUALITY CONTROL

A. Non-Conforming Work. Non-conforming work as covered in the General Conditions applies, but is not limited to the following:
   1. Applicator:
      a. Substitution of specified product or alteration of Manufacturer’s application requirements is considered defective or not complying with Contract Document requirements. Correct such work at no cost to the Owner.

3.6 PROTECTION

A. Allow sufficient time (12 hours minimum) for drying after application before resuming construction activities.

B. Keep off treated areas until completely dry. Do not allow workers or other personnel to enter treatment area until chemical has been absorbed into soil.

C. Protect application areas from precipitation as recommended by Manufacturer.

D. Protect temiticide solution, dispersed in treated soils and fill, from being diluted until ground-supported slabs are installed. Use waterproof barrier according to EPA-Registered Label instructions.

E. Post signs in areas of application warning of poison application. Remove signs when areas with application are covered by other construction.

END OF SECTION