PROJECT MANUAL

COURTHOUSE VETERINARY HOSPITAL & BOARDING

2497 North Landing Road

Virginia Beach, Virginia 23456

Brian Watson, DVM

Project No. 2004

August 10, 2022

BDA Architecture, P.C.
901 Lamberton Place, NE
Albuquerque, NM 87107
505.858.0180

CERTIFICATION PAGE

The technical material and data contained in this Project Manual were prepared under the supervision and direction of the undersigned, whose seal as a Professional Architect, licensed to practice in the State of Connecticut, is affixed below.

_____

David S. Gasser
Registered Architect in the State of Virginia
License No. 0401019577
901 Lamberton Pl, NE
Albuquerque, New Mexico 87107
505-858-0180

SECTION 000103

PROJECT DIRECTORY

PROJECT

Courthouse Veterinary Hospital & Boarding
2497 North Landing Road
Virginia Beach, Virginia 23456
Project No. 2004

OWNER

Brian Watson, DVM

ARCHITECT

BDA Architecture, PC
Paul Gladysz, Principal in Charge
901 Lamberton Place, NE
Albuquerque, NM 87107
(505) 858-0180
Project Manager: Colin Campbell
colin@bdaarc.com

CIVIL ENGINEER

Bushnell Associates
Pinnacle Group Engineering, Inc.
445 Battlefield Blvd, Suite R.
Chesapeake, Virginia 23320
((757)424-4424
fcolorado@pgeva.com

STRUCTURAL ENGINEER

JJK Group, Inc
Jim Kapuranis, P.E.
3240 C Juan Tabo NE
Albuquerque, NM 87111
(860) 338-1702
jim@jjkgroup.com

MECHANICAL/ ELECTRICAL/ PLUMBING ENGINEER

Teeter Engineering Group
Buck Driggers
3400 South Tryon Street, Suite D
Charlotte, NC 28217
(704) 376-2999
buckd@tegpa.com

END OF SECTION

SECTION 000110

TABLE OF CONTENTS

DIVISION 07 - THERMAL AND MOISTURE PROTECTION

DIVISION 08 - OPENINGS

DIVISION 09 - FINISHES

DIVISION 10 - SPECIALTIES

DIVISION 11 - EQUIPMENT

DIVISION 12 - FURNISHINGS (not used)

DIVISION 13 - SPECIAL CONSTRUCTION (not used)

DIVISION 14 - CONVEYING EQUIPMENT (not used)

DIVISION 22 – FIRE SUPPRESSION (refer to FA and FS drawings)

FACILITY SERVICES SUBGROUP

DIVISION 22 - PLUMBING (refer to plumbing drawings)

DIVISION 23 - HEATING VENTILATING AND AIR CONDITIONING (refer to mechanical drawings)

DIVISION 26 - ELECTRICAL (refer to electrical drawings)

SITE AND INFRASTRUCTURE SUBGROUP

DIVISION 31 - EARTHWORK (refer also to civil drawings)

31 3116 Termite Control

DIVISION 32 - EXTERIOR IMPROVEMENTS (refer also to civil drawings)

32 3123 Wood Composite Fences and Gates

DIVISION 33 - UTILITIES (refer to civil drawings)

END OF SECTION

SECTION 000115

LIST OF DRAWING SHEETS

G001	TITLE SHEET
G101	LIFE SAFETY PLAN
G102	LIFE SAFETY PLAN - ATTIC
AS101	ARCHITECTURAL SITE PLAN
AS501	SITE DETAILS
S01.A	GENERAL PROJECT NOTES
S01.B	SPECIAL INSPECTIONS NOTES & TABLES
S03.A	CONCRETE GENERAL NOTES AND DETAILS
S03.B	CONCRETE SLAB-ON-GRADE REQUIREMENTS
S06.A	CARPENTRY GENERAL NOTES
S06.B	ROUGH CARPENTRY GENERAL DETAILS
S06.C	ROUGH CARPENTER GENERAL DETAILS (2)
S31.A	EARTHWORK GENERAL NOTES
S100	FOUNDATION AND CONTROL JOINT PLAN
S200	FLOOR FRAMING PLAN
S300	ROOF FRAMING PLAN
S400	FOUNDATION SECTIONS
S500	ROOF FRAMING SECTIONS
S501	ROOF FRAMING SECTIONS (2)
SW0.1	SHEARWALL GENERAL NOTES AND DETAILS
SW0.2	WOOD SHEARWALL ELEV. AND FRAMING DETAILS
SW1.0	ROOF TO FOUNDATION SHEARWALL PLAN
A101	ARCHITECTURAL FLOOR PLAN
A102	ARCHITECTURAL FLOOR & DIMENSION PLAN - ATTIC
A103	DIMENSION PLAN EXTERIOR
A104	DIMENSION PLAN NORTH
A105	DIMENSION PLAN SOUTH
A106	REFLECTED CEILING PLAN
A107	REFLECTED CEILING PLAN - ATTIC
A110	ROOF PLAN
A201	EXTERIOR ELEVATIONS
A202	INTERIOR ELEVATIONS
A203	INTERIOR ELEVATIONS
A204	INTERIOR ELEVATIONS
A205	INTERIOR ELEVATIONS
A206	INTERIOR ELEVATIONS
A301	BUILDING SECTIONS
A302	BUILDING SECTIONS
A303	WALL SECTIONS
A304	WALL SECTIONS
A305	WALL SECTIONS
A401	ENLARGED PLANS
A501	MISC. DETAILS
A502	MISC. DETAILS
A503	MISC. DETAILS
A504	MISC. DETAILS
A505	DOOR DETAILS
A506	DOOR DETAILS
A507	WINDOW DETAILS
A601	DOOR SCHEDULE AND TYPES
A602	ROOM FINISH SCHEDULE AND WINDOW TYPES

I001	INTERIOR SPECIFICATION
I101	REFERENCE FLOOR PLAN
I201	INTERIOR ELEVATIONS
I202	INTERIOR ELEVATIONS
FA101	MAIN FLOOR PLAN - SPRINKLER AND HVAC MONITORING SYSTEM
FA102	UPPER FLOOR PLAN - HVAC MONITORING SYSTEM
FA103	SPRINKLER AND HVAC MONITORING SYSTEM RISER AND NOTES
FS101	MAIN FLOOR PLAN - FIRE SPRINKLER
FS102	UPPER FLOOR PLAN - FIRE SPRINKLER
P001	PLUMBING SPECIFICATIONS, LEGEND, GENERAL NOTES
P002	PLUMBING SCHEDULES AND DETAILS
P003	PLUMBING DETAILS
P101	MAIN FLOOR PLAN - WASTE
P102	UPPER FLOOR PLAN - WASTE
P201	MAIN FLOOR PLAN - WATER
P202	UPPER FLOOR PLAN - WATER
P301	MAIN FLOOR PLAN - MED GAS
M001	MECHANICAL LEGENDS & GENERAL NOTES
M002	MECHANICAL SPECIFICATIONS
M003	MECHANICAL SCHEDULES
M004	MECHANICAL SCHEDULES
M005	MECHANICAL CALCULATIONS
M006	MECHANICAL DETAILS
M007	MECHANICAL SECTIONS
M101	MAIN LEVEL FLOOR PLAN - MECHANICAL
M102	UPPER LEVEL FLOOR PLAN - MECHANICAL
M103	UPPER LEVEL FLOOR PLAN - GAS PIPING
M201	MECHANICAL COMMISSIONING
E001	ELECTRICAL SPECIFICATIONS
E002	ELECTRICAL SYMBOLS
E003	LIGHTING FIXTURE SCHEDULE
E100	SITE PLAN - ELECTRICAL
E101	MAIN FLOOR PLAN - LIGHTING
E102	UPPER FLOOR PLAN - LIGHTING
E201	MAIN FLOOR PLAN - POWER
E202	UPPER FLOOR PLAN - POWER
E301	MAIN FLOOR PLAN - MECHANICAL CONNECTIONS
E302	UPPER FLOOR PLAN - MECHANICAL AND PLUMBING CONNECTION
E401	PANEL SCHEDULES
E402	PANEL SCHEDULES
E501	POWER RISER DIAGRAM

END OF SECTION

SECTION 003132

GEOTECHNICAL DATA

1.1 INVESTIGATION

A. Geotechnical investigations were conducted at the site, the results of which can be found in the report issued by ECS Mid-Atlantic, LLC, dated April 04, 2022.

B. A copy of the report is bound into the Project Manual.

1.2 INTERPRETATION

A. The report is provided only for bidder's information and convenience and is not part of the Contract Documents. Owner and Architect do not warrant the accuracy or extent of the report or locations of the test borings.

B. Opinions expressed in the report are those of the Geotechnical Engineer and represent the Geotechnical Engineer’s interpretation of subsoil conditions, tests, and results of analyses that the Geotechnical Engineer has conducted.

C. The report is based upon the assumption that uniform variation exists in soil properties between borings. Interpretation of the report is bidder's responsibility. Owner and Architect will not be responsible for interpretation of report by bidders.

D. Bidders are urged to examine the report and the site.

E. Additional soil borings or other exploratory operations may be made by bidders at no additional cost to Owner, provided such operations are approved by Owner in advance.

F. Refer to Conditions of the Contract for additional information.

END OF SECTION

ECS Mid-Atlantic, LLC

Geotechnical Engineering Report

Courthouse Veterinary Hospital & Pet Boarding

2497 North Landing Road
Virginia Beach, Virginia

ECS Project No. 04:11861

April 4, 2022

April 4, 2022

Mr. Francisco Colorado
Pinnacle Group Engineering
445 North Battlefield Boulevard
Chesapeake, VA 23320

ECS Project No. 04:11861

Reference: Geotechnical Engineering Report
Courthouse Veterinary Hospital & Pet Boarding
Virginia Beach, Virginia

Dear Mr. Colorado,

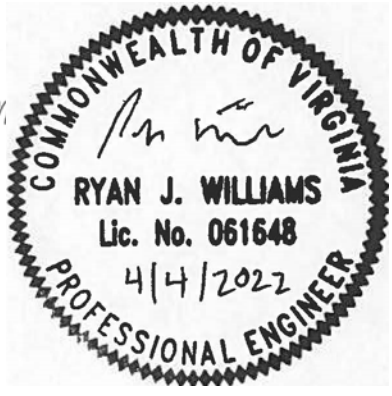
ECS Mid-Atlantic, LLC (ECS) has completed the subsurface exploration, laboratory testing, and geotechnical engineering analyses for the above-referenced project. Our services were performed in general accordance with our agreed to scope of work. This report presents our understanding of the geotechnical aspects of the project along with the results of the field exploration and laboratory testing conducted, and our design and construction recommendations.

It has been our pleasure to be of service to Pinnacle Group Engineering during the design phase of this project. We would appreciate the opportunity to remain involved during the continuation of the design phase, and we would like to provide our services during construction phase operations as well to verify subsurface conditions assumed for this report. Should you have any questions concerning the information contained in this report, or if we can be of further assistance to you, please contact us.

Respectfully submitted,

ECS Mid-Atlantic, LLC

Joshua Monnikendam, E.I.T.
jmonnikendam@ecslimited.com



David M. Anderson, P.E.
Danderson1@ecslimited.com

Ryan J. Williams, P.E.
RJWilliams@ecslimited.com

Table of Contents

APPENDICES

Appendix A – Drawings & Reports

- Site Location Diagram
- Boring Location Diagram
- Subsurface Cross-Section

Appendix B – Field Operations

- Reference Notes for Boring Logs
- Subsurface Exploration Procedures: Standard Penetration Testing (SPT)
- Boring Logs B-01 through B-05

EXECUTIVE SUMMARY

The following summarizes the main findings of the exploration, particularly those that may have a cost impact on the planned development. Further, our principal foundation recommendations are summarized. Information gleaned from the Executive Summary should not be utilized in lieu of reading the entire geotechnical report.

- The geotechnical exploration performed for the proposed development included five (5) soil test borings drilled to depths of 6 to 30 feet below existing ground surface across the project site.

- The borings were conducted within an undeveloped, wooded parcel with wetland areas. Borings in the area encountered 2 to 4 inches of topsoil as surface cover. Underlying the surface cover, intermixed deposits of Sandy Clay (SC), Sandy Clay (CL), Silty Sand (SM), and Fat Clay (CH) were encountered to variable depths of 6 to 7 feet below ground surface. Underlying the intermixed deposit, deposits of Poorly Graded Sand with Silt (SP-SM) and Silty Sand (SM) were encountered to the maximum explored depths of 30 feet below ground surface. The coarse-grained soils were generally very loose to medium dense in relative density, while the fine-grained soils were generally soft to very stiff in relative consistency.

- It is our understanding that 2 to 4.5 feet of fill will be required to bring the site to proposed finished grade in some areas. The additional fill may induce 1-2 inches of immediate settlement. We recommend that all fill be graded in and compacted prior to commencing foundation construction.

- Based on the assumed loading conditions not to exceed 50 kips for columns and 2 klf for walls, the site should be suitable for shallow foundations consisting of spread and wall footings. An allowable bearing pressure of 1,500 psf should be used to dimension the footings. Footings should bear at least 24 inches below finished grade to develop the allowable bearing capacity. Post construction settlements are anticipated to be less than 1 inch.

- Primarily fine-grained soils with moderate to high plasticity were encountered in the upper 4 to 6 feet across the project site. These soils have a moderate to high fines content and plasticity that could potentially affect the pavement subgrade in addition to any new slabs on grade constructed when wet. Additional localized undercutting or stabilization may be required in areas where this soil type is encountered. Additionally, very loose and soft soils were observed in the upper 2 feet at boring locations B-01 and B-04, which were located on the northern portion of the property. The project budget should carry a contingency for undercut or stabilization of unsuitable soils.

- Topsoil and otherwise soft or unsuitable soils should be removed where encountered and replaced with select fill. For planning purposes, a minimum 6 inches of stripping should be anticipated to remove unsuitable soils across developed areas of the site. Trees and overgrowth were also present throughout the site. Root balls may extend as deep as 2 to 4 feet and will require additional localized stripping depth to completely remove the organics. Once the site has been cleared and grubbed, additional undercutting should be anticipated to remove organics and roots larger than 1 inch in diameter.

1.0 INTRODUCTION

The purpose of this study was to provide geotechnical information for an approximately 11,638 square foot, one-story veterinary hospital building, with associated parking areas, drive lanes, and associated utilities. The recommendations developed for this report are based on project information supplied by Pinnacle Group Engineering.

Our services were provided in accordance with our Proposal No. 04:18174 dated February 16, 2022, as authorized by Courthouse Veterinary Clinic on February 23, 2022, and includes our Terms and Conditions.

This report contains the procedures and results of our subsurface exploration and laboratory testing programs, review of existing site conditions, engineering analyses, and recommendations for the design and construction of the project.

The report includes the following items.

- A brief review and description of our field and laboratory test procedures and the results of testing conducted.
- A review of surface topographical features and site conditions.
- A review of area and site geologic conditions.
- A review of subsurface soil stratigraphy with pertinent available physical properties.
- Final copies of our soil test borings.
- Recommended allowable soil bearing pressures for conventional shallow foundations (spread footings) and estimates of predicted foundation settlement and differential settlement.
- Recommendations for slab-on-grade construction, including recommendations for subgrade improvements, subgrade modulus, and underslab subdrainage, if necessary.
- Recommendations for site preparation and construction of compacted fills, including an evaluation of on-site soils for use as compacted fills.
- Recommendations for flexible and rigid pavements based on laboratory CBR testing.
- Recommended seismic site classification in accordance with the International Building Code (IBC) 2015.
- Evaluation of the site with respect to potential construction problems and recommendations dealing with earthwork and inspections during construction.

The recommendations contained herein were developed from the data obtained in the soil test borings, which indicate subsurface conditions at the specific locations at the time of exploration. Soil and groundwater conditions may vary between the borings. If during the course of construction variations appear evident; the Geotechnical Engineer should be informed so that the conditions can be addressed.

2.0 PROJECT INFORMATION

2.1 PROJECT LOCATION/CURRENT SITE USE/PAST SITE USE

The project site is located at 2497 North Landing Road in the City of Virginia Beach, Virginia. The vicinity of the site is bordered by North Landing Road to the north, residential and commercial development to the west and east, and undeveloped forested land to the south. Please reference the Site Location Diagram in Appendix A for more information:

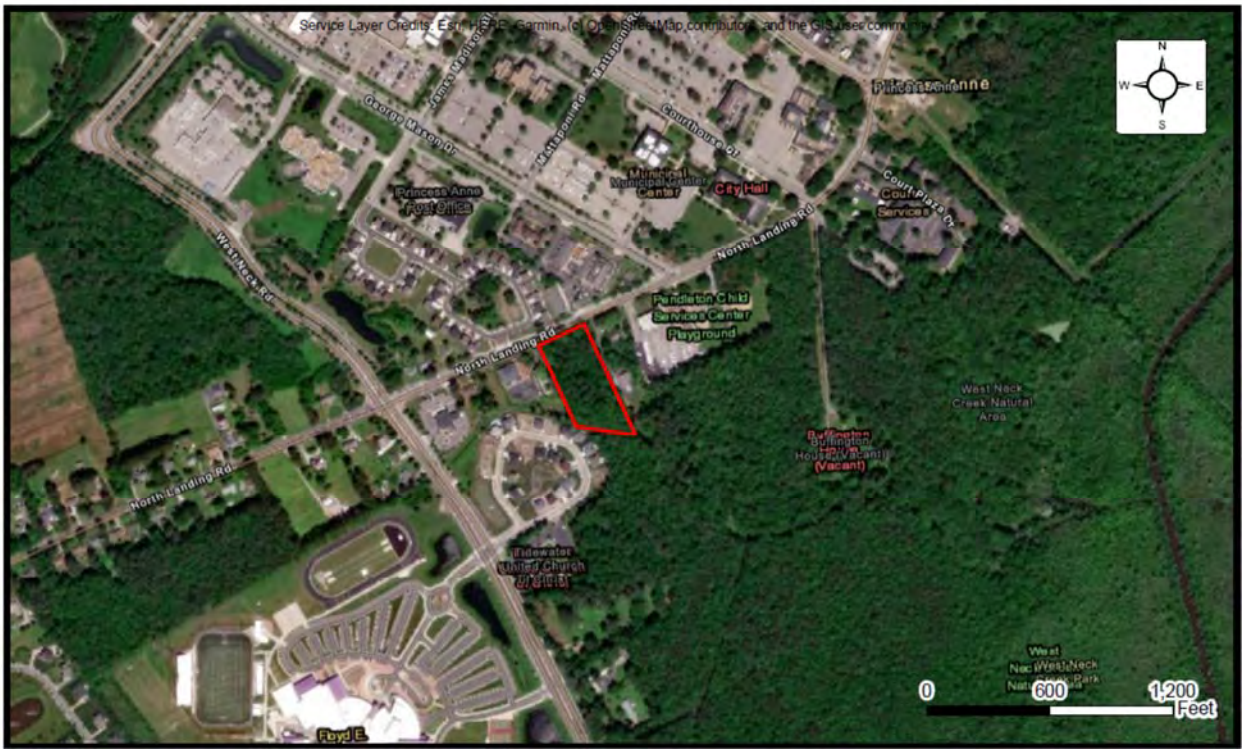


Figure 2.1.1. Site Location Diagram

The site currently consists of undeveloped wooded areas with wetland areas throughout. As such, surface cover generally consisted of topsoil. Available historic imagery from Google Earth shows that the parcel has remained relatively unchanged since 1985. The surrounding commercial and residential developments appear to have been constructed between 2007 and 2019.

Based on topographic drawings provided by Pinnacle Engineering, site grades generally range from El. 14.6 feet to El. 9.0 feet, with the higher elevations at the north side of the site near North Landing Road, gradually sloping down south towards the wetland areas. Current elevations within the area of proposed development generally range from about El. 10.0 feet to El. 14.6 feet based on the provided topography.

2.2 PROPOSED CONSTRUCTION

The following information explains our understanding of the planned development, including proposed buildings and related infrastructure:

Subject	Design Information / Assumptions
Building Footprint	Approximately 11,638 square feet in plan view
# of Stories	1 -story
Usage	Veterinary Hospital and Pet Boarding Building
Framing	Wood or Light Steel
Column Loads	50 kips (Assumed)
Wall Loads	2 kips per linear foot (klf) (Assumed)
Lowest Finish Floor Elevation	El. 15.7 feet

Based on the Architectural Site Plan prepared by Pinnacle Group Engineering dated January 13, 2022, the building will have yard enclosures, a dumpster enclosure to the west, and associated site utilities and asphalt and concrete pavements, with parking for approximately 35 vehicles to be provided.

Based on the provided plans, finished grade around the perimeter of the building will be on the order of El. 15.0 feet, with a Finished Floor Elevation of El. 15.7 feet. Top of curb elevations in the parking lot areas will range from El. 11.9 feet to El. 15.94 feet. Therefore, 1 to 4.5 feet of fill will be required in some building and parking lot areas to reach proposed grades. Some of the wetland areas will be mitigated to accommodate the proposed construction.

An updated plan was provided by Pinnacle via email on April 1, 2022, depicting two stormwater management ponds, one to the west and one to the south of the proposed parking areas. Exploration and recommendations for the ponds were not included in our current scope of work.

3.0 FIELD EXPLORATION AND LABORATORY TESTING

Our exploration procedures are explained in greater detail in Appendix B including the insert titled Subsurface Exploration Procedures. Our scope of work included drilling five (5) borings to depths of 6 to 30 feet below existing grades within the vicinity of the proposed building and pavement areas. Our borings were located in the field by using handheld GPS devices, and their approximate locations are shown on the Boring Location Diagram in Appendix A.

3.1 SUBSURFACE CHARACTERIZATION

The subsurface conditions encountered were generally consistent with published geological mapping. The following sections provide generalized characterizations of the soil. Please refer to the boring logs in Appendix B.

Approximate Depth (ft)	Elevation [(1)] (ft)	Stratum	Description	Ranges of SPT[(2)] N-values (bpf)
0-0.33 ft	El. + 13 to El. + 9.75	Surface Cover	Borings performed in across the site indicated approximately 2 to 4 inches of topsoil as surface cover.	n/a
0.17-7 ft	El. + 12.75 to El. + 4	I	Firm to Very Stiff deposits of Lean Clay (CL) and Fat Clay (CH), along with Very Loose to Medium Dense deposits of Clayey Sand (SC) and Silty Sand (SM) encountered to variable depths of 6 to 7 feet below current site grades. Groundwater encountered at depths of 6 feet below ground surface in boring locations B-01 through B-03.	2 to 21
6-30 ft	El. + 7 to El. - 17	II	Very Loose to Medium Dense deposits of Silty Sand (SM) and Poorly Graded Sand with Silt (SP-SM) encountered to the maximum explored depths of 30 feet below ground surface.	2 to 21

Notes:

(1) Please note that the ground surface elevations were interpolated from the provided topographic drawings, boring locations were not surveyed. Therefore, elevation ranges are approximate +/- several feet.

(2) Standard Penetration Testing

A graphical presentation of the subsurface conditions is shown on the Subsurface Cross Section Diagram(s) included in Appendix A.

3.2 GROUNDWATER OBSERVATIONS

Water levels were estimated based on visual/manual observation of the moisture content of recovered SPT samples. The use of wet drilling methods (mud rotary) precludes direct measurement of water levels in open boreholes.

Groundwater depths at the time of drilling were estimated to be approximately 6 feet below existing grades as noted in our boring logs in Appendix B. Groundwater was not encountered in borings B-04 and B-05 due to the depth at which they were drilled.

Variations in the long-term water table may occur as a result of changes in precipitation, evaporation, surface water runoff, construction activities, and other factors. Normally, the highest groundwater levels occur in the late winter and spring and lowest levels occur in the late summer and fall. The contractor should determine actual groundwater conditions prior to construction to evaluate their impact on the work.

3.3 LABORATORY TESTING

The laboratory testing consisted of selected tests performed on samples obtained during our field exploration operations. Classification and index property tests were performed on representative soil samples, including moisture content, grain size analysis, and Atterberg limits tests. Additionally, two bulk subgrade samples were collected for standard proctor and CBR testing to aid in the pavement design.

Each sample was visually classified based on texture and plasticity in accordance with ASTM D2488 Standard Practice for Description and Identification of Soils (Visual-Manual Procedures) and including USCS classification symbols, and ASTM D2487 Standard Practice for Classification for Engineering Purposes (Unified Soil Classification System (USCS)). After classification, the samples were grouped in the

major zones noted on the boring logs in Appendix B. The group symbols for each soil type are indicated in parentheses along with the soil descriptions. The stratification lines between strata on the logs are approximate; in situ, the transitions may be gradual.

At the time of this report, laboratory testing was not yet complete. An addendum to this report will be provided once the laboratory results have been completed.

4.0 DESIGN RECOMMENDATIONS

The following sections provide recommendations for foundation design, slabs on grade, below grade walls, seismic design parameters, and pavements. Based on our subsurface exploration and project understanding, the proposed structure can be supported by shallow foundations consisting of spread footings and strip footings bearing on stable natural soils or well compacted structural fill, assuming the site is graded in with all fill prior to commencing foundation construction.

4.1 FOUNDATIONS

Prior to placing foundation excavations, all fill should be graded in to finished floor elevations to allow for immediate settlement to occur. It is anticipated that the weight of fill will induce 1-2 inches of immediate settlement.

Provided subgrades and Structural Fills are placed and prepared as recommended in this report, the proposed structure can be supported by shallow foundations including column footings and continuous wall footings. We recommend the foundation design use the following parameters:

Design Parameter	Column Footing	Wall Footing
Net Allowable Bearing Pressure(1)	1,500 psf	1,500 psf
Acceptable Bearing Soil Material	Stable, Natural Stratum I soils or well compacted Structural Fill.	Stable, Natural Stratum I soils or well compacted Structural Fill.
Minimum Width	36 inches	24 inches
Minimum Footing Embedment Depth (below slab or finished grade) (2)	24 inches	24 inches
Estimated Total Settlement – Post Construction (3)	Less than 1- inch	Less than 1- inch
Estimated Differential Settlement (4)	Less than 0.5 inches between columns	Less than 0.5 inches

Notes:

(1) Net allowable bearing pressure is the applied pressure in excess of the surrounding overburden soils above the base of the foundation.
(2) For bearing considerations and frost penetration requirements
(3) Based on assumed structural loads. If final loads are different, ECS must be contacted to update foundation recommendations and settlement calculations.
(4) Based on maximum column/wall loads and variability in borings. Differential settlement can be re-evaluated once the foundation plans are more complete.

We recommend that foundation construction not begin until all fill is placed and graded in. For bearing considerations, footings should bear a minimum of 24 inches below lowest adjacent finished grade.

Potential Undercuts: Up to 4 inches of topsoil were encountered across the site. Due to the wooded nature of the site, some roots and organic deposits may extend to depths of 2 feet or greater. Additionally, very loose soil conditions were observed in the upper 2 feet on the northern end of the site. Clayey soils were also observed in the upper 6 feet, which may be sensitive to disturbance and changes in moisture conditions. In the event that any soft or unsuitable soils are observed at the footing bearing elevations, the unsuitable soils should be undercut and removed. Any undercut should be backfilled with a well compacted fill material or No. 57 stone up to the original design bottom of footing elevation, extending 1 foot laterally for each foot of undercut; the original footing shall be constructed on top of the fill material.

4.2 SLABS ON GRADE

Provided subgrades and structural fills are prepared as discussed herein, the proposed floor slabs can be constructed as Ground Supported Slabs (or Slab-On-Grade). Based on the assumed finish floor elevations of 2 feet or more above current grades in some areas, it appears that the slabs will bear on newly compacted fill or existing Stratum I soils. The following graphic depicts our soil-supported slab recommendations:

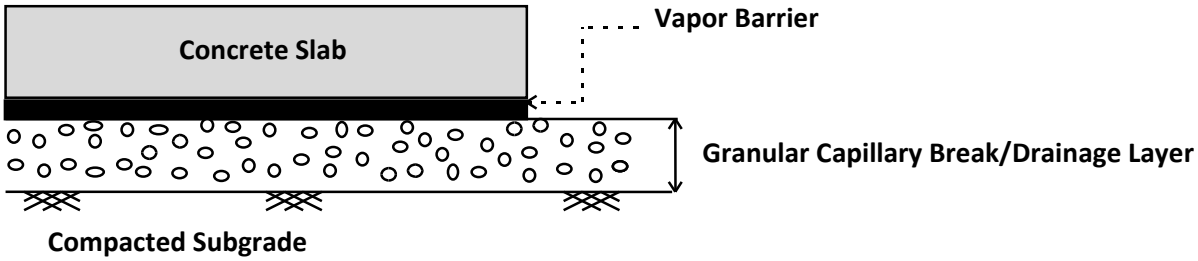


Figure 4.2.1

1. Granular Drainage Layer Thickness: 4 inches
2. Granular Drainage Layer Material: GRAVEL (GP, GW), SAND (SP, SW), VDOT No. 57 Stone (typ.)
   VDOT No. 57 Stone or washed concrete sand is considered acceptable Porous Fill material.
3. Subgrade compacted to 95% maximum dry density per ASTM D698 or Passing Proofroll

Soft or yielding soils will likely be encountered across the site. Those soils should be removed and replaced with compacted Structural Fill in accordance with the recommendations included in this report.

Subgrade Modulus: Provided the Structural Fill and Granular Drainage Layer are constructed in accordance with our recommendations, the slab may be designed assuming a modulus of subgrade reaction, k_1 of 150 pci (lbs./cu. inch). The modulus of subgrade reaction value is based on a 1 ft by 1 ft plate load test basis.

Vapor Barrier: Before the placement of concrete, a vapor barrier may be placed on top of the granular drainage layer to provide additional protection against moisture penetration through the floor slab. When a vapor barrier is used, special attention should be given to surface curing of the slab to reduce the potential for uneven drying, curling and/or cracking of the slab. Depending on proposed flooring material types, the structural engineer and/or the architect may choose to eliminate the vapor barrier.

Slab Isolation: Soil-supported slabs should be isolated from the foundations and foundation-supported elements of the structure so that differential movement between the foundations and slab will not induce excessive shear and bending stresses in the floor slab. Where the structural configuration prevents the use of a free-floating slab such as in a drop-down footing/monolithic slab configuration, the slab should be designed with suitable reinforcement and load transfer devices to preclude overstressing of the slab.

4.3 SEISMIC DESIGN CONSIDERATIONS

Seismic Site Classification: The International Building Code (IBC) 2015 requires site classification for seismic design based on the upper 100 feet of a soil profile. At least two methods are utilized in classifying sites, namely the shear wave velocity (v_s) method and the Standard Penetration Resistance (N-value) method. The N-value method was used in classifying this site.

SEISMIC SITE CLASSIFICATION			
Site Class	**Soil Profile Name**	**Shear Wave Velocity, Vs, (ft./s)**	**N value (bpf)**
A	Hard Rock	Vs > 5,000 fps	N/A
B	Rock	2,500 < Vs ≤ 5,000 fps	N/A
C	Very dense soil and soft rock	1,200 < Vs ≤ 2,500 fps	>50
D	Stiff Soil Profile	600 ≤ Vs ≤ 1,200 fps	15 to 60
E	Soft Soil Profile	Vs < 600 fps	<15

Based upon our interpretation of the subsurface conditions, the appropriate Seismic Site Classification is "D" as shown in the preceding table.

4.4 PAVEMENTS

Subgrade Characteristics: Based on the results of our borings, it appears that the pavement subgrades will consist mainly of Clayey Sand (SC), Sandy Lean Clay (CL), or newly placed and compacted fill. An ECS geotechnical engineer should be onsite at the time of construction in order to determine the suitability of this material to remain in place.

At the time of this report, CBR testing was not yet completed. In the event that the results differ from what was assumed herein, an addendum will be issued with updated pavement recommendations. Based on the soil types encountered, their N-values, and our experience with the local soil conditions, we recommend that a design CBR value of 3 be utilized to dimension the pavement sections.

It is our understanding that all pavement areas are to be paved with asphalt with the potential for minimal concrete pavements. Based on our experience with similar projects, we anticipate that the drive lanes will support automobile traffic for 100 vehicles per day or less with less than 5% truck traffic. Our design assumes that ditches and swales will be provided along the edges of all pavements to prevent water penetration of the subgrade soils. Our design also assumes stable subgrade soils evaluated by a passing proofroll or compacted to at least 95% of the Standard Proctor Density (ASTM D698).

PROPOSED PAVEMENT SECTIONS			
Material	**Light-Duty Flexible Pavement**	**Heavy-Duty Flexible Pavement**	**Rigid Pavement**
Portland Cement Concrete (f'_c = 4000 psi)	-	-	6.0 in.
Asphaltic Concrete Surface Course (SM-9.5)	2.0 in	1.5 in	-
Asphaltic Concrete Surface Course (BM-25.0)	-	3.0 in	-
Graded Aggregate Base Course (AASHTO #21A/21B)	8.0 in	8.0 in	6.0 in

In general, heavy-duty sections are areas that will be subjected to trucks, buses, or other similar vehicles including main drive lanes of the development.

For the construction of new pavements, we recommend that any soft, unstable and/or unsuitable materials be removed from the pavement areas. The stripped surface should be proofrolled and carefully observed at the time of construction in order to aid in identifying any localized soft or unsuitable materials. This material, where encountered, should be closely evaluated during construction and should be removed from below the pavement as required or considered necessary by the Geotechnical Engineer. For construction during wet seasonal conditions, undercutting of loose, wet materials from below design subgrade elevations should be anticipated. For planning purposes, undercutting or stabilization of the upper 2 feet of pavement subgrades should be anticipated.

An important consideration with the design and construction of new pavements is surface and subsurface drainage. Where standing water develops, either on the pavement surface or within the base course layer, softening of the subgrade and other problems related to the deterioration of the pavement can be expected. Furthermore, good drainage should minimize the possibility of the subgrade materials becoming saturated over a long period of time. Based upon the results of the soil test borings, the groundwater table should not affect the performance of pavements. However, surface runoff which seeps into base materials could create localized deterioration the soil's bearing capacity. Water that tends to collect within the base course layer may be minimized by installing weep holes in drainage structures and backfilling around these structures and storm sewer pipes with No. 57 Stone, construction of drainage swales and diversion ditches around the pavement perimeter, and proper backfilling and grading behind curbs to minimize water intrusion from behind the curbs.

5.0 SITE CONSTRUCTION RECOMMENDATIONS

5.1 SUBGRADE PREPARATION

5.1.1 Stripping and Grubbing

The subgrade preparation should consist of stripping all vegetation, topsoil, pavements, and any soft or unsuitable materials from the 10-foot expanded building and 5-foot expanded pavement limits, and 5 feet beyond the toe of Structural Fills.

ECS should be retained to verify that topsoil and unsuitable surficial materials have been removed prior to the placement of structural fill or construction of structures. At the time of our exploration, surface cover consisted of approximately 2 to 4 inches of topsoil. For planning purposes, a minimum 6 inches of stripping should be anticipated to remove surficial organics. Deeper topsoil or organic laden soils may be present in wet, low-lying, and poorly drained areas or in undeveloped areas outside of the boring locations. Additionally, very soft and loose soils were encountered in the upper 2 feet on the northern side of the site. This material may become unstable when wet and additional undercutting may be necessary. As a result, a contingency for additional undercutting should be considered in the project budget.

5.1.2 Proofrolling

Prior to fill placement or other construction on subgrades, the subgrades should be evaluated by an ECS field technician. The exposed subgrade should be thoroughly proofrolled with construction equipment having a minimum axle load of 10 tons [e.g. fully loaded tandem-axle dump truck]. Proofrolling should be traversed in two perpendicular directions with overlapping passes of the vehicle under the observation of an ECS technician. This procedure is intended to assist in identifying any localized yielding materials.

Where proofrolling identifies areas that are unstable or “pumping” subgrade those areas should be repaired prior to the placement of any subsequent Structural Fill or other construction materials. Methods of stabilization include undercutting, moisture conditioning, or chemical stabilization. The situation should be discussed with ECS to determine the appropriate procedure. Test pits may be excavated to explore the shallow subsurface materials to help in determining the cause of the observed unstable materials, and to assist in the evaluation of appropriate remedial actions to stabilize the subgrade.

5.1.3 Site Temporary Dewatering

The contractor shall make their own assessment of temporary dewatering needs based upon the limited subsurface groundwater information presented in this report. Soil sampling is not continuous, and thus soil and groundwater conditions may vary between sampling intervals (typically 5 feet). If the contractor believes additional subsurface information is needed to assess dewatering needs, they should obtain such information at their own expense. ECS makes no warranties or guarantees regarding the adequacy of the provided information to determine dewatering requirements; such recommendations are beyond our scope of services.

Dewatering systems are a critical component of many construction projects. Dewatering systems must be selected, designed, and maintained by a qualified and experienced (specialty or other) contractor familiar

with the geotechnical and other aspects of the project. The failure to properly design and maintain a dewatering system for a given project can result in delayed construction, unnecessary foundation subgrade undercuts, detrimental phenomena such as 'running sand' conditions, internal erosion (i.e., 'piping'), the migration of 'fines' down-gradient towards the dewatering system, localized settlement of nearby infrastructure, foundations, slabs-on-grade and pavements, etc. Water discharged from any site dewatering system shall be discharged in accordance with all local, state, and federal requirements.

5.2 EARTHWORK OPERATIONS

5.2.1 Structural Fill

Prior to placement of Structural Fill, representative bulk samples (about 50 pounds) of on-site and/or off-site borrow should be submitted to ECS for laboratory testing, which will typically include Atterberg limits, natural moisture content, grain-size distribution, and moisture-density relationships (i.e., Proctors) for compaction. Import materials should be tested prior to being hauled to the site to determine if they meet project specifications. Alternatively, Proctor data from other accredited laboratories can be submitted if the test results are within the last 90 days.

Satisfactory Structural Fill Materials: Materials satisfactory for use as Structural Fill should consist of inorganic soils with the following engineering properties and compaction requirements.

STRUCTURAL FILL INDEX PROPERTIES	
Subject	**Property**
Building and Pavement Areas	LL < 40, PI<20
Max. Particle Size	4 inches
Fines Content (% passing #200 sieve)	Max. 25 %
Max. organic content	3 % by dry weight

STRUCTURAL FILL COMPACTION REQUIREMENTS	
Subject	**Requirement**
Compaction Standard	Standard Proctor, ASTM D698
Required Compaction	95% of Max. Dry Density
Moisture Content	-2 to +3 % points of the soil's optimum value
Loose Thickness	8 inches prior to compaction

On-Site Borrow Suitability: The sandy soils of Stratum II are generally anticipated to meet the requirements of structural fill materials. Depending on the depth that the material is excavated from, dewatering may be required. Some of the sandy Stratum I soils may be suitable, however additional screening and testing should be conducted prior to reuse.

Fill Placement: Fill materials should not be placed on frozen soils, on frost-heaved soils, and/or on excessively wet soils. Borrow fill materials should not contain frozen materials at the time of placement, and all frozen or frost-heaved soils should be removed prior to placement of Structural Fill or other fill

soils and aggregates. Excessively wet soils or aggregates should be scarified, aerated, and moisture conditioned.

5.3 FOUNDATION OBSERVATIONS

Protection of Foundation Excavations: Exposure to the environment may weaken the soils at the footing bearing level if the foundation excavations remain open for too long a time. Therefore, foundation concrete should be placed as soon as possible after excavations are made. If the bearing soils are softened by surface water intrusion or exposure, additional undercut may be required.

Footing Subgrade Observations: Very loose sands and soft clays may be encountered in footing subgrades. It is important to have ECS observe the foundation subgrade prior to placing foundation concrete, to confirm the bearing soils are what was anticipated.

5.4 UTILITY INSTALLATIONS

Utility Subgrades: The soils encountered in our exploration are expected to be generally suitable for support of utility pipes. The pipe subgrades should be observed and probed for stability by ECS. Any loose or unsuitable materials encountered should be removed and replaced with suitable compacted Structural Fill, or pipe stone bedding material.

Utility Backfilling: The granular bedding material should be at least 4 inches thick, but not less than that specified by the civil engineer's project drawings and specifications. We recommend that the bedding materials be placed up to the springline of the pipe. Fill placed for support of the utilities, as well as backfill over the utilities, should satisfy the requirements for Structural Fill and Fill Placement.

Excavation Safety: All excavations and slopes should be constructed and maintained in accordance with OSHA excavation safety standards. The contractor is solely responsible for designing, constructing, and maintaining stable temporary excavations and slopes. The contractor's responsible person, as defined in 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations. ECS is providing this information solely as a service to our client. ECS is not assuming responsibility for construction site safety or the contractor's activities; such responsibility is not being implied and should not be inferred.

6.0 CLOSING

ECS has prepared this report to guide the geotechnical-related design and construction aspects of the project. We performed these services in accordance with the standard of care expected of professionals in the industry performing similar services on projects of like size and complexity at this time in the region. No other representation, expressed or implied, and no warranty or guarantee is included or intended in this report.

The description of the proposed project is based on information provided to ECS by Pinnacle Group. If any of this information is inaccurate or changes, either because of our interpretation of the documents provided or site or design changes that may occur later, ECS should be contacted so we can review our

recommendations and provide additional or alternate recommendations that reflect the proposed construction.

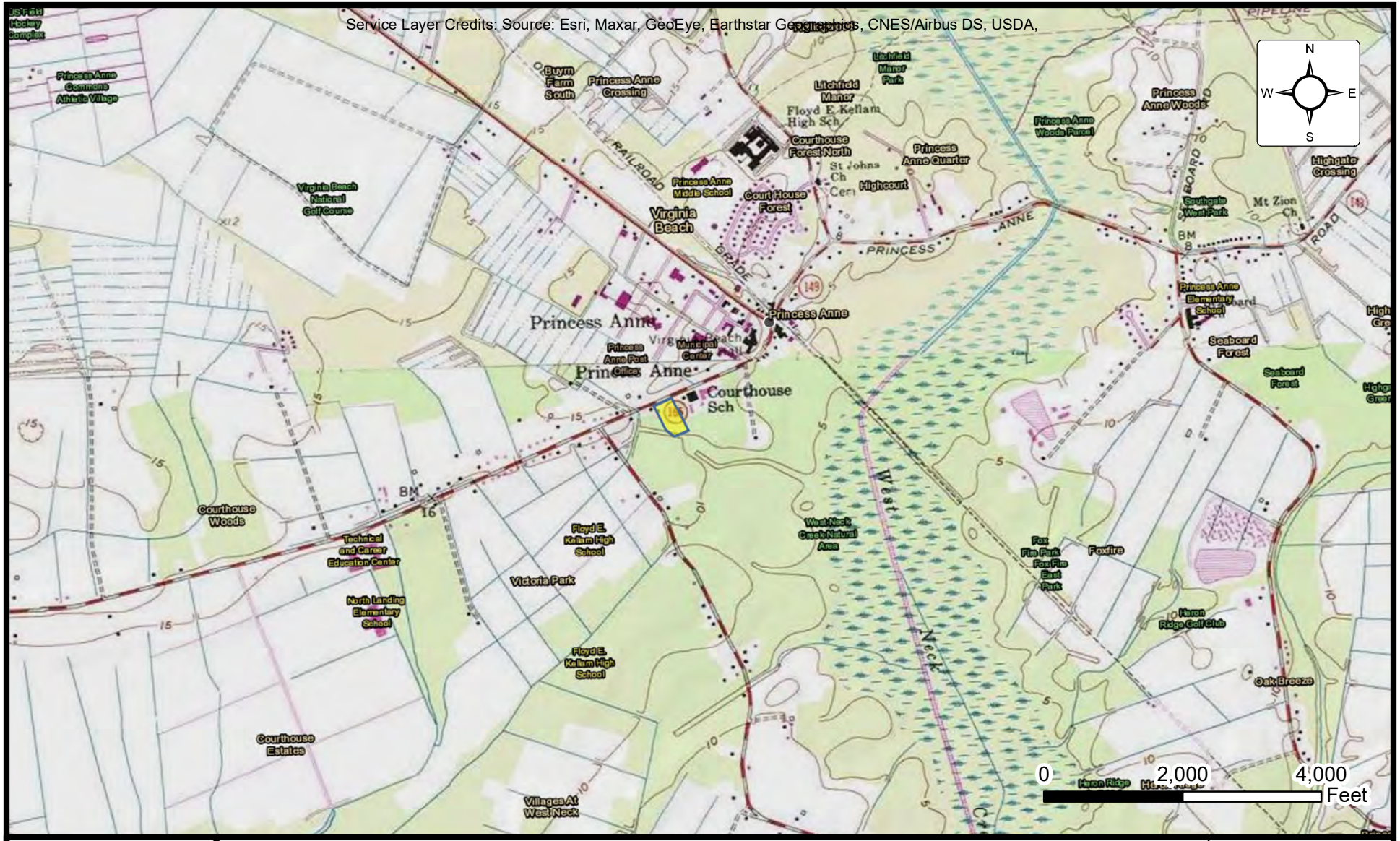
We recommend that ECS review the project plans and specifications so we can confirm that those plans/specifications are in accordance with the recommendations of this geotechnical report.

Field observations, and quality assurance testing during earthwork and foundation installation are an extension of, and integral to, the geotechnical design. We recommend that ECS be retained to apply our expertise throughout the geotechnical phases of construction, and to provide consultation and recommendation should issues arise.

ECS is not responsible for the conclusions, opinions, or recommendations of others based on the data in this report.

APPENDIX A – Diagrams & Reports

Site Location Diagram
Boring Location Diagram
Subsurface Cross-Section(s)



SITE LOCATION DIAGRAM
COURTHOUSE VETERINARY HOSPITAL

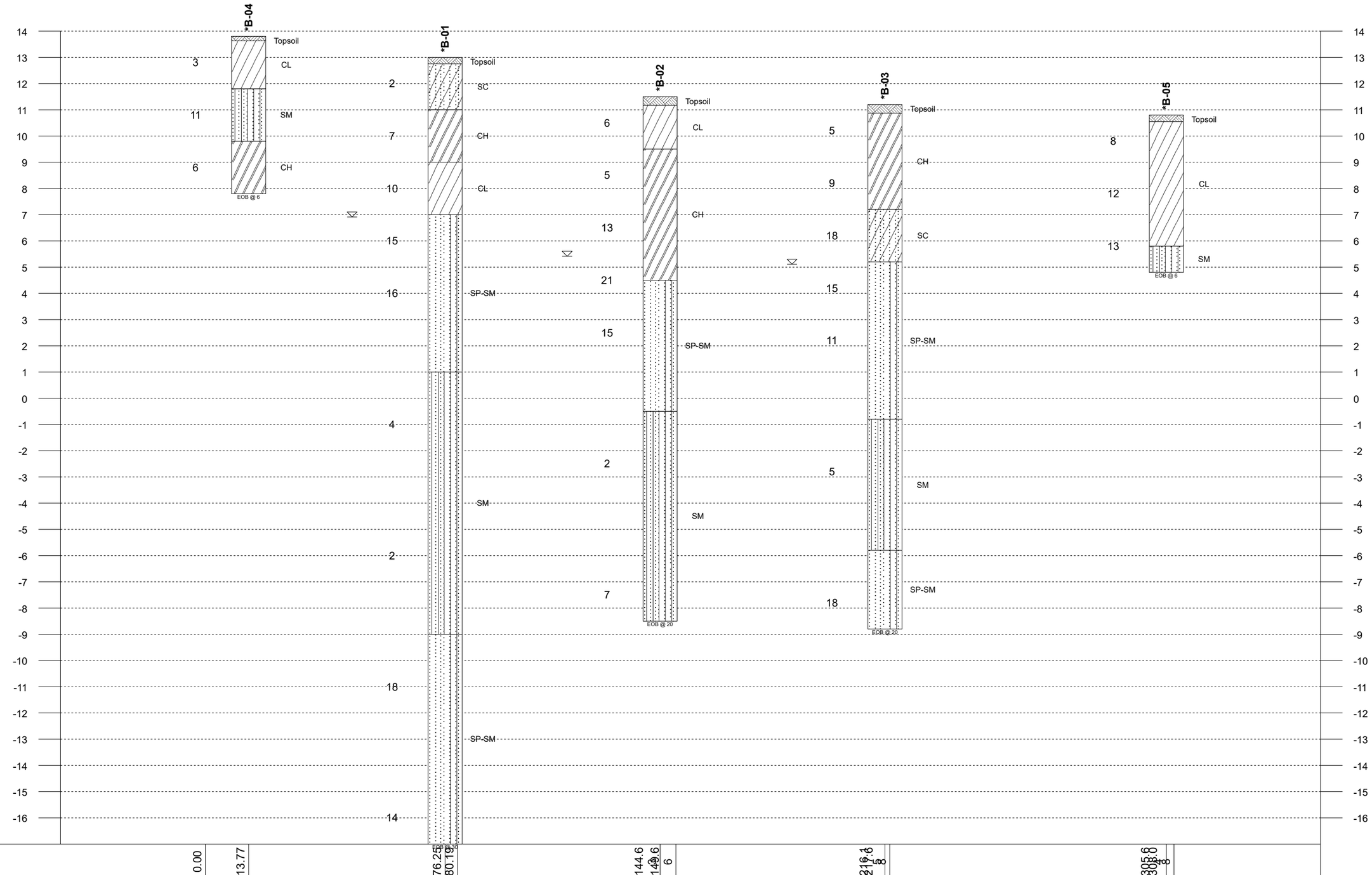
2497 NORTH LANDING ROAD, VIRGINIA BEACH, VIRGINIA
PINNACLE GROUP ENGINEERING

ENGINEER	RJW
SCALE	AS NOTED
PROJECT NO.	04:11861
SHEET	1 OF 1
DATE	3/24/2022

BORING LOCATION DIAGRAM
COURTHOUSE VETERINARY HOSPITAL

2497 NORTH LANDING ROAD, VIRGINIA BEACH, VIRGINIA
PINNACLE GROUP ENGINEERING

ENGINEER	RJW
SCALE	AS NOTED
PROJECT NO.	04:11861
SHEET	1 OF 1
DATE	4/4/2022



Legend Key

- Topsoil
- Lean CLAY
- CLAYEY SAND
- SILTY SAND
- Fat CLAY
- Poorly Graded SAND w…

-17.00

Notes:

1- EOB: END OF BORING AR: AUGER REFUSAL SR: SAMPLER REFUSAL.
2- THE NUMBER BELOW THE STRIPS IS THE DISTANCE ALONG THE BASELINE.
3- SEE INDIVIDUAL BORING LOG AND GEOTECHNICAL INFORMATION.
4- STANDARD PENETRATION TEST RESISTANCE (LEFT OF BORING) IN BLOWS PER FOOT (ASTM D1586).

Plastic Limit Water Content Liquid Limit
X———●———△
[FINES CONTENT %]

BOTTOM OF CASING
100% LOSS OF CIRCULATION

WL (First Encountered)
WL (Completion)
WL (Seasonal High Water)
WL (Stabilized)

Fill
Possible Fill
Probable Fill
Rock

GENERALIZED SUBSURFACE SOIL PROFILE A-A'

Courthouse Veterinary Hospital
Pinnacle Group Engineering
2497 North Landing Road, VIRGINIA BEACH, Virginia 23456

Project No: 04:11861 Date: 04/04/2022

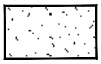
APPENDIX B – Field Operations

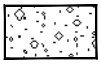
Reference Notes for Boring Logs
Subsurface Exploration Procedure: Standard Penetration Testing (SPT) Boring Logs B-01 through B-05

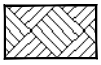
REFERENCE NOTES FOR BORING LOGS

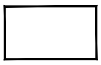
MATERIAL[1,2]

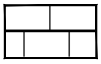

ASPHALT


CONCRETE


GRAVEL

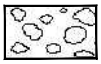

TOPSOIL

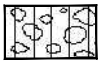

VOID


BRICK

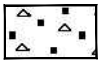

AGGREGATE BASE COURSE

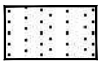

GW **WELL-GRADED GRAVEL**
gravel-sand mixtures, little or no fines

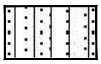

GP **POORLY-GRADED GRAVEL**
gravel-sand mixtures, little or no fines


GM **SILTY GRAVEL**
gravel-sand-silt mixtures


GC **CLAYEY GRAVEL**
gravel-sand-clay mixtures

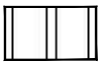

SW **WELL-GRADED SAND**
gravelly sand, little or no fines

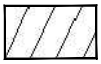

SP **POORLY-GRADED SAND**
gravelly sand, little or no fines


SM **SILTY SAND**
sand-silt mixtures

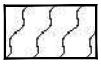

SC **CLAYEY SAND**
sand-clay mixtures

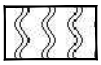

ML **SILT**
non-plastic to medium plasticity

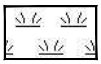

MH **ELASTIC SILT**
high plasticity


CL **LEAN CLAY**
low to medium plasticity


CH **FAT CLAY**
high plasticity


OL **ORGANIC SILT or CLAY**
non-plastic to low plasticity


OH **ORGANIC SILT or CLAY**
high plasticity


PT **PEAT**
highly organic soils

DRILLING SAMPLING SYMBOLS & ABBREVIATIONS

SS	Split Spoon Sampler	PM	Pressuremeter Test
ST	Shelby Tube Sampler	RD	Rock Bit Drilling
WS	Wash Sample	RC	Rock Core, NX, BX, AX
BS	Bulk Sample of Cuttings	REC	Rock Sample Recovery %
PA	Power Auger (no sample)	RQD	Rock Quality Designation %
HSA	Hollow Stem Auger		

PARTICLE SIZE IDENTIFICATION

DESIGNATION		PARTICLE SIZES
Boulders		12 inches (300 mm) or larger
Cobbles		3 inches to 12 inches (75 mm to 300 mm)
Gravel:	Coarse	¾ inch to 3 inches (19 mm to 75 mm)
	Fine	4.75 mm to 19 mm (No. 4 sieve to ¾ inch)
Sand:	Coarse	2.00 mm to 4.75 mm (No. 10 to No. 4 sieve)
	Medium	0.425 mm to 2.00 mm (No. 40 to No. 10 sieve)
	Fine	0.074 mm to 0.425 mm (No. 200 to No. 40 sieve)
Silt & Clay ("Fines")		<0.074 mm (smaller than a No. 200 sieve)

COHESIVE SILTS & CLAYS

UNCONFINED COMPRESSIVE STRENGTH, Q_P[4]	SPT[5] (BPF)	CONSISTENCY[7] (COHESIVE)
<0.25	<2	Very Soft
0.25 - <0.50	2 - 4	Soft
0.50 - <1.00	5 - 8	Firm
1.00 - <2.00	9 - 15	Stiff
2.00 - <4.00	16 - 30	Very Stiff
4.00 - 8.00	31 - 50	Hard
>8.00	>50	Very Hard

GRAVELS, SANDS & NON-COHESIVE SILTS

SPT[5]	DENSITY
<5	Very Loose
5 - 10	Loose
11 - 30	Medium Dense
31 - 50	Dense
>50	Very Dense

RELATIVE AMOUNT[7]	COARSE GRAINED (%)[8]	FINE GRAINED (%)[8]
Trace	≤5	≤5
With	10 - 20	10 - 25
Adjective *(ex: "Silty")*	25 - 45	30 - 45

WATER LEVELS[6]


WL (First Encountered)


WL (Completion)


WL (Seasonal High Water)


WL (Stabilized)

FILL AND ROCK

FILL | POSSIBLE FILL | PROBABLE FILL | ROCK

[1]Classifications and symbols per ASTM D 2488-17 (Visual-Manual Procedure) unless noted otherwise.

[2]To be consistent with general practice, "POORLY GRADED" has been removed from GP, GP-GM, GP-GC, SP, SP-SM, SP-SC soil types on the boring logs.

[3]Non-ASTM designations are included in soil descriptions and symbols along with ASTM symbol [Ex: (SM-FILL)].

[4]Typically estimated via pocket penetrometer or Torvane shear test and expressed in tons per square foot (tsf).

[5]Standard Penetration Test (SPT) refers to the number of hammer blows (blow count) of a 140 lb. hammer falling 30 inches on a 2 inch OD split spoon sampler required to drive the sampler 12 inches (ASTM D 1586). "N-value" is another term for "blow count" and is expressed in blows per foot (bpf). SPT correlations per 7.4.2 Method B and need to be corrected if using an auto hammer.

[6]The water levels are those levels actually measured in the borehole at the times indicated by the symbol. The measurements are relatively reliable when augering, without adding fluids, in granular soils. In clay and cohesive silts, the determination of water levels may require several days for the water level to stabilize. In such cases, additional methods of measurement are generally employed.

[7]Minor deviation from ASTM D 2488-17 Note 14.

[8]Percentages are estimated to the nearest 5% per ASTM D 2488-17.

SUBSURFACE EXPLORATION PROCEDURE: STANDARD PENETRATION TESTING (SPT) ASTM D 1586 Split-Barrel Sampling

Standard Penetration Testing, or **SPT**, is the most frequently used subsurface exploration test performed worldwide. This test provides samples for identification purposes, as well as a measure of penetration resistance, or N-value. The N-Value, or blow counts, when corrected and correlated, can approximate engineering properties of soils used for geotechnical design and engineering purposes.

SPT Procedure:

- Involves driving a hollow tube (split-spoon) into the ground by dropping a 140-lb hammer a height of 30-inches at desired depth
- Recording the number of hammer blows required to drive split-spoon a distance of 12 inches (in 3 or 4 Increments of 6 inches each)
- Auger is advanced* and an additional SPT is performed
- One SPT typically performed for every two to five feet
- Obtain two-inch diameter soil sample

**Drilling Methods May Vary*— The predominant drilling methods used for SPT are open hole fluid rotary drilling and hollow-stem auger drilling.

ECS provides Boring Location Diagrams and Boring Logs for each project!

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Pinnacle Group Engineering	**04:11861**	**B-01**	**1 of 1**

PROJECT NAME:	DRILLER/CONTRACTOR:
Courthouse Veterinary Hospital	**Fishburne Drilling, Inc.**

SITE LOCATION: **2497 North Landing Road, VIRGINIA BEACH, Virginia 23456**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:
3441159.6	**12198076.0**		**13.00**

BOTTOM OF CASING

Plastic Limit Water Content Liquid Limit

STANDARD PENETRATION BLOWS/FT

ROCK QUALITY DESIGNATION & RECOVERY

RQD

REC

CALIBRATED PENETROMETER TON/SF

[FINES CONTENT] %

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ELEVATION (FT)	BLOWS/6"
	S-1	SS	24	12	Topsoil Thickness[3.00"] (SC) Alluvium, CLAYEY FINE SAND, contains slight roots and organics, tan and orange, moist, very loose		1-1-1-3 (2)
	S-2	SS	24	8	(CH) FAT CLAY WITH SAND, gray mottled orange, moist, firm		4-3-4-4 (7)
5	S-3	SS	24	12	(CL) SANDY LEAN CLAY, orange and gray, moist, stiff	8	4-5-5-7 (10)
	S-4	SS	24	18	(SP-SM) FINE SAND WITH SILT, light brown, wet, medium dense		7-8-7-7 (15)
	S-5	SS	24	24			6-7-9-8 (16)
10						3	
	S-6	SS	24	24	(SM) SILTY FINE SAND, gray, wet, very loose		1-1-3-5 (4)
15						-2	
	S-7	SS	24	24			2-1-1-1 (2)
20						-7	
	S-8	SS	24	12	(SP-SM) FINE SAND WITH SILT, gray, wet, medium dense		8-9-9-5 (18)
25						-12	
	S-9	SS	24	8			9-7-7-11 (14)
30					**END OF BORING AT 30 FT**	-17	

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

WL (First Encountered) **6.00**	BORING STARTED: **Mar 16 2022**		CAVE IN DEPTH:
WL (Completion)	BORING COMPLETED: **Mar 16 2022**		HAMMER TYPE: **Auto**
WL (Seasonal High Water)	EQUIPMENT: **ATV**	LOGGED BY: **JBM4**	DRILLING METHOD: **Mud rotary**
WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Pinnacle Group Engineering	**04:11861**	**B-02**	**1 of 1**

PROJECT NAME:	DRILLER/CONTRACTOR:
Courthouse Veterinary Hospital	**Fishburne Drilling, Inc.**

SITE LOCATION: **2497 North Landing Road, VIRGINIA BEACH, Virginia 23456**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:
3441103.3	**12198110.6**		**11.50**

BOTTOM OF CASING

Plastic Limit Water Content Liquid Limit

STANDARD PENETRATION BLOWS/FT

ROCK QUALITY DESIGNATION & RECOVERY

RQD

REC

CALIBRATED PENETROMETER TON/SF

[FINES CONTENT] %

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
	S-1	SS	24	12	Topsoil Thickness[4.00"] (CL) Alluvium, SANDY LEAN CLAY, light brown, moist, firm			2-2-4-3 (6)
	S-2	SS	24	8	(CH) FAT CLAY, gray mottled orange, moist to wet, firm to very stiff			4-3-2-2 (5)
5	S-3	SS	24	12		▽	7	7-7-6-3 (13)
	S-4	SS	24	12				6-11-10-9 (21)
	S-5	SS	24	24	(SP-SM) FINE SAND WITH SILT, light brown, wet, medium dense		2	6-8-7-7 (15)
10								
	S-6	SS	24	6	(SM) SILTY FINE SAND, gray, wet, very loose to loose		-3	2-1-1-2 (2)
15								
	S-7	SS	24	8			-8	3-4-3-4 (7)
20					**END OF BORING AT 20 FT**			
25							-13	
30							-18	

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered) **6.00**

▼ WL (Completion)

▼ WL (Seasonal High Water)

▽ WL (Stabilized)

BORING STARTED:	**Mar 16 2022**	CAVE IN DEPTH:
BORING COMPLETED:	**Mar 16 2022**	HAMMER TYPE: **Auto**
EQUIPMENT: **ATV**	LOGGED BY: **JBM4**	DRILLING METHOD: **Mud rotary**

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Pinnacle Group Engineering	**04:11861**	**B-03**	**1 of 1**

PROJECT NAME:	DRILLER/CONTRACTOR:
Courthouse Veterinary Hospital	**Fishburne Drilling, Inc.**

SITE LOCATION: **2497 North Landing Road, VIRGINIA BEACH, Virginia 23456**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:
3441043.8	**12198150.5**		**11.20**

BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
	S-1	SS	24	20	Topsoil Thickness[4.00"] (CH) Alluvium, SANDY FAT CLAY, light brown and orange, moist, firm to stiff			2-2-3-4 (5)
	S-2	SS	24	24				4-4-5-5 (9)
5	S-3	SS	24	18	(SC) CLAYEY FINE SAND, light brown and orange, moist, medium dense		7	7-8-10-10 (18)
	S-4	SS	24	18	(SP-SM) FINE SAND WITH SILT, light brown, wet, medium dense	▽		12-9-6-6 (15)
	S-5	SS	24	18			2	6-6-5-5 (11)
10								
					(SM) SILTY FINE SAND, gray, wet, loose			
	S-6	SS	24	12			-3	2-3-2-3 (5)
15								
					(SP-SM) FINE SAND WITH SILT, gray, wet, medium dense			
	S-7	SS	24	18			-8	10-8-10-12 (18)
20					**END OF BORING AT 20 FT**			
25							-13	
30							-18	

Plastic Limit Water Content Liquid Limit

⊗ STANDARD PENETRATION BLOWS/FT

ROCK QUALITY DESIGNATION & RECOVERY

RQD

REC

○ CALIBRATED PENETROMETER TON/SF

[FINES CONTENT] %

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered) **6.00**	BORING STARTED: **Mar 16 2022**		CAVE IN DEPTH:
▼ WL (Completion)	BORING COMPLETED: **Mar 16 2022**		HAMMER TYPE: **Auto**
▼ WL (Seasonal High Water)	EQUIPMENT: **ATV**	LOGGED BY: **JBM4**	DRILLING METHOD: **Mud rotary**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Pinnacle Group Engineering	**04:11861**	**B-04**	**1 of 1**

PROJECT NAME:	DRILLER/CONTRACTOR:
Courthouse Veterinary Hospital	**Fishburne Drilling, Inc.**

SITE LOCATION: **2497 North Landing Road, VIRGINIA BEACH, Virginia 23456**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:	BOTTOM OF CASING
3441154.3	**12198013.7**		**13.80**	

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0	S-1	SS	24	12	Topsoil Thickness[2.00"] (CL) Alluvium, SANDY LEAN CLAY, brown and tan, moist, soft		13	1-1-2-4 (3)
	S-2	SS	24	12	(SM) SILTY FINE SAND, orange, moist, medium dense			6-6-5-5 (11)
5	S-3	SS	24	8	(CH) SANDY FAT CLAY, light brown and tan, moist, firm		9	3-3-3-5 (6)
					END OF BORING AT 6 FT			
10							4	
15							-1	
20							-6	
25							-11	
30							-16	

Plastic Limit Water Content Liquid Limit

STANDARD PENETRATION BLOWS/FT

ROCK QUALITY DESIGNATION & RECOVERY

RQD

REC

CALIBRATED PENETROMETER TON/SF

[FINES CONTENT] %

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered) **Dry**	BORING STARTED: **Mar 16 2022**	CAVE IN DEPTH:	
▼ WL (Completion)	BORING COMPLETED: **Mar 16 2022**	HAMMER TYPE: **Auto**	
▼ WL (Seasonal High Water)	EQUIPMENT: **ATV**	LOGGED BY: **JBM4**	DRILLING METHOD: **Mud rotary**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Pinnacle Group Engineering	**04:11861**	**B-05**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Courthouse Veterinary Hospital	**Fishburne Drilling, Inc.**		
SITE LOCATION: **2497 North Landing Road, VIRGINIA BEACH, Virginia 23456**			LOSS OF CIRCULATION
NORTHING: **3440990.6**	EASTING: **12198079.2**	STATION:	SURFACE ELEVATION: **10.80**

BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0	S-1	SS	24	12	Topsoil Thickness[3.00"] (CL) Alluvium, SANDY LEAN CLAY, light brown and orange, moist, firm to stiff, contains organics at 2'		10	2-3-5-4 (8)
	S-2	SS	24	18				4-6-6-5 (12)
5	S-3	SS	24	20	(SM) SILTY FINE SAND, light brown, moist, medium dense		6	6-6-7-6 (13)
					END OF BORING AT 6 FT			
10							1	
15							-4	
20							-9	
25							-14	
30							-19	

Plastic Limit Water Content Liquid Limit
X———●———△

⊗ **STANDARD PENETRATION BLOWS/FT**

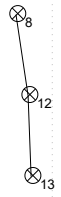
ROCK QUALITY DESIGNATION & RECOVERY

RQD

REC

○ **CALIBRATED PENETROMETER TON/SF**

[FINES CONTENT] %



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered) **Dry**	BORING STARTED: **Mar 16 2022**		CAVE IN DEPTH:
▼ WL (Completion)	BORING COMPLETED: **Mar 16 2022**		HAMMER TYPE: **Auto**
▼ WL (Seasonal High Water)	EQUIPMENT: **ATV**	LOGGED BY: **JBM4**	DRILLING METHOD: **Mud rotary**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

SECTION 007200

GENERAL CONDITIONS

1.1 SUMMARY

A. Related Documents:
   1. Division 01 - General Requirements.

1.2 DOCUMENT

A. American Institute of Architects (AIA) Document A201-2017, General Conditions of the Contract for Construction, forms a part of this Contract and by reference is incorporated herein as fully as if repeated at length.

END OF SECTION

AIA® Document A201® – 2017

General Conditions of the Contract for Construction

for the following PROJECT:
(Name and location or address)

Courthouse Veterinary Hospital & Pet Boarding
2497 North Landing Road
Virginia Beach, VA 23456

THE OWNER:
(Name, legal status and address)

Brian Watson, DVM, Courthouse Veterinary Clinic, LLC
2492 North Landing Road, Suite 106
Virginia Beach, VA 23456

THE ARCHITECT:
(Name, legal status and address)

BDA Architecture, P.C.
901 Lamberton Place NE
Albuquerque, NM 87107

TABLE OF ARTICLES

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

For guidance in modifying this document to include supplementary conditions, see AIA Document A503™, Guide for Supplementary Conditions.

Init.
/

15 CLAIMS AND DISPUTES

INDEX
(Topics and numbers in bold are Section headings.)

ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding or proposal requirements.

§ 1.1.2 The Contract

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

§ 1.1.3 The Work

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 The Project

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

§ 1.1.5 The Drawings

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

§ 1.1.6 The Specifications

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

§ 1.1.7 Instruments of Service

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 Initial Decision Maker

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent

consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document G202™–2013, Project Building Information Modeling Protocol Form, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 Evidence of the Owner's Financial Arrangements

§ 2.2.1 Prior to commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.

§ 2.2.2 Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided in the Contract Documents.

§ 2.2.3 After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

§ 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements,

assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.3.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.3 If the employment of the Architect terminates, the Owner shall employ a successor to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

§ 2.3.4 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.3.5 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.3.6 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.4 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.4 Labor and Materials

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

§ 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 Permits, Fees, Notices and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- **.1** allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- **.2** Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- **.3** whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Architect's approval. The Architect's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the

Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

§ 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 Shop Drawings, Product Data and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the time and in the form specified by the Architect.

§ 3.13 Use of Site

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 Access to Work
The Contractor shall provide the Owner and Architect with access to the Work in preparation and progress wherever located.

§ 3.17 Royalties, Patents and Copyrights
The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner or Architect. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect.

§ 3.18 Indemnification
§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

ARTICLE 4 ARCHITECT
§ 4.1 General
§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 Duties, responsibilities, and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, Contractor, and Architect. Consent shall not be unreasonably withheld.

§ 4.2 Administration of the Contract
§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the

Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 Communications

The Owner and Contractor shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may order minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations

and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either, and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a Separate Contractor or the subcontractors of a Separate Contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor,

prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

.1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and

.2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.

§ 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work,

promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a Separate Contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a Separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.

§ 6.2.5 The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor, and Architect. A Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

§ 7.2 Change Orders

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor, and Architect stating their agreement upon all of the following:

.1 The change in the Work;
.2 The amount of the adjustment, if any, in the Contract Sum; and
.3 The extent of the adjustment, if any, in the Contract Time.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

.1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
.2 Unit prices stated in the Contract Documents or subsequently agreed upon;
.3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
.4 As provided in Section 7.3.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

.1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;
.2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;
.3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
.4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and
.5 Costs of supervision and field office personnel directly attributable to the change.

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will

affect the Contract Sum or Contract Time, the Contractor shall notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

ARTICLE 8 TIME

§ 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and

unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

§ 9.3 Applications for Payment

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

§ 9.4 Certificates for Payment

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Architect. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- **.1** defective Work not remedied;
- **.2** third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- **.3** failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
- **.4** reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- **.5** damage to the Owner or a Separate Contractor;
- **.6** reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- **.7** repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

§ 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.4 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

§ 9.6.5 The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

§ 9.7 Failure of Payment

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents, the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 Substantial Completion

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 Final Completion and Final Payment

§ 9.10.1 Upon receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

.1 liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
.2 failure of the Work to comply with the requirements of the Contract Documents;
.3 terms of special warranties required by the Contract Documents; or
.4 audits performed by the Owner, if permitted by the Contract Documents, after final payment.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

.1 employees on the Work and other persons who may be affected thereby;
.2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and
.3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 Injury or Damage to Person or Property

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 Hazardous Materials and Substances

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and Architect of the condition.

§ 10.3.2 Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.

§ 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

§ 11.1.2 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 11.1.3 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 Owner's Insurance

§ 11.2.1 The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.

§ 11.2.2 Failure to Purchase Required Property Insurance. If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform the Contractor in writing prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.

§ 11.2.3 Notice of Cancellation or Expiration of Owner's Required Property Insurance. Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice to the Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.

§ 11.3 Waivers of Subrogation

§ 11.3.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

§ 11.3.2 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance

The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to fire or other hazards however caused.

§11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to

the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located, excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

§ 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

§ 13.3.2 No action or failure to act by the Owner, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.4.5 If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

- **.1** Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- **.2** An act of government, such as a declaration of national emergency, that requires all Work to be stopped;
- **.3** Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
- **.4** The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- **.1** repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- **.2** fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;
- **.3** repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- **.4** otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- **.1** Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- **.2** Accept assignment of subcontracts pursuant to Section 5.4; and
- **.3** Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance,

the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

.1 that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or

.2 that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

.1 cease operations as directed by the Owner in the notice;

.2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and

.3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

§ 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.5 Claims for Additional Cost

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

§ 15.1.7 Waiver of Claims for Consequential Damages

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

.1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and

.2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the

Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 Arbitration

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 15.4.4 Consolidation or Joinder

§ 15.4.4.1 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.

Additions and Deletions Report for

AIA® Document A201® – 2017

This Additions and Deletions Report, as defined on page 1 of the associated document, reproduces below all text the author has added to the standard form AIA document in order to complete it, as well as any text the author may have added to or deleted from the original AIA text. Added text is shown underlined. Deleted text is indicated with a horizontal line through the original AIA text.

Note: This Additions and Deletions Report is provided for information purposes only and is not incorporated into or constitute any part of the associated AIA document. This Additions and Deletions Report and its associated document were generated simultaneously by AIA software at 15:55:54 ET on 08/10/2022.

PAGE 1

Courthouse Veterinary Hospital & Pet Boarding
2497 North Landing Road
Virginia Beach, VA 23456

...

Brian Watson, DVM, Courthouse Veterinary Clinic, LLC
2492 North Landing Road, Suite 106
Virginia Beach, VA 23456

...

BDA Architecture, P.C.
901 Lamberton Place NE
Albuquerque, NM 87107

Certification of Document's Authenticity

AIA® Document D401™ – 2003

I, , hereby certify, to the best of my knowledge, information and belief, that I created the attached final document simultaneously with its associated Additions and Deletions Report and this certification at 15:55:54 ET on 08/10/2022 under Order No. 2114332689 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A201™ - 2017, General Conditions of the Contract for Construction, as published by the AIA in its software, other than those additions and deletions shown in the associated Additions and Deletions Report.

_____

(Signed)

_____

(Title)

_____

(Dated)

SECTION 011100

SUMMARY OF WORK

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Project description.
2. Work by Others.
3. Contractor's use of site and premises.
4. Owner furnished Products.

1.2 PROJECT DESCRIPTION

A. Work of this Project is described as facility entitled:

Courthouse Veterinary Hospital & Pet Boarding

B. Work includes site construction, general construction, fire protection, plumbing medical gas, HVAC, and electrical.

C. The Project will be constructed under a single contract.

1.3 WORK BY OTHERS

A. Separate Contracts:
1. The Owner may execute contracts for additional work at the site, that is excluded from the work of this Contract,
2. Work under separate contract may be executed concurrent with Work of this Contract.
3. Cooperate with the Owner and separate contractors to accommodate this requirement.

1.4 CONTRACTOR'S USE OF SITE AND PREMISES

A. Limit use of site and premises to allow for:
1. Work by separate contractors.
2. Work by Owner.

B. Move any stored products under Contractor's control that interfere with the operations of the Owner or separate contractors.

C. Assume full responsibility for protection and safekeeping of products under this Contract stored on site.

D. Conform to [Building Rules and Regulations.

E. Confine operations to construction area unless otherwise approved by Owner.

F. If access to adjacent common or occupied spaces is required:
1. Schedule operations with Owner in advance.
2. Perform work after normal business hours or on weekends when directed by Owner.

G. Do not use or store hazardous or flammable materials on premises without Owner's approval; follow requirements of governing authorities having jurisdiction over the work.

H. Prohibit smoking within interior spaces.

1.5 OWNER FURNISHED PRODUCTS

A. Owner Furnished and Contractor Installed (O.F.C.I.):
   1. Products that will be furnished by Owner and installed by Design/Builder are as follows:
      a. Veterinary Equipment as scheduled on the Drawings and Specifications.
      b. Appliances as scheduled on the Drawings and Specifications.

B. Not in Contract (N.I.C.):
   1. Products that will be furnished and installed by Owner are as follows:
      a. Veterinary Equipment as scheduled on the Drawings and Specifications.
      b. Appliances as scheduled on the Drawings and Specifications.
      c. Signage (except as required by building code).
      d. Furnishings.
      e. Video Surveillance and Security Detection and Alarm Systems.
      f. Other miscellaneous items as noted on the Drawings.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 012500

SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Product Substitution Procedures.

1.2 GENERAL

A. Definition: Proposal by Contractor to use manufacturer, product, material, or system different from one required in Contract Documents.

B. Do not substitute Products unless a substitution request has been approved by Architect.

C. Substitutions during Bidding: Refer to Instructions to Bidders.

D. Architect will consider substitution requests within 10 days after award of Contract. After initial 10 day period, substitutions requests will be considered only due to non-availability of a specified Product through no fault of Contractor.

E. In case of non-availability of a specified Product notify Architect in writing as soon as non-availability becomes apparent.

1.3 SUBSTITUTION REQUESTS

A. Submit substitution requests on form provided by Architect.

B. Document specified product and proposed substitution with complete data, including:
1. Product identification, including name and address of manufacturer.
2. Product description, performance and test data, and reference standards.
3. Sample, if requested.
4. Description of any anticipated effect that acceptance of proposed substitution will have on Progress Schedule, construction methods, or other items of Work.
5. Description of any differences between specified product and proposed substitution.
6. Difference in cost between specified product and proposed substitution.

C. Burden of proof for substantiating compliance of proposed substitution with Contract Document requirements remains with [Contractor.] [Construction Manager.]

D. A request constitutes a representation that the [Contractor:] [Construction Manager:]
1. Has investigated the proposed Product and determined that it meets or exceeds the quality level of the specified Product.
2. Will provide the same warranty for the substitution as for the specified Product.
3. Will coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner.
4. Waives claims for additional costs or time extension that may subsequently become apparent.
5. Will reimburse Owner for design services associated with re-approval by authorities or revisions to Contract Documents to accommodate the substitution.

E. Substitutions will not be considered if:
1. They are indicated or implied on Shop Drawings or other submittals without submittal of a substitution request.
2. Approval will require substantial revision of Contract Documents without additional compensation to Architect.

F. Submit in searchable Adobe PDF format.

G. Architect will notify Contractor of approval or rejection of each Substitution Request.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 012519

SUBSTITUTION REQUEST FORM

DATE: _____

TO: _____

ATTENTION: _____

PROJECT: _____

We submit for your consideration the following product as a substitution for the specified product:

Section No.	Paragraph	Specified Product
_____	_____	_____

Proposed Substitution: _____

_____

Reason for Substitution: _____

_____

Product Data:

Attach complete technical data for both the specified product and the proposed substitution. Include information on changes to Contract Documents that the proposed substitution will require for its proper installation.

Samples:

___ Attached ___ Will be furnished upon request

Does the substitution affect dimensions shown on Drawings?

___ No ___ Yes (explain) _____

_____

Effects of proposed substitution on other Work:

_____

_____

Differences between proposed substitution and specified Product:

_____

_____

Manufacturer's warranties of the proposed substitution are:

___ Same ___ Different (explain) _____

_____

Maintenance service and spare parts are available for proposed substitution from:

_____

_____

Previous installations where proposed substitution may be seen:

Project: _____ Project: _____

Owner: _____ Owner: _____

Architect: _____ Architect: _____

Date Installed: _____ Date Installed: _____

Cost savings to be realized by Owner, if proposed substitution is approved:

_____

Change to Contract Time, if proposed substitution is approved:

___ No Change ___ Add _____ days ___ Deduct _____ days

Submittal constitutes a representation that Contractor has read and agrees to the provisions of Section 01 2500.

Submitted by Contractor:

_____

Signature

_____

Firm

For Use by Architect:

Based on the information supplied by the Contractor, the Architect has reviewed the proposed substitution on the basis of design concept of the Work and conformance with information given in Contract Documents.

___ Approved ___ Approved as Noted ___ Rejected

Submit Additional Information: _____

_____

By: _____ Date: _____

SECTION 012600

CONTRACT MODIFICATION PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Supplemental Instructions.
2. Proposal Requests.
3. Contractor proposed changes.
4. Construction Change Directives.
5. Change Orders.

B. Related Sections:
1. Section 016000 - Product Requirements.

1.2 CHANGE PROCEDURES

A. Architect's Supplemental Instructions:
1. Format: AIA Document G710 - Architect's Supplemental Instructions.
2. Architect will advise of minor changes in Work not involving an adjustment to Contract Sum or Contract Time as authorized by the Conditions of the Contract.

B. Proposal Requests:
1. Format: AIA Document G709 - Proposal Request.
2. Architect may issue a Proposal Request that includes a detailed description of a proposed change with supplemental or revised Drawings and specifications.
3. Prepare and submit an estimate of any change to Contract Sum or Contract Time within 7 days after receipt. Include:
   a. Quantities and unit costs, with total cost or credit to Owner. If requested, furnish documentation of quantities.
   b. Taxes, delivery charges, equipment rentals, and trade discounts as applicable.
   c. If change in Contract Time is involved, provide updated Progress Schedule.
4. Do not stop work or initiate changes in response to a Proposal Request. If approved, Architect will prepare and issue a Change Order.
5. Submit electronically in Adobe PDF format.

C. Contractor Proposed Changes:
1. Format: Contractor’s standard.
2. Contractor may propose a change by submitting request for change to Architect.
3. Describe proposed change, reason for change, its full effect on Work, and any change to Contract Sum or Contract Time. Include:
   a. Quantities and unit costs, with total cost or credit to Owner. If requested, furnish documentation of quantities.
   b. Taxes, delivery charges, equipment rentals, and trade discounts as applicable.
   c. If change in Contract Time is involved, provide updated Progress Schedule.
4. Document any required substitutions in accordance with Section 016000.
5. Submit electronically in Adobe PDF format.

D. Construction Change Directive:
1. Architect may issue a directive, signed by Owner, instructing Contractor to proceed with a change for subsequent inclusion in a Change Order.
2. Documentation will describe changes in Work and designate method of determining any change to Contract Sum or Contract Time. Promptly execute change.

E. Change Orders:
1. Format: AIA Document G701 - Change Order.

2. Execution: Prepare Change Orders for signature of parties as provided in Conditions of the Contract. Submit electronically in Adobe PDF format.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 012613

REQUESTS FOR INFORMATION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Requests for Information (RFI's).

B. Related Sections:
1. Section 012500 - Substitution Procedures.
2. Section 012600 - Contract Modification Procedures.
3. Section 013300 - Submittal Procedures.
4. Section 017700 - Closeout Procedures.

1.2 GENERAL

A. Request for Information (RFI): Request from Contractor seeking interpretation or clarification of Contract Documents not involving Substitutions or changes to Contract Sum or Contract Time.

B. RFI's constitute a request for information only.

C. Do not submit RFI's:
1. To request approval of Substitutions; refer to Section 012500.
2. To request changes known to include changes to Contract Sum or Contract Time; refer to Section 012600.
3. To request approval of submittals; refer to Section 013300.
4. To submit Project Record Documents; refer to Section 017700.

1.3 SUBMITTAL

A. Submit RFI's on Contractor's standard form.

B. Include on each RFI:
1. Name of Contractor.
2. Project name.
3. Date submitted.
4. Sequential RFI number.
5. Applicable Drawing sheet and detail numbers or Specification Section numbers.
6. Date when response information is required to avoid impact on Construction Schedule and Construction Cost.

C. Review and sign RFI's submitted by Subcontractors, Sub-Subcontractors, or Suppliers prior to submittal to Architect.

D. Maintain log of RFI's showing RFI number and current status of each RFI.

E. When RFI's require submittal of drawings, follow submittal procedures specified for Shop Drawings in Section 01 3300.

F. Submit electronically in Adobe PDF format.

G. Allow minimum 7 days for Architect's review and response to each RFI.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 012900

PAYMENT PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Schedule of Values.
2. Applications for Payment.

B. Related Sections:
1. Section 017700 - Closeout Procedures.

1.2 SCHEDULE OF VALUES

A. General:
1. Submit a Schedule of Values to Architect at least 20 days prior to submitting first Application for Payment.
2. Upon request of Architect, furnish additional data to support values given that will substantiate their correctness.
3. Approved Schedule of Values will be used as basis for reviewing Contractor's Applications for Payment.

B. Form and Content:
1. Format: AIA Document G703 - Continuation Sheet of Application and Certification for Payment.
2. Use Table of Contents of Project Manual as basis of format for listing costs of Work.
3. List installed value of component parts of Work in sufficient detail to serve as basis for computing values for progress payments.
4. Include separate line items for:
   a. Site mobilization.
   b. Insurance.
   c. Contractor's overhead and profit.
5. For items on which payment will be requested for stored materials, break down value into:
   a. Cost of materials, delivered and unloaded, with taxes paid.
   b. Total installed value.
6. For each line item that has a value of more than $25,000.00 break down costs to list major products or operations under each item.
7. Total of costs listed in Schedule shall equal Contract Sum.

C. Submit electronically in Adobe PDF format.

D. Review and Resubmittal:
1. After initial review by Architect, revise and resubmit if required.
2. Revise and resubmit along with next Application for Payment when a Change Order is issued. List each Change Order as a new line item.

1.3 APPLICATIONS FOR PAYMENT

A. Preparation:
1. Format: AIA Document G702 - Application and Certification for Payment, supported by AIA Document G703 - Continuation Sheet.
2. Prepare required information in typewritten format or on electronic media format.
3. Use data from reviewed Schedule of Values. Provide dollar value in each column for each line item representing portion of work performed.
4. List each authorized Change Order as a separate line item, listing Change Order number and dollar value.
5. Prepare Application for Final Payment as specified in Section 017700.

B. Waivers of Lien:
   1. Along with each Application for Payment, submit waivers of lien from Contractor and each Subcontractor or Sub-subcontractor included on the current month's Application for Payment.
   2. Submit partial waivers on each item for amount requested, prior to deduction of retainage.
   3. For completed items, submit full or final waiver.

C. Substantiating Data:
   1. When Architect requires substantiating information, submit data justifying dollar amounts in question.
   2. Provide one copy of data with cover letter showing Application number and date, and line item number and description.

D. Submittal:
   1. Submit one electronic copy in Adobe PDF format of each Application for Payment.
   2. Payment period: Submit at intervals stipulated in Owner/Contractor Agreement.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 013100

PROJECT MANAGEMENT AND COORDINATION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Project coordination.
   2. Coordination drawings.
   3. Project meetings.

B. Related Sections:
   1. Section 017700 - Contract Closeout.

1.2 PROJECT COORDINATION

A. Submit required project submittals electronically in Adobe PDF format. Submit samples when required.

B. The Work of this contract includes coordination of entire work of project including preparation of general coordination drawings/diagrams/schedules and control of site utilization from the beginning of activity through the project close-out and warranty periods

C. Permits, Taxes, and Codes: Contractor shall secure and pay for all building permits and all taxes or fees required for performance of this work. A Building Permit is required. All work shall be executed in accordance with the local and state codes, ordinances, and regulations governing the particular class of work involved. The Contractor shall be responsible for the final execution of the work to suit these requirements. On completion of the various parts of the work, the installation shall be tested, as required by the constituted authorities and approved, and, on completion of the work, the Contractor shall obtain and deliver to the Owner final Certificates of Acceptance. The Contractor shall furnish copies of each certificate to the Architect.

D. Coordinate scheduling, submittals, and work of various Sections of specifications to assure efficient and orderly sequence of installation of interdependent construction elements.

E. Verify that utility requirement characteristics of operating equipment are compatible with building utilities. Coordinate work of various Sections having interdependent responsibilities for installing, connecting to, and placing in service such equipment.

F. Coordinate space requirements and installation of mechanical and electrical items that are indicated diagrammatically on Drawings.
   1. Follow routing shown as closely as practical; place runs parallel with building lines.
   2. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

G. In finished areas, conceal pipes, ducts, and wiring within construction. Coordinate locations of fixtures and outlets with finish elements.

H. Coordinate completion and clean up of work of separate Sections in preparation for Substantial Completion.

I. After Owner occupancy, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents to minimize disruption of Owner's activities.

1.3 COORDINATION DRAWINGS

A. Hold coordination meetings with trades providing mechanical, plumbing, fire protection, and electrical work.

B. Resolve conflicts between trades, prepare composite coordination drawings and obtain signatures on original composite coordination Drawings.

C. When conflicts cannot be resolved:
   1. Cease work in areas of conflict and request clarification prior to proceeding.
   2. Prepare drawings to define and to indicate proposed solution.
   3. Submit drawings for approval when actual measurements and analysis of Drawings and Project Manual indicate that various systems cannot be installed without significant deviation from intent of Contract Documents.

D. Submit original composite coordination drawings as part of Project Record Documents specified in Section 017700.

1.4 PROJECT MEETINGS

A. Schedule and administer preconstruction conference, progress meetings and pre-installation conferences.

B. Make physical arrangements for meetings; notify involved parties at least 5 days in advance.

C. Record significant proceedings and decisions at each meeting; reproduce and distribute copies to parties in attendance and others affected by proceedings and decisions made.

1.5 PRECONSTRUCTION CONFERENCE

A. Schedule within 15 days after date of Notice to Proceed at central site convenient to all parties.

B. Attendance:
   1. Contractor.
   2. Owner.
   3. Architect and principal consultants as required.
   4. Major subcontractors and suppliers as Contractor deems appropriate.

C. Review and Discuss:
   1. Relation and coordination of various parties, and responsible personnel for each party.
   2. Use of premises, including office and storage areas, temporary controls, and security procedures.
   3. Construction schedule and critical work sequencing.
   4. Processing of:
      a. Contract modifications.
      b. Shop Drawings, Product Data, and Samples.
      c. Applications for Payment.
      d. Substitutions.
      e. Requests for Information.
      f. Other required submittals.
   5. Adequacy of distribution of Contract Documents.
   6. Procedures for maintaining contract closeout submittals.
   7. Installation and removal of temporary facilities.
   8. Notification procedures and extent of testing and inspection services.

1.6 PROGRESS MEETINGS

A. Schedule progress meetings as determined at preconstruction meeting and by contract.

B. Location: Contractor’s Project field office.

C. Attendance:
   1. Contractor.
   2. Owner.
   3. Architect and consultants as appropriate to agenda.
   4. Subcontractors and suppliers as appropriate to agenda.
   5. Others as appropriate to agenda.

D. Review and Discuss:
   1. Work progress since previous meeting, including:
      a. Field observations, deficiencies, conflicts, and problems.
      b. Progress and completion date.
      c. Corrective measures needed to maintain quality standards, progress, and completion date.
   2. Status of:
      a. Requests for information.
      b. Submittals.
      c. Contract modifications.
   3. Coordination between various elements of Work.
   4. Maintenance of Project Record Documents.

1.7 PRE-INSTALLATION CONFERENCES

A. Where required in individual specification Section, convene a pre-installation conference at project site or other designated location.

B. Require attendance of parties directly affecting or affected by work of the specific Section.

C. Review conditions of installation, preparation and installation procedures, and coordination with related work.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 013216

CONSTRUCTION PROGRESS SCHEDULES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Construction progress schedule.

B. Related Sections:
   1. Section 011100 - Summary of Work.
   2. Section 012900 - Payment Procedures.

1.2 FORMAT

A. Prepare Progress Schedule as a horizontal bar chart with separate bar for each major portion of Work or operation, identifying first work day of each week.

B. Sequence of Listings: The chronological order of the start of each item of Work.

1.3 CONTENT

A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.

B. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.

C. Coordinate content with Schedule of Values specified in Section 012900.

1.4 SUBMITTAL

A. Submit initial Progress Schedule within 15 days after date of Notice to Proceed.

B. Submit revised Progress Schedule with each Application for Payment.

C. Submit electronically in Adobe PDF format.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 013300

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Submittal procedures.
   2. Proposed Products list.
   3. Submittal schedule.
   4. Shop Drawings.
   5. Product Data.
   6. Samples.
   7. Quality control submittals.

B. Related Sections:
   1. Section 014000 - Quality Requirements.

1.2 SUBMITTAL PROCEDURES

A. Number each submittal consistently with the Project Manual section number and a sequential number within each section. Number resubmittals with original number and numeric suffix.

B. Identify Project, Contractor, Subcontractor or supplier, pertinent Drawing sheet and detail numbers, and specification Section number, as appropriate.

C. Submit all submittals listed under “Submittals for Review” simultaneously for each Product or Specification Section.

D. Where multiple Products function as an assembly, group submittals for all related Products into single submittal.

E. Architect will not review incomplete or non-conforming submittals.

F. Apply Contractor’s stamp, signed or initialed certifying that:
   1. Submittal was reviewed.
   2. Products, field dimensions, and adjacent construction have been verified.
   3. Information has been coordinated with requirements of Work and Contract Documents.

G. Schedule submittals to expedite the Project, and deliver to Architect. Coordinate submittal of related items.

H. For each submittal, allow 14 days for Architect’s review, excluding delivery time to and from Contractor.

I. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of completed Work.

J. Revise and resubmit submittals when required; identify all changes made since previous submittal.

K. Distribute copies of reviewed submittals to concerned parties and to Project Record Documents file. Instruct parties to promptly report any inability to comply with provisions.

L. Submit electronically in Adobe PDF format. Be consistent in email subject header.

1.3 SUBMITTAL SCHEDULE

A. Within 15 days after date of Notice to Proceed, submit a submittal schedule showing all submittals proposed for project, including submittals listed as:
   1. Submittals for Review.
   2. Quality Control Submittals.
   3. Closeout Submittals.

B. Include for each submittal:
   1. Specification section number.
   2. Description of submittal.
   3. Type of submittal.
   4. Anticipated submittal date.
   5. For submittals requiring Architect’s review, date reviewed submittal will be required from Architect.

C. Submit electronically in Adobe PDF format.

1.4 SHOP DRAWINGS

A. If changes to the project are made in shop drawings due to field conditions, material availability, or product availability, the change must be clearly stated in the transmittal and clearly noted on the shop drawings. Do not change the design aesthetic of any material or product without written approval of architect.

B. Identify details by reference to sheet and detail numbers or room number shown on Drawings.

C. Reproductions of details contained in Contract Documents are not acceptable.

D. Submit electronically in Adobe PDF format. Architect will return one copy to Contractor in Adobe PDF format.

1.5 PRODUCT DATA

A. Mark each copy to identify applicable products, models, options, and other data.

B. Supplement manufacturers' standard data to provide information unique to this Project.

C. Submit electronically in Adobe PDF format. Architect will return one copy to Contractor in Adobe PDF format.

1.6 SAMPLES

A. Submit samples to illustrate functional and aesthetic characteristics of Products, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.

B. Where so indicated, submit samples of finishes from the full range of manufacturers' standard colors, textures, and patterns for Architect's selection.

C. Include identification on each sample, with full Project information.

D. Unless otherwise specified in individual specifications, submit two of each sample.

E. Architect will notify Contractor of approval or rejection of samples, or of selection of color, texture, or pattern if full range is submitted.

1.7 QUALITY CONTROL SUBMITTALS

A. Quality control submittals specified in Section 014000 are for information and do not require Architect’s responsive action except to require resubmission of incomplete or incorrect information.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 014000

QUALITY REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. References.
2. Quality assurance and control of installation.
3. Mockups.
4. Manufacturer's field services and reports.
5. Design data and calculations.
6. Test reports and certifications.
7. Manufacturer's installation instructions.

1.2 REFERENCES

A. For products or workmanship specified by reference to association, trade, or industry standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.

C. Conform to edition of reference standard in effect as of date of Project Manual.

D. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.3 QUALITY ASSURANCE AND CONTROL OF INSTALLATION

A. Familiarity with Plans: All trades shall be responsible for work in their respective trade regardless of where references appear. For example, should electrical work appear on an architectural drawing, the electrical contractor will be held responsible for its completion; etc. All contractors should be thoroughly familiar with all plans and specifications sections and the work of all other trades to assure complete coverage and system interface.

B. The Contractor shall warrant and guarantee all workmanship, labor and materials performed and supplied by him or his subcontractors, for a period of one (1) year from the date of completion as evidenced by date of Architect’s Final Certificate of Payment of this contract. This also includes all labor required for replacing materials or equipment found to be defective within the one (1) year period.

C. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.

D. Comply fully with manufacturers' instructions, including each step in sequence.

E. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.

F. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

G. Perform work by persons qualified to produce workmanship of specified quality.

H. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

1.4 MOCKUPS

A. Definition:
   1. Mockups are field samples constructed, applied, or assembled at the project site for review by the Owner and Architect that illustrate materials, equipment, or workmanship.
   2. Approved mockups establish the standard of quality by which the Work will be judged.

B. Construct, apply, or assemble specified items, with related attachment and anchorage devices, flashings, seals, and finishes.

C. Perform work in accordance with applicable specifications sections.

D. Erect at project site at location acceptable to Architect. Protect from damage.

E. Removal:
   1. Mockups may remain as part of the Work only when so designated in individual specification sections.
   2. Do not remove mockups until removal is approved by Architect or upon Final Completion.
   3. Where mockup is not permitted to remain as part of the Work, clear area after removal of mockup has been approved by Architect.

1.5 MANUFACTURERS' FIELD SERVICES AND REPORTS

A. When specified in individual specification Sections, require material or Product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, or startup of equipment, as applicable, and to initiate instructions when necessary.

B. Individuals to report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

C. Submit report to Architect within 10 days of observation.

1.6 DESIGN DATA AND CALCULATIONS

A. When specified in individual specification Sections, require material or Product suppliers or manufacturers to provide design data and calculations.

B. Accuracy of design data and calculations is the responsibility of the Contractor.

C. When so specified, prepare design data and calculations under the direction of a professional engineer licensed in the state in which the Project is located. Affix engineer’s seal to submittals.

D. Submit electronically in Adobe PDF format.

1.7 TEST REPORTS AND CERTIFICATIONS

A. When specified in individual specification Sections, require material or Product suppliers or manufacturers to provide test reports and manufacturers’ certifications.

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

C. Submittals may be recent or previous test results on material or Product, but must be acceptable to Architect.

D. Submit electronically in Adobe PDF format.

1.8 MANUFACTURER'S INSTALLATION INSTRUCTIONS

A. When Contract Documents require that Products be installed in accordance with manufacturer's instructions:
   1. Submit manufacturer's most recent printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, as applicable.
      a. Submit in quantities specified for Product Data.
      b. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
      c. Identify conflicts between manufacturers' instructions and requirements of Contract Documents.
   2. Perform installation of Products to comply with requirements of manufacturer's instructions.
   3. If installation cannot be performed in accordance with manufacturer's instructions, notify Architect and await instructions.
   4. Submit electronically in Adobe PDF format.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 014523

TESTING AND INSPECTION SERVICES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Laboratory selection and payment.
   2. Laboratory duties.
   3. Contractor's responsibilities.

B. Related Sections: Individual specifications sections contain specific tests and inspections to be performed.

1.2 REFERENCES

A. ASTM International (ASTM):
   1. C1077 - Standard Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation.
   2. D3666 - Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials.
   3. D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
   4. E329 - Standard Specification for Agencies Engaged in Construction Inspection and/or Testing.
   5. E543 - Standard Specification for Agencies Performing Nondestructive Testing.

1.3 QUALITY ASSURANCE

A. Contractor shall employ and pay for services of an independent testing laboratory to perform specified testing and inspection.

B. Employment of Testing Laboratory shall in no way relieve Contractor of his obligations to perform work in accordance with Contract Documents.

C. Refer to the Conditions of the Contract for provisions related to special inspections and testing.

D. Qualifications of Laboratory:
   1. Meet requirements of ASTM C1077, D3666, D3740, E329 and E543.
   2. Authorized to operate in State in which project is located.

1.4 LABORATORY DUTIES

A. Cooperate with Architect and Contractor; provide qualified personnel after due notice.

B. Perform specified inspections, sampling, and testing of materials and methods of construction:
   1. Comply with specified standards.
   2. Ascertain compliance or noncompliance of materials with requirements of Contract Documents.

C. Promptly notify Architect and Contractor of observed irregularities or deficiencies of Work or products.

D. Promptly submit written report of each test and inspection; submit electronically in Adobe PDF format to Architect and Contractor.

E. Each report to include:
   1. Date issued.
   2. Project title and number.
   3. Testing Laboratory name, address, and telephone number.
   4. Name of Inspector and signature of individual in charge.

5. Date and time of sampling or inspection.
6. Record of temperature and weather conditions.
7. Date of test.
8. Identification of product and specification section.
9. Location of sample or test in project.
10. Type of inspection or test.
11. Results of tests and compliance or noncompliance with Contract Documents.
12. Interpretation of test results when requested by Architect or Contractor.

F. Perform additional tests when required by Architect or Contractor.

G. Laboratory is not authorized to:
1. Release, revoke, alter, or enlarge on requirements of Contract Documents.
2. Approve or accept any portion of work.
3. Perform any duties of Contractor.

1.5 CONTRACTOR'S RESPONSIBILITIES

A. Cooperate with Laboratory personnel, provide access to Work, and to manufacturer's operations.

B. When materials require testing prior to being incorporated into Work, secure and deliver to Laboratory adequate quantities of representative samples of materials proposed to be used.

C. Furnish copies of product test reports as required.

D. Furnish incidental labor and facilities:
1. To provide access to work to be tested.
2. To obtain and handle samples at site or at source of product to be tested.
3. To facilitate inspections and tests.
4. For safe storage and curing of test samples.

E. Notify Laboratory sufficiently in advance of operations to allow for Laboratory assignment of personnel and scheduling of tests.

F. When tests or inspections cannot be performed after such notice, reimburse Owner for Laboratory personnel and travel expenses incurred due to Contractor's or Construction Manager's negligence.

G. Make arrangements with Laboratory and pay for additional samples and tests required for Contractor's convenience.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 015000

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Temporary utilities.
2. Field offices and sheds.
3. Temporary controls.
4. Protection of installed Work.
5. Progress cleaning.
6. Water, erosion, sediment, dust, and mold and mildew control.
7. Removal.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

3.1 TEMPORARY ELECTRICITY

A. Provide temporary electrical service of capacity and characteristics required for construction.

B. Provide power outlets for construction operations, with branch wiring and distribution boxes located as required. Provide flexible power cords as required.

C. Maintain distribution system and provide routine repairs.

3.2 TEMPORARY LIGHTING

A. Provide temporary lighting for construction and security purposes.

B. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.

C. Maintain lamps and provide routine repairs.

D. Provide portable lights when required to provide minimum lighting levels necessary for specific work.

3.3 TEMPORARY HEAT

A. Provide temporary heating devices required to maintain specified ambient temperatures for construction.

B. Maintain minimum ambient temperature of 50 degrees F in areas where construction is in progress, unless otherwise indicated in individual specification sections.

3.4 TEMPORARY VENTILATION

A. Ventilate enclosed areas to facilitate curing of materials, disperse humidity, and prevent accumulations of dust, fumes, vapors, or gases.

B. Provide temporary fan units as required to maintain clean air for construction.

3.5 TEMPORARY TELEPHONE AND COMPUTER SERVICES

A. Contractor shall be accessible during normal business hours via mobile telephone with voice mail or an answering service.

B. Provide computer in Contractor's field office with printer, Internet access, scanner, and email service.

3.6 TEMPORARY WATER

A. Provide temporary water required for construction.

B. Protect from freezing.

C. Maintain distribution system and provide routine repairs.

3.7 TEMPORARY SANITARY FACILITIES

A. Provide chemical toilets for use during construction.

B. Permanent toilets may not be used during construction.

C. Maintain facilities in clean and sanitary condition.

3.8 FIELD OFFICES AND SHEDS

A. Provide temporary field offices and storage sheds required for construction.

B. Do not unreasonably encumber site or premises with excess materials or equipment.

C. Field Office / Temporary Structures:
   1. Portable or mobile buildings, structurally sound, weathertight, with floors raised above ground.
   2. Thermal transmission resistance: Compatible with occupancy and storage requirements.
   3. Provide connections for utility services when required.
   4. Provide steps and landings at entrances.

3.9 BARRIERS

A. Provide barriers to prevent unauthorized entry to construction areas and to protect adjacent area from construction operations.

B. Fencing:
   1. Provide temporary fencing for construction operations.
   2. Construction: Commercial grade chain link.
   3. Height: 6 feet.
   4. Locate to protect construction operations, materials, and equipment.
   5. Provide vehicular gates.

C. Tree and Plant Protection:
   1. Protect existing trees and plants at site that are designated to remain.
   2. Remove roots and branches that interfere with construction.
   3. Provide temporary barriers to height of 6 feet around individual or groups of trees and plants.
   4. Do not permit vehicular traffic, parking, storage of materials, dumping of harmful chemicals or liquids, or standing or continuously running water within root zones.
   5. Supervise earthwork operations to prevent damage to root zones.
   6. Replace trees and plants that are damaged or destroyed due to construction operations.

3.10 EXTERIOR CLOSURES

A. Provide temporary weathertight closures for exterior openings to provide acceptable interior working conditions, to allow for temporary heating and maintenance of ambient temperatures required in individual specification sections, to protect the Work, and to prevent entry of unauthorized persons.

B. Provide access doors with locking hardware.

3.11 PROTECTION OF INSTALLED WORK

A. Protect installed work from construction operations; provide special protection when required in individual specification sections.

B. Minimize traffic, storage, and construction activities on roof surfaces. If traffic, storage, or activity is necessary, obtain recommendations for protection from roofing manufacturer.

C. Prohibit traffic from landscaped areas.

3.12 PROGRESS CLEANING

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

B. Provide containers for collection of waste materials, debris, and rubbish; remove and dispose of off site as required by construction activities.

C. Periodically clean interior areas to provide suitable conditions for finish work.

3.13 TEMPORARY CONTROLS

A. Water Control:
   1. Grade site to drain. Prevent puddling water.
   2. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
   3. Provide water barriers to protect site from soil erosion.

B. Erosion and Sediment Control:
   1. Plan and execute methods to control surface drainage from cuts, fills, borrow areas, and waste disposal areas. Prevent erosion and sedimentation.
   2. Minimize amount of bare soil exposed at any one time.
   3. Provide temporary measures such as silt fences, dikes, berms, settlement basins, and drainage systems to prevent water flow and sedimentation.
   4. Periodically inspect earthwork to detect erosion and sedimentation; promptly employ corrective measures.

C. Dust Control:
   1. Provide dust control materials and methods to minimize dust from construction operations.
   2. Prevent dust from dispersing into atmosphere.

D. Mold and Mildew Control:
   1. Provide continuous measures to prevent formation of mold and mildew in construction.
   2. Do not install materials sensitive to mold and mildew growth until protection can be provided.
   3. Promptly remove and replace materials exhibiting mold and mildew growth.

3.14 REMOVAL

A. Remove temporary utilities, equipment, facilities, and services when construction needs can be met by use of permanent construction or upon completion of Project.

B. Remove foundations and underground installations; grade site as indicated.

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

D. Restore permanent facilities used during construction to original or to specified condition.

END OF SECTION

SECTION 017700

CLOSEOUT PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Closeout procedures.
2. Final cleaning.
3. Adjusting.
4. Project record documents.
5. Operation and maintenance data.
6. Warranties.
7. Spare parts and maintenance materials.
8. Starting of systems.
9. Demonstration and instructions.

1.2 CLOSEOUT PROCEDURES

A. Final Inspection:
1. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with the Contract Documents and ready for Architect's inspection.
2. If Architect performs reinspection due to failure of Work to comply with claims of status of completion made by Contractor, Owner will compensate Architect for such additional services and will deduct the amount of such compensation from final payment to Contractor.

B. Submit final Application for Payment showing original Contract Sum, adjustments, previous payments, retainage withheld from previous payments, and sum remaining due.

C. Advise the Owner of pending insurance change-over requirement.

D. Closeout Submittals:
1. Evidence of compliance with requirements of governing authorities.
2. Certificate of Occupancy.
3. Project Record Documents.
4. Operation and Maintenance Data.
5. Warranties.
6. Keys and keying schedule.
7. Spare parts and maintenance materials.
8. Evidence of payment of Subcontractors and suppliers.
9. Final lien waiver.
10. Certificate of insurance for products and completed operations.
11. Consent of Surety to final payment.

E. Owner will occupy portion of the building as specified in Section 01 1100.

1.3 FINAL CLEANING

A. Execute final cleaning prior to final inspection.

B. Clean surfaces exposed to view:
1. Clean glass.
2. Remove temporary labels, stains and foreign substances.
3. Polish transparent and glossy surfaces.
4. Vacuum carpeted surfaces; damp mop hard surface flooring.

C. Clean equipment and fixtures to a sanitary condition.

D. Clean or replace filters of operating equipment.

E. Clean debris from roofs and drainage systems.

F. Clean site; sweep paved areas, rake clean landscaped surfaces.

G. Remove waste and surplus materials, rubbish, and construction facilities from the site.

1.4 ADJUSTING

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

1.5 PROJECT RECORD DOCUMENTS

A. Maintain following record documents on site; record actual revisions to the Work:
   1. Drawings.
   2. Specifications.
   3. Addenda.
   4. Change Orders and other Modifications to the Contract.
   5. Reviewed Shop Drawings, Product Data, and Samples.
   6. Material Safety Data Sheets.

B. Store Record Documents separate from documents used for construction.

C. Record information concurrent with construction progress.

D. Make entries neatly and accurately.

E. Label each set or volume with "PROJECT RECORD DOCUMENTS", project title, and description of contents.
   1. Organize contents according to Project Manual table of Contents.
   2. Provide table of contents for each volume.

F. Drawings: Mark each item to record actual construction including:
   1. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
   2. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
   3. Field changes of dimension and detail.
   4. Details not on original Drawings.

G. Specifications: Mark 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 utilized.
   3. Changes made by Addenda and Modifications.

H. Shop Drawings: Mark each item to record actual construction including:
   1. Field changes of dimension and detail.
   2. Details not on original Shop Drawings.

I. Submit electronically in Adobe PDF format.

1.6 OPERATION AND MAINTENANCE DATA

A. Identify as "OPERATION AND MAINTENANCE INSTRUCTIONS" and title of project.

B. Contents:

1. Directory: List names, addresses, and telephone numbers of Architect, Contractor, Subcontractors, and major equipment suppliers.
2. Operation and maintenance instructions: Arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
    a. Significant design criteria.
    b. List of equipment.
    c. Parts list for each component.
    d. Operating instructions.
    e. Maintenance instructions for equipment and systems.
    f. Maintenance instructions for special finishes, including recommended cleaning methods and materials and special precautions identifying detrimental agents.
3. Project documents and certificates including:
    a. Shop drawings and product data.
    b. HVAC balance reports.
    c. Certificates.
    d. Copies of warranties and bonds.

C. Submittal:
1. Submit electronically in Adobe PDF format at least 15 days prior to final inspection.
2. Architect will notify Contractor of any required revisions after final inspection.
3. Revise content of documents as required prior to final submittal.
4. Submit revised documents electronically in Adobe PDF format within 10 days after final inspection.

1.7 WARRANTIES

A. Execute and assemble documents from Subcontractors, suppliers, and manufacturers.

B. Include Table of Contents.

C. Submit electronically in Adobe PDF format

D. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within 10 days after acceptance, listing date of acceptance as start of warranty period.

1.8 SPARE PARTS AND MAINTENANCE MATERIALS

A. Provide products, spare parts, maintenance and extra materials in quantities specified in individual specification Sections.

B. Deliver to Project site in location as directed; obtain receipt from Owner prior to final payment.

C. Packaging:
1. Leave products in original packaging when possible.
2. Supplement and reinforce original packaging when required to ensure safe transport and storage.
3. Clearly mark containers to identify contents.

1.9 STARTING OF SYSTEMS

A. Notify Owner and Architect at least seven days prior to startup of each system or piece of equipment.

B. Prior to beginning startup verify that:
1. Lubrication has been performed.
2. Drive rotation, belt tension, control sequences, tests, meter readings, and electrical characteristics are within manufacturer's requirements.
3. Utility connections and support components are complete and tested.

C. Execute start-up under supervision of applicable manufacturer's representative or Contractor’s personnel in accordance with manufacturers' instructions.

D. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to startup, and to supervise placing equipment or system in operation.

E. Submit written report that equipment or system has been properly installed and is functioning correctly.

1.10 DEMONSTRATION AND INSTRUCTIONS

A. Demonstrate operation and maintenance of Products to Owner's personnel two weeks prior to date of Substantial Completion.

B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

C. Utilize Operation and Maintenance Manuals as basis for instruction. Review contents of manual with Owners' 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 upon times, at equipment location.

E. Prepare and insert additional data in Operation and Maintenance Manuals when need for additional data becomes apparent during instruction.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 033000

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Cast-in-place concrete for foundations, paving, slabs on grade and supported slabs.
2. Equipment pads.
3. Bases for flagpoles and lighting fixtures.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

A. American Concrete Institute (ACI):
1. 301 - Structural Concrete for Buildings.
2. 305R - Hot Weather Concreting.
3. 306R - Cold Weather Concreting.
4. 308 - Standard Practice for Curing Concrete.
5. 318 - Building Code Requirements for Structural Concrete.

B. ASTM International (ASTM):
1. C31 - Standard Test Method for Method of Making and Curing Concrete Test Specimens in the Field.
2. C33 - Standard Specification for Concrete Aggregates.
3. C39 - Standard Test Method for Test Method for Compressive Strength of Cylindrical Concrete Specimens.
4. C94 - Standard Specification for Ready-Mixed Concrete.
5. C143 - Standard Test Method for Slump of Portland Cement Concrete.
6. C150 - Standard Specification for Portland Cement.
7. C171 - Standard Specification for Sheet Materials for Curing Concrete.
8. C172 - Standard Test Method for Method of Sampling Freshly Mixed Concrete.
9. C231 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
10. C260 - Standard Specification for Air-Entraining Admixtures for Concrete.
11. C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
12. C330 - Standard Specification for Lightweight Aggregates for Structural Concrete.
13. C494 - Standard Specification for Chemical Admixtures for Concrete.
14. C618 - Standard Specification for Fly Ash and Raw or Calcined Natural Pozzolans for Use as a Mineral Admixture in Portland Cement Concrete.
15. C1116/1116M - Standard Specification for Fiber-Reinforced Concrete and Shotcrete.
16. D1752 - Standard Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.

1.3 SUBMITTALS

A. Submittals for Review:
1. Concrete Mix Designs: Include:
   a. Proportions of cement, fine and coarse aggregates and water.
   b. Combined aggregate gradation.
   c. Aggregate specific gravities and gradations.
   d. Water/cement ratio, design strength, slump, and air content.
   e. Type of cement and aggregates.
   f. Air dry density and split cylinder ratio for lightweight concrete.
   g. Type and proportion of admixtures.

h. Special requirements for pumping.
i. Range of ambient temperature and humidity for which design is valid.
j. Special characteristics of mix requiring precautions in mixing, placing, or finishing techniques to achieve finished product.

1.4 QUALITY ASSURANCE

A. Concrete Mix Design: In accordance with ACI 301, Method 1 or 2.

1.5 DELIVERY, STORAGE AND HANDLING

A. Mix and deliver concrete to project ready mixed in accordance with ASTM C94.

B. Schedule delivery so that pours will not be interrupted for over 15 minutes.

C. Place concrete on site within 90 minutes after proportioning materials at batch plant.

1.6 PROJECT CONDITIONS

A. Cold Weather Placement - Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures. Comply with ACI 306R and following requirements:
1. Air temperature at or expected to fall below 40 degrees F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 degrees F and not more than 80 degrees F at point of placement.
2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
3. Do not use calcium chloride, salt, and other materials containing antifreeze agents or chemical accelerators unless otherwise accepted in mix designs.

B. Hot Weather Placement - Place concrete in accordance with ACI 305R and following requirements:
1. Cool ingredients before mixing to maintain concrete temperature at time of placement below 90 degrees F. Use chilled mixing water or chopped ice if water equivalent of ice is calculated in total amount of mixing water.
2. If required, cover reinforcing steel with water soaked burlap so that steel temperature will not exceed ambient air temperature.
3. Fog spray forms, reinforcing steel, and subgrade just before concrete is placed.
4. Use water-reducing retarding admixture when required by high temperatures, low humidity, or other adverse placing conditions.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers - Concrete Chemicals:
1. BASF Corporation. (www.buildingsystems.basf.com)
2. Dayton Superior. (www.daytonsuperior.com)
3. W. R. Meadows, Inc. (www.wrmeadows.com)

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Portland Cement: ASTM C150, Type – see Structural Drawings and Specifications.

B. Aggregates: See Structural Drawings and Specifications for Aggregate Schedule.
1. Fine: ASTM C33, clean, hard, durable, uncoated natural sand, free from silt, loam, and clay.
2. Coarse: ASTM C33, clean, hard, durable, uncoated crushed stone, maximum size No. 467, Table No. 2.

2.3 ACCESSORIES

A. Water: Clean and potable.

B. Admixtures:
   1. Water reducing or water reducing/set retarding: ASTM C494, Type A or D.
   2. Air entraining: ASTM C260.

C. Expansion Joint Filler: ASTM D1752, non asphaltic type.

D. Non Shrink Grout: Premixed, consisting of non-metallic aggregate, cement, water reducing and plasticizing agents; minimum 4,000 psi compressive strength at 28 days.

E. Bonding Agent: Two component modified epoxy resin.

F. Curing Compound: ASTM C309, solvent based type.

G. Curing Paper: ASTM C171, waterproof paper or polyethylene film.

2.4 MIXES

A. Proportions: In accordance with ACI 301.

B. Design concrete to yield characteristics as scheduled on Structural Drawings and Specifications.

C. Air Entrained Concrete: Provide air entraining admixture as noted in Structural Drawings and Specifications.

D. Use accelerating admixture in cold weather only when approved by Structural Engineer. Use of admixtures will not reduce cold weather placement requirements.

PART 3 EXECUTION

3.1 PREPARATION

A. Notify Architect and Testing Laboratory minimum 24 hours prior to placing concrete.

B. Accurately position anchor bolts, sleeves, conduit, inserts, and accessories. Do not cut reinforcing steel to facilitate installation of inserts or accessories.

C. Remove water and debris from forms and excavations.

D. Close openings left in forms for cleaning and inspection.

E. Prepare previously placed [and existing] concrete surfaces by cleaning with steel wire brush and applying bonding agent in accordance with manufacturer's instructions.

F. Where new concrete is doweled to existing, drill holes in existing concrete, insert steel dowels, and pack holes solid with non shrink grout.

3.2 PLACEMENT OF CONCRETE

A. Place concrete in accordance with ACI 301 and ACI 318.

B. Ensure reinforcement, inserts, and embedded parts are not disturbed during concrete placement.

C. Deposit concrete as nearly as possible in its final position to minimize handling and flowing.

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

E. Do not place partially hardened, contaminated, or retempered concrete.

F. Do not allow concrete to free fall over 5 feet; provide tremies, chutes, or other means of conveyance.

G. Consolidate concrete with mechanical vibrating equipment. Hand compact in corners and angles of forms.

H. Screed slabs level, to flatness tolerance of 1/8 inch in 10 feet.

3.3 PLACEMENT OF SEPARATE FLOOR TOPPINGS

A. Prior to placing toppings, remove deleterious material from concrete substrates; broom surfaces clean.

B. Apply bonding agent to concrete substrate; follow manufacturer's instructions.

3.4 PLACEMENT OF GROUT

A. Remove loose and foreign matter from concrete; lightly roughen bonding surface.

B. Just prior to grouting, thoroughly wet concrete surfaces; remove excess water.

C. Mix grout in accordance with manufacturer's instructions. Do not re-temper.

D. Place grout continuously, by most practical means; avoid entrapped air. Do not vibrate grout.

3.5 PROTECTION

A. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

C. Provide artificial heat to maintain temperature of concrete above minimum specified temperature for duration of curing period.

D. Keep forms sufficiently wet to prevent cracking of concrete or loosening of form joints.

3.6 CURING

A. Cure concrete in accordance with ACI 308:
   1. Horizontal surfaces:
      a. See Room Finish Schedule and Structural Drawings for locations of Concrete Curing / Vapor Emission and Alkalinity Control System.
      b. Other surfaces: Use either curing paper or curing compound method.
   2. Vertical surfaces: Use either wet curing or curing compound method.

B. Curing Compound Method:
   1. Per Manufacturer’s instructions.

C. Curing Paper Method:
   1. Spread curing paper over surfaces, lapping ends and sides minimum 4 inches; maintain in place by use of weights.
   2. Remove paper after curing.

D. Wet Curing Method: Spray water over surfaces and maintain wet for 7 days.

3.7 CLEANING

A. Remove efflorescence, stains, oil, grease, and foreign materials from exposed surfaces.

3.8 FIELD QUALITY CONTROL

A. Testing and Inspection Services:
   1. Certify each delivery ticket.
   2. Record time at which concrete was discharged from truck.
   3. Monitor and record amount of water and water reducing admixture added to concrete at project site.
   4. Determine ambient temperature and temperature of concrete sample for each set of test cylinders.
   5. Test cylinders:
      a. Make test cylinders in accordance with ASTM C172; one set of 3 cylinders for each 100 cubic yards placed in any one day, for each different class of concrete.
      b. Mold and cure cylinders in accordance with ASTM C31; test cylinders in accordance with ASTM C39; one at 7 days and two at 28 days.
   6. Slump tests: Make slump tests at beginning of each day's placement and for each set of test cylinders in accordance with ASTM C143.
   7. Air content: Determine total air content of air entrained concrete for each strength test in accordance with ASTM C231.

END OF SECTION

SECTION 033500

CONCRETE FINISHING AND CURING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Concrete hardener and densifier.
2. Moisture emission and alkalinity control.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
2. Cast-In-Place Concrete: See structural drawings

1.2 REFERENCES

A. American Concrete Institute (ACI):
1. 301 - Structural Concrete for Buildings.
2. 302.1 - Guide for Concrete Floor and Slab Construction.

B. ASTM International (ASTM):
1. C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
2. C501 - Standard Test Method for Abrasion Resistance of Horizontal Concrete Surfaces.
3. E1155 - Standard Test Method for Determining Floor Flatness and Levelness Using the F-Number System (Inch-Pound Units).

1.3 SUBMITTALS

A. Submittals for Review:
1. Product Data: Descriptive data for sealer and moisture emission and alkalinity control system.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Minimum 5 years documented experience in work of this Section.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers - Concrete Hardener and Densifier:
1. Solomon Colors, Inc. (www.solomoncolors.com)

B. Acceptable Manufacturers - Moisture Emission and Alkalinity Control System:
1. Sinak Corporation (www.sinakcorp.com)

C. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Concrete Hardener and Densifier:
1. Type: ASTM C309, water based, colloidal silica, odorless, penetrating hardener.
2. Source: Lythic Densifier by Solomon Colors, Inc. or approved substitute.

B. Moisture Emission and Alkalinity Control System:
1. Type: Lithium-formulation, moisture vapor emission and alkalinity mitigation concrete curing system.
2. Source: VC5 Lithium Cure by Sinak Corporation or approved substitute.

PART 3 EXECUTION

3.1 FINISHING INTERIOR FLOOR SURFACES

A. Finish concrete floor surfaces in accordance with ACI 301 and ACI 302.1.

B. Steel trowel surfaces to receive carpeting, resilient flooring, and resinous flooring.

C. Steel trowel and fine broom finish surfaces to receive tiling.

D. Steel trowel and seal surfaces to be exposed. Apply sealer in accordance with manufacturer's instructions.

3.2 INSTALLATION - CONCRETE HARDENER AND DENSIFIER

A. Application shall comply with manufacturer’s instructions and recommendations.

B. Provide concrete hardener and densifier on following floor finishes as noted on the drawings:
   1. Concrete Sealer

3.3 INSTALLATION - MOISTURE EMISSION AND ALKALINITY CONTROL

A. Application shall comply with manufacturer’s instructions and recommendations.

B. Provide moisture emission and alkalinity control under the following floor finishes as noted on the drawings:
   1. Resilient Sheet Flooring
   2. Resilient Plank Flooring
   3. Resilient Athletic Flooring
   4. Resinous Flooring

END OF SECTION

SECTION 055000

METAL FABRICATIONS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Shop fabricated metal components.
2. Bollards.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

A. American Welding Society (AWS):
1. D1.1/D1.1M - Structural Welding Code - Steel.

B. ASTM International (ASTM):
1. A36/A36M - Standard Specification for Carbon Structural Steel.
2. A108 - Standard Specification for Steel Bars, Carbon, Cold-Finished, Standard Quality.
3. A123/A123M - Standard Specification for Zinc (Hot-Galvanized) Coatings on Iron and Steel Products.
4. A283 - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates, Shapes and Bars.
5. A307 - Standard Specification for Carbon Steel Externally Threaded Standard Fasteners.
6. A354 - Standard Specification for Quenched and Tempered Alloy Steel Bolts, Studs, and Other Externally Threaded Fasteners.
7. A500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
8. A501 - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
9. A510 - Standard Specification for General Requirements for Wire Rods and Coarse Round Wire, Galvanized Steel.
10. A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
11. A780 - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
12. A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
13. A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength, Low-Alloy and High-Strength Low-Alloy with Improved Formability.
14. E985 - Standard Specification for Permanent Metal Railing Systems and Rails for Buildings.

C. Society for Protective Coatings (SSPC) - Painting Manual.

D. American Institute of Steel Construction (AISC) – Architecturally Exposed Structural Steel.

1.3 SUBMITTALS

A. Submittals for Review:
1. Shop Drawings: Show dimensions, metal thicknesses, finishes, joints, attachments, and relationship of work to adjacent construction.

B. Quality Control Submittals:
1. Certificate of Compliance from Professional Structural Engineer performing system design.

1.4 QUALITY ASSURANCE

A. Fabricator Qualifications: Minimum 5 years documented experience in work of this Section.

1.5 DELIVERY, STORAGE AND HANDLING

A. Store steel above ground on platforms, skids, or other supports; separate with wooden separators.

B. Protect steel from corrosion.

C. Prevent damage to prime coat and galvanized coatings.

PART 2 PRODUCTS

2.1 MATERIALS - STEEL

A. Shapes: ASTM A36/A36M.

B. Pipe: ASTM A501.

C. Tube: ASTM A500.

D. Bars: ASTM A108.

2.2 ACCESSORIES

A. Exposed Screws: Same material as metal being fastened; Phillips flat head, countersunk, unless noted otherwise.

B. Bolts: ASTM A307, hexagonal head type.

C. Primer Paint: SSPC Paint 15, Type 1, red oxide.

D. Anchoring Cement: Non-shrink cementitious type.

2.3 FABRICATION

A. Fit and shop assemble items in largest practical sections, for delivery to site.

B. Fabricate items with joints tightly fitted and secured.

C. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

D. Exposed Mechanical Fastenings: Flush countersunk screws or bolts, unobtrusively located, consistent with design of component except where specifically noted otherwise.

E. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

F. Conceal fastenings where possible.

G. Welding to conform to AWS.
   1. Use welds for permanent connections where possible. Grind exposed welds smooth.
   2. Tack welds prohibited on exposed surfaces.

2.4 FINISHES

A. Interior Ferrous Metal:
   1. Shop painted except steel to be encased in concrete and surfaces to be welded.

2. Surface preparation: SSPC SP2 - Hand Tool Cleaning or SP3 - Power Tool Cleaning.
3. Application: One coat; follow coating manufacturer's instructions.
4. Minimum dry film thickness: 2.0 mils.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install items in accordance with approved Shop Drawings.

B. Install components plumb, level, and rigid.

C. Welding: AWS. Grind and fill exposed welds; finish smooth and flush.

D. Install sleeved components with anchoring cement.

E. Prevent contact of exterior aluminum and dissimilar metals by use of zinc rich paint, bituminous coating, or non-absorptive gaskets.

3.2 ADJUSTING

A. Clean and touch up damaged primer paint with same product as applied in shop.

B. Clean and touch up galvanized coatings at welded and abraded surfaces in accordance with ASTM A780.

3.3 SCHEDULE

A. This Schedule includes principal items only; refer to Drawings for additional items not listed.

B. Guard Rails and Handrails:
1. Fabricate steel pipe or tube stock of sizes and types indicated.
2. Make bends uniform and free from buckles and other defects.
3. Cut intersections square to within 2 degrees and to length within 1/8 inch. Remove burrs from cut ends.
4. Miter and cope intersections within 2 degrees, fit to within 1/8 inch.
5. Continuously weld connections.
6. Where length exceeds that suitable for shipping and handling, fabricate in sections with concealed internal sleeves forming slip joints. Extend sleeves minimum 2 inches on both sides of joint; field weld and grind smooth.

END OF SECTION

SECTION 064100

ARCHITECTURAL WOOD CASEWORK

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Special fabricated cabinet units.
   2. Plastic laminate countertops.
   3. Shop finishing.
   4. Cabinet hardware.
   5. Tackboard

B. Related Sections:
   1. Division 01: Administrative, procedural, and temporary work requirements.
   2. Section 066116 - Solid Surfacing Fabrications.
   3. Section 079200 - Joint Sealers.

1.2 REFERENCES

A. Architectural Woodwork Institute/Architectural Woodwork Manufacturers of Canada/Woodwork Institute (AWI/AWMAC/WI) - Architectural Woodwork Standards.

B. Association of Electrical and Medical Imaging Equipment Manufacturers (NEMA) LD-3 - High Pressure Decorative Laminates.

1.3 SUBMITTALS

A. Submittals for Review:
   1. Shop Drawings:
      a. Include dimensioned plan, sections, elevations, and details, including interface with adjacent work.
      b. Designate wood species and finishes.
   2. Samples: For approval from Owner.
      a. 3 x 3 inch plastic laminate samples in each color and finish.
      b. Each hardware component.
      c. Door and trim styles.

1.4 QUALITY ASSURANCE

A. Fabricator Qualifications:
   1. Minimum 5 years documented experience in work of this Section.
   2. Certified under AWI/AWMAC/WI Quality Certification Program.

1.5 DELIVERY, STORAGE AND HANDLING

A. Do not deliver materials until proper protection can be provided, and until needed for installation.

1.6 PROJECT CONDITIONS

A. Environmental Requirements: Maintain following conditions in building for minimum 7 days prior to, during, and after installation of casework:
   1. Temperature: 60 to 80 degrees F.
   2. Humidity: 17 to 50 percent.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers - Plastic Laminate:
   1. Formica Corp. (www.formica.com)
   2. Wilsonart International, Inc. (www.wilsonart.com)

B. Acceptable Manufacturers - Sheet Products - Reception Desk Face:
   1. Roseburg. (www.roseburg.com)

C. Acceptable Manfacturers –Tackboard:
   1. Jasco Classic Tackboard or approved equal
      a. (800)935-2725

D. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Sheet Products:
   1. Graded in accordance with AWI/AWMAC/WI Architectural Woodwork Standards, Section 4 requirements for quality grade specified.
   2. Sheet core:
      a. Countertops at wet areas: Moisture Resistant Particleboard.
      b. Other surfaces: Particleboard.

B. Sheet Products - Reception Desk Face:
   1. Source: Marine and Exterior Sanded Plywood by Roseburg or approved substitute.Grade: Marine AB
   2. Thickness: 1/2 inch.
   3. Exposed and semi-exposed veneers: Close grain hardwood, of quality suitable for opaque finish.
   4. Adhesives: Moisture resistant meeting ASTM 2559.

C. Lumber:
   1. Graded in accordance with AWI/AWMAC/WI Architectural Woodwork Standards, Section 3 requirements for quality grade specified, average moisture content of 6 percent.
   2. Exposed and semi-exposed locations: Close grain hardwood, of quality suitable for opaque finish.

D. Wood Trim - Reception Desk Face:
   1. Graded in accordance with AWI/AWMAC/WI Architectural Woodwork Standards, Section 3 requirements for quality grade specified, average moisture content of 6 percent.
   2. Natural Birch species, plain sawn/sliced cut, of quality suitable for transparent finish
   3. Close grain hardwood, of quality suitable for opaque finish.

E. Hardboard: Pressed wood fiber with resin binder; standard grade, 1/8 inch thick, smooth one side.

F. Plastic Laminate (PL1, PL2, PL3): NEMA LD-3.
   1. High pressure decorative laminate:
      a. Horizontal surfaces:
         1) Backing sheet: Grade BGF.
         2) Other surfaces: Grade HGS.
      b. Vertical surfaces:
         1) Backing sheet: Grade BLF.
         2) Cabinet liner: Grade CLS.
         3) Other surfaces: Grade VGP.
   2. Low pressure decorative laminate: Grade VGL.
   3. Colors: See Sheet I101 Interior Specifications.

4. Finish: See Sheet I101 Interior Specifications.

G. Tackboard
1. Panel Substrate
a. Composition: Mineral fiber
b. Treatments: Factory protection against rot, fungi, and moisture absorption.
c. Density: 30 pcf
d. Thickness: ½ inch
e. Size: Width and height as required to fabricate seamless panels.
f. Edge Treatment: Square
g. Fire rating: Class A
h. Required product: Micore 300

2. Adheasive
a. Fabric Adhesive: H.B. Fuller – E3877 or Non-staining, non-pigmented adhesive recommended by fabric manufacturer.
b. Board Adhesive: 237 by W.W. Henry or Beats Nails Construction adhesive by DAP.
3. Fabric
a. Manufacturer
1) National Office Furniture or Approved Equal
b. Pattern: Pact
c. Color: Submit standard colors for Architect/Owner approval

2.3 ACCESSORIES

A. Solid Surfacing Countertops: Specified in Section 066116.

B. Fasteners: Type and size as required by conditions of use.

C. Adhesives:
1. Waterproof, water based or solvent release type, compatible with backing and laminate materials.

D. Finish Hardware: As scheduled at end of Section or approved substitute.
1. Standard: ANSI/BHMA A156.9.
2. Finish and Base Metal: Satin chrome plated steel.

E. Glazing: Specified in Section 088000.

F. Joint Sealers: Specified in Section 079200.

2.4 FABRICATION

A. Cabinets - Plastic Laminate Finish:
1. Quality: AWI/AWMAC/WI Architectural Woodwork Standards, Section 10, Custom Grade.
2. Construction type: Frameless.
3. Interface style: Full Overlay.
4. Semi-exposed surfaces: Low pressure decorative laminate.
5. Fit exposed and semi-exposed sheet edges with matching edging.
a. Source: Doellkin, Frama-Tech, or approved substitute.
b. Material: PVC
c. Thickness:
1) Doors of upper cabinets: 05mm (.018”) PVC edge.
2) Doors and drawers on base cabinets: 3mm PVC edge.
6. Fabricate drawer bodies to full depth of drawer fronts less 1/2 inch.

B. Plastic Laminate Countertops:
1. Quality: AWI/AWMAC/WI Architectural Woodwork Standards, Section 11, Custom Grade.
2. Surfaces: High pressure decorative laminate.
3. Edging:

a. Source: Doellkin, Frama-Tech, or approved substitute.
b. Material: PVC
c. Thickness: 3mm

4. Locate end joints centered or symmetrical. Join sections with concealed clamp fasteners. Locate plastic laminate butt joints minimum 2 feet away from sinks.
5. Provide holes and cutouts for mounting of sinks, trim, and accessories.

C. Plastic Laminate Shelves at Cage Banks:
1. Quality: AWI/AWMAC/WI Architectural Woodwork Standards, Section 10, Economy Grade.
2. Surfaces: Low pressure decorative laminate.
3. Edging:
a. Source: Doellkin, Frama-Tech, or approved substitute.
b. Material: PVC
c. Thickness: 3mm
4. Locate end joints centered or symmetrical. Join sections with concealed clamp fasteners.

D. Shop assemble for delivery to project site in units easily handled.

E. Prior to fabrication, field verify dimensions to ensure correct fit.

F. Apply plastic laminate in full uninterrupted sheets; fit corners and joints to hairline. Slightly bevel arises. Apply laminate backing sheet to reverse side of laminate faced surfaces.

G. Where field fitting is required, provide ample allowance for cutting. Provide trim for scribing and site conditions.

H. Provide cutouts and reinforcement for plumbing, electrical, appliances, and accessories. Prime paint surfaces of cut edges.

PART 3 EXECUTION

3.1 PREPARATION

A. Prior to installation, condition cabinets to average humidity that will prevail after installation.

3.2 INSTALLATION

A. Install in accordance with AWI/AWMAC/WI Architectural Woodwork Standards.

B. Set plumb, rigid and level.

C. Scribe to adjacent construction with maximum 1/8 inch gaps.

D. Adhere countertops, splashes, and skirts with beads of adhesive.

E. Fill joints between cabinets, tops, splashes, and adjacent construction with joint sealer as specified in Section 079200; finish flush.

3.3 FINISH HARDWARE SCHEDULE

DESCRIPTION	MANUFACTURER	MODEL
Door and drawer pull	-	Wire pull
Drawer slide	Blum	Metabox
Door hinge	Blum	Concealed 120 degree
File drawer system	Blum	Metabox

DESCRIPTION	MANUFACTURER	MODEL
Pencil Drawer		
Corner cabinet Lazy Susan	Knape & Vogt	PKN Series
Glass door track	Knape & Vogt	P992 Series
Countertop support brackets	Knape & Vogt	208 Series
Cage bank shelf support brackets	Rangine Corp.	Rakks EH-1824
Adjustable shelf standards and brackets	Knape & Vogt	82/182 Series
Mortise mount pilaster shelving system	Knape & Vogt	255 Series
Leash hook	White Water Marine Hardware	7772S

END OF SECTION

SECTION 064600

WOOD TRIM

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Interior wood trim and cap.

B. Related Sections:
   1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

A. American Wood Protection Association (AWPA) U1 - Use Category System - User Specification for Treated Wood.

B. Architectural Woodwork Institute/Architectural Woodwork Manufacturers of Canada/Woodwork Institute (AWI/AWMAC/WI) - Architectural Woodwork Standards.

C. ASTM International (ASTM) E84 - Standard Test Method for Surface Burning Characteristics of Materials.

1.3 SUBMITTALS

A. Submittals for Review:
   1. Shop Drawings:
      a. Include dimensioned plans, sections, elevations, and details, including interface with adjacent work.
      b. Designate wood species and finishes.
   2. Samples: 6 inch long samples of each profile.

1.4 QUALITY ASSURANCE

A. Fabricator Qualifications:
   1. Minimum 5 years documented experience in work of this Section.
   2. Certified under AWI/AWMAC/WI Quality Certification Program.

1.5 DELIVERY, STORAGE AND HANDLING

A. Do not deliver materials until proper protection can be provided, and until needed for installation.

1.6 PROJECT CONDITIONS

A. Environmental Requirements: Maintain following conditions in building for minimum 7 days prior to, during, and after installation of interior trim:
   1. Temperature: 60 to 80 degrees F.
   2. Humidity: 17 to 50 percent.

PART 2 PRODUCTS

2.1 MATERIALS

A. Interior Trim:
   1. Graded in accordance with AWI/AWMAC/WI Architectural Woodwork Standards, Section 3 requirements for quality grade specified, average moisture content of 6 percent.
   2. Natural Birch species, plain sawn/sliced cut, of quality suitable for transparent finish

3. Close grain hardwood, of quality suitable for opaque finish.

2.2 ACCESSORIES

A. Fasteners: Type and size as required by conditions of use; plain steel for interior use; hot dip galvanized steel for exterior use.

B. Adhesives:
1. Waterproof, water-based type, compatible with trim and substrate materials.

2.3 FABRICATION

A. Quality: AWI/AWMAC/WI Architectural Woodwork Standards, Section 6, Premium Grade.

B. Where field fitting is required, provide ample allowance for cutting.

C. Groove back of trim applied to flat substrate, except do not groove exposed ends.

2.4 FINISHES

A. Finishing: See Sheet I101 Interior Specifications.

PART 3 EXECUTION

3.1 PREPARATION

A. Prior to installation, condition wood to average humidity that will prevail after installation.

B. Back prime prior to installation.

3.2 INSTALLATION

A. Install in accordance with AWI/AWMAC/WI Architectural Woodwork Standards.

B. Install in longest practical lengths.

C. Set plumb and level.

D. Miter ends, corners, and intersections.

E. Scribe to adjacent construction with maximum 1/8 inch gaps.

F. Fasten to supporting construction.

END OF SECTION

SECTION 066000

PLASTIC FABRICATIONS

GENERAL

1.1 SUMMARY

A. Section Includes:
1. Fiberglass reinforced polymer column wrap.
2. cPVC Porch Railing system.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
2. Section 07 9200 - Joint Sealers.

1.2 REFERENCES

A. ASTM International (ASTM):
1. D635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position.
2. E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

1.3 SUBMITTALS

A. Submittals for Review:
1. Product Data: Indicate materials, profiles, sizes, fastening methods, surface texture, finishes, and accessories.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Minimum 5 years documented experience in work of this Section.

1.5 PROJECT CONDITIONS

A. Do not install siding on wet or frozen substrate.

B. Do not install siding at temperatures below 40 degrees F.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
1. H**B&G. (www.hbgcolumns.com)**

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. FRP Column Wraps:
1. Source:.Plain PermaWrap Columns by HB&G.
2. Type: Plain With Standard Cap and Base.
3. Column Width: 12 inches.
4. Column Height: 10’.
5. Cap: Standard.
6. Base: Standard
7. Finish: Paintable matte white finish.
8.

B. cPVC Railing System:
   1. Source: PermaRail Plus cPVC railing System by HB&G.
   2. Top Rail Type: Belhaven.
   3. Bottom Rail Type: Standard with Aluminum Stiffener.
   4. Newel Post Type: Newel-Loc Square 4-1/4”, Standard Newel Cap and Standard Newel Skirt.
   5. Baluster Type: 1-1/4” Square Baluster.

2.3 ACCESSORIES

A. Fasteners: Type recommended by manufacturer.

B. Joint Sealers: Specified in Section 07 9200.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install products, and accessories in accordance with manufacturer's instructions.

B. Install aligned, level, and plumb.

END OF SECTION

SECTION 066116

SOLID SURFACING FABRICATIONS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Solid surfacing countertops and trim.

B. Related Sections:
   1. Division 01: Administrative, procedural, and temporary work requirements.
   2. Section 079200 - Joint Sealers.

1.2 REFERENCES

A. ASTM International (ASTM) E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

1.3 SUBMITTALS

A. Submittals for Review:
   1. Shop Drawings: Indicate dimensions, component sizes, fabrication details, attachment provisions and coordination requirements with adjacent work.
   2. Product Data: Indicate product description, fabrication information and compliance with specified performance requirements.
   3. Samples: 2 x 2 inch samples of color selected.

B. Closeout Submittals:
   1. Maintenance Data: Include recommended cleaning materials and procedures and damage repair.

1.4 QUALITY ASSURANCE

A. Fabricator / Installer Qualifications: Minimum 5 years experience in fabrication and installation of solid surface materials.

B. Fire Hazard Classification: Class A flame spread/smoke developed rating, test procedure NFPA 255.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
   1. Avonite Surfaces. (www.avonitesurfaces.com)
   2. Wilsonart International, Inc. (www.wilsonart.com)

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Solid Surfacing (SS1):
   1. Source: Avonite or approved substitute.
   2. Material: Homogenous sheet material composed of acrylic resin and coloring agents.
   3. Thickness:
      a. Horizontal surfaces:1/2 inch
      b. Vertical surfaces:1/4 inch
   4. Color: See sheet I101 Interior Specifications.

5. Surface finish: See sheet I101 Interior Specifications.

B. Substitutions: Under provisions of Division 01.
1. Source: Wilsonart or approved substitute.
2. Material: Homogenous sheet material composed of acrylic resin and coloring agents.
3. Thickness:
   a. Horizontal surfaces:1/2 inch
   b. Vertical surfaces:1/4 inch
4. Color: See sheet I101 Interior Specifications.
5. Surface finish: See sheet I101 Interior Specifications.

2.3 ACCESSORIES

A. Type recommended by solid surfacing manufacturer.

B. Joint Sealer: Specified in Section 079200.

2.4 FABRICATION

A. Fabricate components in shop to sizes and shapes indicated, in accordance with manufacturer's instructions and approved Shop Drawings.

B. Fabricate splashes and skirts from solid surfacing color specified on sheet I101 Interior Specifications.

C. Form joints to be inconspicuous in appearance and without voids. Join pieces with adhesive.

D. Finish exposed edges to smooth, uniform bullnose profile.

E. Allowable Tolerances:
1. Maximum variation in size: 1/8 inch.
2. Maximum variation in location of openings: 1/8 inch from indicated location.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install in accordance with manufacturer's instructions and approved Shop Drawings.

B. Set plumb, level, and rigid.

C. Adhere countertops and skirts with beads of adhesive.

D. Seal perimeter with joint sealer as specified in Section 079200. Finish smooth and flush.

E. Allowable Tolerances:
1. Maximum variation from level and plumb: 1/8 inch in 10 feet, noncumulative.
2. Maximum variation in plane between adjacent pieces at joint: Plus or minus 1/32 inch.

3.2 ADJUSTING

A. Sand out minor scratches and abrasions.

3.3 PROTECTION

A. Protect surfaces from damage with non-staining coverings.

END OF SECTION

SECTION 072113

BOARD INSULATION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Board insulation at exterior walls.
2. Board insulation at perimeter of foundation walls.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

A. ASTM International (ASTM):
1. C578 - Standard Specification for Rigid Cellular Polystyrene Thermal Insulation.
2. C612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation.
3. C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
4. E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
5. E96/E96M - Standard Test Method for Water Vapor Transmission of Materials.
6. E136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 degrees C.

1.3 SUBMITTALS

A. Submittals for Review:
1. Product Data: Indicate product composition and performance characteristics.

B. Quality Control Submittals:
1. Certificates of Compliance: Certification from an independent testing laboratory that insulation meets fire hazard classification requirements.

1.4 QUALITY ASSURANCE

1.5 DELIVERY, STORAGE AND HANDLING

A. Store insulation in clean, dry, sheltered area, off ground or floor, until used. Protect against wetting and moisture absorption.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers - Polystyrene Insulation:
1. Dow Chemical Co. (www.dowbuildingmaterials.com)
2. Owens Corning. (www.owenscorning.com)

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Board Insulation - Below Grade:
1. ASTM C578, Type IV, closed cell extruded polystyrene foam.
2. Minimum compressive strength: 25 PSI.

3. Thermal resistance: 4.0 per inch.
4. Water vapor permeance: Maximum 1.5 perms for 1 inch thickness, tested to ASTM E96/E96M.

1.2 ACCESSORIES

A. Adhesive:
1. Type recommended by insulation manufacturer.

B. Tape: Minimum 2 inches wide, pressure sensitive, foil faced, waterproof.

C. Impale Fasteners:
1. Steel impaling fasteners on metal base with lock washers, length to suit insulation thickness.
2. Adhesive: Type recommended by fastener manufacturer.

D. Metal Clips: Galvanized steel, L-shaped, 2 inches long.

E. Fasteners: Type best suited to application, hot-dip galvanized or fluoropolymer coated steel.

PART 2 EXECUTION

2.1 PREPARATION

A. Substrate:
1. Remove protrusions flush with adjacent surface.
2. Remove dirt, dust, oil, grease, and other materials that could impair adhesion.

2.2 INSTALLATION

A. Apply adhesive in continuous beads. 1/8 inch thick.

B. Install boards on foundation wall perimeter, horizontally.

C. Place boards in a method to maximize contact bedding.

D. Stagger joints.

E. Butt edges and ends tight to adjacent boards, at perimeter, and around penetrations with maximum 1/4 inch gaps.

END OF SECTION

SECTION 072116

BLANKET INSULATION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Thermal Batt Insulation in exterior wall, ceiling and roof assemblies.
2. Acoustic Batt Insulation for applications to reduce airborne sound transmission

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
2. 092900 – Gypsum Board

1.2 REFERENCES

A. ASTM International (ASTM):
1. C665 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Wood Frame and Light Construction Buildings.
2. E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
3. E136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 Degrees C.

1.3 SUBMITTALS

A. Quality Control Submittals:
1. Certificates of Compliance: Certification from an independent testing laboratory that insulation meets fire hazard classification requirements.

1.4 QUALITY ASSURANCE

A. Fire Hazard Classification:
1. Noncombustible, tested to ASTM E136.
2. Flame spread/smoke developed rating of 25/50 or less, tested to ASTM E84.

1.5 DELIVERY, STORAGE AND HANDLING

A. Store insulation in clean, dry, sheltered area, off ground or floor, until used. Protect against wetting and moisture absorption.

1.6 PROJECT CONDITIONS

A. Do not install insulation until building is substantially water and weather tight.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
1. Johns Manville. (www.jm.com)
2. Knauf Insulation. (www.knaufinsulation.us)
3. Owens Corning. (www.owenscorning.com)

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Thermal Batt Insulation: Exterior wall, ceiling and roof assemblies.
   1. Type: ASTM C665, glass fiber composition.
   2. Facing: Unfaced.
   3. Stapling flanges: None.
   4. Thermal resistance:
      a. 3-1/2 inches thick: R-value of 11.00.
      b. 3-5/8 inches thick: R-value of 13.00.
      c. 6-1/4 inches thick: R-value of 19.00.
      d. 6-1/2 inches thick: R-value of 22.00.
      e. 8-1/2 inches thick: R-value of 25.00.
      f. 9 inches thick: R-value of 26.00.
      g. 10 inches thick: R-value of 30.00.
      h. 12 inches thick: R-value of 38.00.

B. Acoustic Batt Insulation: Designed for applications to reduce airborne sound transmission.
   1. Type: ASTM C665, glass fiber composition.
   2. Facing: Unfaced.
   3. Stapling flanges: None.

2.3 ACCESSORIES

A. Tape: Minimum 2 inches wide, pressure sensitive, waterproof.

B. Fasteners: Hot-dip galvanized steel type best suited to application, minimum 5/8 inch penetration into framing.

C. Impale Fasteners: Steel impaling fasteners on metal base with lock washers, length to suit insulation thickness.

D. Wire Mesh: Hexagonal steel wire, galvanized.

PART 3 EXECUTION

3.1 INSTALLATION OF THERMAL INSULATION

A. Friction fit between framing members.

B. Butt insulation to adjacent construction. Butt ends and edges.

C. Carry insulation around pipes, wiring, boxes, and other components.

D. Ensure complete enclosure of spaces without voids.

E. At ceilings, apply with in conjunction with separate vapor barrier facing towards interior of structure.

3.2 INSTALLATION OF ACOUSTIC INSULATION

A. Friction fit between framing members.

B. Butt to framing members and adjacent construction.

C. Carry around pipes, wiring, outlets, and other construction without voids.

D. Press against one gypsum board surface to form slight air space on opposite side.

END OF SECTION

SECTION 072600

VAPOR RETARDERS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Sheet materials for controlling vapor diffusion at floors.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

A. ASTM International (ASTM):
1. D882 - Standard Test Method for Tensile Properties of Thin Plastic Sheeting.
2. D1709 - Standard Test Method for Impact Resistance of Plastic Film by the Free-Falling Dart Method.
3. E96/E96M - Standard Test Method for Water Vapor Transmission of Materials.
4. E154 - Standard Test Method for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover.
5. E1643 - Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.
6. E1745 - Standard Test Method for Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs.

1.3 SUBMITTALS

A. Submittals for Review:
1. Product Data: Include product description and performance characteristics.
2. Samples: 12 x 12 inch vapor retarder samples.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
1. Griffolyn, Division of Reef Industries. (www.reefindustries.com)
2. Raven Industries. (www.rufco.com)
3. Stego Industries. (www.stegoindustries.com)
4. W.R. Meadows, Inc. (www.wrmeadows.com)

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Under Slab Vapor Retarder:
1. Source: Stego Wrap by Stego Industries or approved substitute.
2. Exceed requirements of ASTM E1745, Class A.
3. Description: Multi-layer plastic extrusion manufactured with virgin polyolefin resins.
4. Thickness: 15 mils.
5. Water vapor permeance: Maximum 0.1 grams.
6. Tensile strength: Minimum 45 lbf per inch.
7. Puncture resistance: Minimum 2200 grams.
8. Chemical resistance: Unaffected, tested to ASTM E154.
9. Life expectancy: Indefinite, tested to ASTM E154.

2.3 ACCESSORIES

A. Pipe Boots: Vapor retarder manufacturer’s standard pipe boot system.

B. Adhesive: Compatible with vapor retarder and substrate, permanently non hardening.

C. Joint Tape: Minimum 2 inches wide, pressure sensitive, waterproof, compatible with vapor retarder.

PART 3 EXECUTION

3.1 INSTALLATION - UNDER SLABS ON GRADE

A. Install in accordance with manufacturer’s instructions and ASTM E1643.

B. Remove sharp rocks and objects that could puncture vapor retarder.

C. Install vapor retarder without tears, voids, and holes.

D. Lap ends and edges minimum 6 inches over adjacent sheets.

E. Install pipe boots at pipe and conduit penetrations through vapor retarder.

F. Tape seal lapped joints, tears, holes, perimeter, and penetrations through vapor retarder.

3.2 REPAIR

A. Inspect vapor retarder for damage just prior to covering.

B. Clean damaged areas and cover with additional vapor retarder material cut minimum 6 inches larger than damaged area on all sides. Seal to main vapor retarder with continuous tape.

END OF SECTION

SECTION 072700

WEATHER BARRIERS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Sheet materials for controlling moisture movement at exterior wall assemblies.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

A. ASTM International (ASTM):
1. D882 - Standard Test Method for Tensile Properties of Thin Plastic Sheeting.
2. D1117 – Standard Guide for Evaluating Nonwoven Fabrics.
3. E96/E96M - Standard Test Method for Water Vapor Transmission of Materials.
4. E331 - Standard Test Method for Water Penetration of Exterior Windows, Doors, and Curtain Walls by Uniform Static Air Pressure Differential.
5. E2178 - Standard Test Method for Air Permeance of Building Materials.
6. E2273 - Standard Test Method for Determining the Drainage Efficiency oof Exterior Insulation and Finish Systems Clad Wall Assemblies.
7. E2357 - Standard Test Method for Determining Air Leakage of Air Barrier Assemblies.

1.3 QUALITY ASSURANCE

A. Provide continuous barrier to moisture and air infiltration, flashed to discharge incidental condensation and water penetration.

1.4 SUBMITTALS

A. Submittals for Review:
1. Product Data: Manufacturer's descriptive data.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers - Sheet Moisture Barriers:
1. DuPont. (www.tyvek.com)
2. Griffolyn, Division of Reef Industries. (www.reefindustries.com)
3. Raven Industries. (www.rufco.com)

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Weather Barrier:
1. Source: Tyvek CommercialWrap D by Dupont or approved substitute.
2. Description: 100% flash spunbonded high-density polyethylene fibers. ASTM E2357 passed, ABAA evaluated air barrier assembly, and assembly water resistance per ASTM E331.
3. Breaking strength: Minimum 33 PSI, tested to D882.
4. Tear resistance: Minimum 6 lbs., tested to ASTM D1117.
5. Drainability: 98 percent or greater when tested in accordance with ASTM E2273.
6. Water vapor transmission: Not less than 23 perms per ASTM E96/E96M, tested to ASTM E96/E96M.

7. Air permeance: Maximum 0.001 CFM per square foot at 1.57 psf, tested to ASTM E2178.
8. Assembly air permeance: Maximum 0.04 CFM per square foot at 1.57 psf, tested to ASTM E2357.

2.3 ACCESSORIES

A. Fasteners: Hot-dip galvanized or fluoropolymer coated steel nails with 1 inch diameter plastic washers, minimum 5/8 inch penetration into framing.

B. Joint Tape: Minimum 2 inches wide, pressure sensitive, waterproof, compatible with moisture barrier.

C. Flashing Sheet: Composite flashing material composed of micro-creped, polyethylene laminate with a 100 percent butyl-based adhesive layer

D. Primer: Type recommended by moisture barrier manufacturer.

E. Patching Compound: Type recommended by moisture barrier manufacturer.

PART 3 EXECUTION

3.1 INSTALLATION

A. Provide complete and continuous barrier.

B. Apply primer when required by weather barrier manufacturer.

C. Install moisture barrier without tears, voids, and holes.

D. Begin application at low point; weatherlap succeeding courses minimum 4 inches.

E. Lap ends 6inches minimum. Tape seal lapped ends and edges.

F. Fasten at maximum 12 inches on center.

G. Seal to door and window frames, around penetrations, and at perimeter with flashing sheet. Press to full bond with substrate without voids, wrinkles, bridging, or fishmouths.

3.2 FIELD QUALITY CONTROL

A. Inspect moisture barrier for damage just prior to covering.

B. Clean damaged areas and cover with additional moisture barrier material minimum 6 inches larger than damaged area on all sides. Seal to main moisture barrier with continuous tape.

END OF SECTION

SECTION 073113

ASPHALT SHINGLES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Granular surfaced asphalt fiberglass shingle roofing.
2. Underlayment and ice dam protection.
3. Metal flashings and accessories.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
2. Section 076200 - Sheet Metal Flashing and Trim.

1.2 REFERENCES

A. ASTM International (ASTM):
1. C1549 - Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer.
2. D225 - Standard Specification for Asphalt Shingles (Organic Felt) Surfaced with Mineral Granules.
3. D226 - Standard Specification for Asphalt Saturated Organic Felt Used in Roofing and Waterproofing.
4. D412 - Standard Test Method for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers - Tension.
5. D1970 - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
6. D3018 - Standard Specification for Class A Asphalt Shingles Surfaced with Mineral Granules.
7. D3161 - Standard Test Method for Wind-Resistance of Asphalt Shingles (Fan-Induced Method).
8. D3462 - Standard Specification for Asphalt Shingles Made from Glass Felt and Surfaced with Mineral Granules.
9. D4586 - Standard Specification for Asphalt Roof Cement, Asbestos Free.
10. D4869 - Standard Specification for Asphalt-Saturated Organic Felt Underlayment Used in Steep Slope Roofing.
11. D6757 - Standard Specification for Underlayment Felt Containing Inorganic Fibers Used in Steep-Slope Roofing.
12. D6380 - Standard Specification for Asphalt Roll Roofing (Organic Felt).
13. D6381 - Standard Test Method for Measurement of Asphalt Shingle Mechanical Uplift Resistance.
14. D7158 - Standard Test Method for Wind Resistance of Sealed Asphalt Shingles (Uplift Force/Uplift Resistance Method).
15. E1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.

B. National Roofing Contractors Association (NRCA) - Steep Roofing Manual.

C. Underwriters Laboratories (UL):
1. 790 - Standard for Standard Test Methods for Tests of Roof Coverings.
2. 997 - Standard for Wind Resistance of Prepared Roof Covering Materials.
3. 2218 - Standard for Impact Resistance of Prepared Roof Covering Materials.
4. 2390 - Standard for Tests for Wind Resistant Asphalt Shingles with Sealed Tabs.

1.3 SUBMITTALS

A. Submittals for Review:
1. Product Data: Manufacturer's product description and installation instructions.
2. Samples: Shingle samples showing available colors.

3. Warranty: Sample warranty form.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Minimum 5 years documented experience in work of this Section.

B. Shingles:
1. Wind uplift resistance: Class F, tested to UL 997.
2. Fire hazard classification Class A, tested to UL 790.

C. Perform work in accordance with NRCA Manual.

1.5 PROJECT CONDITIONS

A. Do not install underlayment or shingles at ambient or surface temperatures less than 40 degrees F or on wet or frozen substrate.

1.6 WARRANTIES

A. Furnish manufacturer's standard warranty providing coverage against water leakage through shingles.

1.7 MAINTENANCE

A. Extra Materials: 100 square feet of extra shingles.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
1. Owens Corning. (www.owenscorning.com)

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Asphalt Fiberglass Shingles:
1. Source: Owens Corning Duration Series Shingles or approved substitute.
2. ASTM D3462, glass fiber mat base, mineral granule surfaced, self-sealing, fungus and algae resistant.
3. Type: Architectural.
4. Color: Estate Gray.
5. Provide matching hip and ridge shingles.

2.3 ACCESSORIES

A. Underlayment: Owens Corning PROARMOR. ASTM D226, non-perforated.

B. Ice Dam Protection:
1. Source: WeatherLock Flex by Owens Corning or approved substitute.
2. Description: ASTM D1970; minimum 40 mil thick polymer modified asphalt laminated to slip-resistant polyethylene film, self-adhering with release paper facing.
3. Elongation: Minimum 250 percent, tested to ASTM D412.
4. Tensile strength: Minimum 250 PSI, tested to ASTM D412.

C. Fasteners: Hot-dip galvanized steel nails, minimum 3/8-inch head diameter, 10 gage barbed shank, length to penetrate minimum 3/4 inch into sheathing.

D. Ridge Vents: VentSure, RidgeCat by Owens Corning or approved substitute.

E. Roof Louver:
   1. Source: Master Flow Roof Louver SSB960, Metal Slant-Back
   2. Opening Size: 10”
   3. Venting Area: 60 sq. inches of NFA per vent.
   4. Color: Submit manufacturers standard colors for Architect/Owner approval.

F. Plastic Cement: ASTM D4586, Type I, non-running, heavy body material composed of asphalt and other mineral ingredients.

G. Metal Flashings: Specified in Section 076200.

H. Flashing Boots: Preformed EPDM or equivalent synthetic rubber material, sized to fit penetration being flashed, with minimum 4-inch-wide deck flange and stainless steel draw band at top.

PART 3 EXECUTION

3.1 INSTALLATION OF ICE DAM PROTECTION

A. Starting from eave edge of roof apply one ply modified bitumen underlayment horizontally on roof. Weatherlap each sheet 4 inches over preceding sheet. Lap ends 6 inches minimum.

B. Press to full bond with substrate without voids, wrinkles, bridging, or fishmouths. Seal ends and edges.

C. Extend ice dam protection minimum 24 inches beyond interior face of exterior walls.

3.2 INSTALLATION OF UNDERLAYMENT (6:12 sloped roofs)

A. Starting at low edge, apply one ply of underlayment horizontally over substrate [including previously installed ice dam protection].

B. Weather lap each strip 6 inches minimum over previous strip.

3.3 INSTALLATION OF UNDERLAYMENT (2:12 sloped roofs)

A. Starting at low edge, apply one 18-inch-wide strip of underlayment horizontally over substrate [including previously installed ice dam protection].

B. Apply following strips full 36-inch width; weatherlap preceding strip by 19 inches so that not less than two plies cover substrate at any point.

C. Lap ends 6 inches minimum.

D. Fasten top of each strip under overlapping strip to hold strip in position until shingles are installed.

E. Provide 18-inch weave pattern at valleys.

F. Lap underlayment minimum 12 inches over hips and ridges from both sides. Apply 36-inch-wide strip centered lengthwise over ridge. Nail at 12 inches on center on each side.

G. Extend minimum 4 inches up abutting vertical surfaces.

3.4 FLASHINGS

A. Rake Edges:
   1. Install metal drip edge at rake edges with top flange on top of underlayment.
   2. Weather lap ends 2 inches minimum and seal with plastic cement.
   3. Nail top flange to decking at 8 inches on center maximum.
   4. Apply plastic cement to cover nail heads and at edge of flashings for entire length of metal.

B. Drip Edges:
   1. Apply drip edge at eave with top flange directly on deck; extend underlayment to outer face of drip edge.
   2. Lap ends 2 inches minimum and seal with plastic cement.
   3. Nail in place at 8 inches on center maximum.
   4. Apply plastic cement to cover nail heads and at edge of flashings for entire length of metal.

C. Valleys:

   1. Apply one layer of 36-inch-wide underlayment centered over valleys. Weather lap joints 12 inches minimum.
   2. Nail at 18 inches on center, with nails located within 1 inch of edges.

D. Stepped Flashings:
   1. Install 4-inch-high x 2 inch wide x 7 inch long tins concurrent with shingles. Place with ends slightly above with shingle butt ends.
   2. Place stepped counterflashing over tins at masonry.

E. Round Penetrations:
   1. Place preformed flashing boot over penetration.
   2. Fasten flange to deck with minimum of four fasteners.
   3. Tighten draw band to watertight condition.

F. Other Flashings:
   1. Weather lap ends 2 inches minimum and seal with plastic cement.
   2. Nail in place at 8 inches on center maximum.
   3. Apply plastic cement to cover nail heads and at edge of flashings for entire length of metal.

3.5 INSTALLATION OF RIDGE VENTS

A. Cut 1-inch-wide slot through sheathing under ridge vents, extending to within 6 inches of ends of vents.

B. Center ridge vent over slot; fasten at maximum 12 inches on center with 3-inch nails.

C. Apply shingles over vent; fasten with 3-inch nails.

3.6 INSTALLATION OF SHINGLES

A. Install shingles in accordance with manufacturer's instructions.

B. Place shingles in straight coursing pattern, in straight horizontal lines square with building lines, with 8 inch exposure to produce double thickness over roof area.

C. Remove foreign matter between shingles to ensure uniform contact.

D. Cut shingles at perimeter and around penetrations. Do not use damaged shingles.

E. Provide double course of shingles at eaves. Extend shingles 3/8 inch beyond metal drip edges.

F. Extend shingles on both slopes across valley in a weave pattern and fasten. Extend shingles a minimum of 12 inches beyond valley center line to achieve woven valley, concealing the valley protection.

G. Fasten shingles along nailing guide line through laminated portion with minimum of four fasteners per shingle.

H. Cap hips and ridges with individual shingles, maintaining same exposure as shingles.

END OF SECTION

SECTION 074646

FIBER CEMENT SIDING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Mineral-fiber cement siding.
2. Mineral-fiber cement soffits.
3. Trim, anchorage, and accessories.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
2. Section 07 6200 - Sheet Metal Flashing and Trim.
3. Section 07 9200 - Joint Sealers.

1.2 REFERENCES

A. ASTM International (ASTM):
1. C1186 - Standard Specification for Flat, Non-Asbestos, Fiber-Cement Sheets.
2. E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

1.3 SUBMITTALS

A. Submittals for Review:
1. Product Data: Indicate profiles, sizes, fastening methods, surface texture, and finish. Submit manufacturer's data, samples and installation instructions for each product used.
2. Provide sample for verification of specified finish.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Minimum 5 years documented experience in work of this Section.

1.5 WARRANTIES

A. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
1. James Hardie Building Products. (www.jameshardie.com)

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Mineral-Fiber Cement Siding:
1. ASTM C1186, Grade II, Type A; formulated from portland cement, ground sand, cellulose fibers, additives, and water; formed under pressure to required profile.
2. Finish: Factory prime painted.
3. Fire hazard classification: Class A, tested to ASTM E84.
4. Siding:
a. Source: HardiePlank Lap Siding by James Hardie Building Products or approved substitute.
b. Thickness: 0.312 in.

c. Length: 144 in. boards
d. Width: 7.25 in.
e. Surface Texture: Select Cedarmill
f. Color: Factory Primed.

5. Soffits:
   a. Source: HardieSoffit Panels Vented and Non-Vented-Smooth by James Hardie Building Products or approved substitute.
   b. Size: Soffit width x maximum practical length.
   c. Thickness: 1/4 inch.
   d. Surface texture: Smooth.
   e. Venting: Vented and Non vented. See drawings for locations.
   f. Color: As selected by owner from manufacturer’s full line of standard colors.
6. Trim:
   a. Source: HardieTrim Board by James Hardie Building Products or approved substitute.
   b. Size: 3 1/2, 5 1/2, 7 1/4, 9 1/4, 11 1/4 inches wide x maximum practical length.
   c. Thickness: 3/4 inch.
   d. Surface texture: Smooth.
   e. Color: As selected by owner from manufacturer’s full line of standard colors.

2.3 ACCESSORIES

A. Fasteners: Type recommended by siding manufacturer; non-corrosive.

B. Sheet Metal Flashings and Trim: Specified in Section 07 6200.

C. Joint Sealers: Specified in Section 07 9200.

PART 3 EXECUTION

3.1 INSTALLATION - LAP SIDING

A. Install in accordance with manufacturer's instructions.

B. Install siding with 7 inch exposure.

C. Lap siding for natural water shed.

D. Butt joints tight.

E. Set plumb and level.

F. Cut siding to fit at perimeter and around penetrations with maximum ¼ inch gaps. Smooth cut edges.

G. Install corner strips, closures, and trim.

H. Fasten at maximum 12 inches on center. Blind nail except trim.

I. Install metal flashings at internal and external corners, sills, and heads of wall openings. Fasten at 12 inches on center maximum.

J. Apply joint sealer between siding and trim and adjacent surfaces as specified in Section 07 9200. Ensure watertight condition.

3.2 INSTALLATION - BOARD SIDING AND SOFFITS

A. Install in accordance with manufacturer's instructions.

B. Install sheets with edges and ends over firm bearing.

C. Butt joints tight.

D. Set plumb and level.

E. Cut siding to fit at perimeter and around penetrations with maximum ¼ inch gaps. Smooth cut edges.

F. Install corner strips, closures, [battens,] and trim.

G. Fasten at maximum 12 inches on center in orderly fastening pattern.

H. Install metal flashings at internal and external corners, sills, and heads of wall openings. Fasten at 12 inches on center maximum.

I. Apply joint sealer between siding and trim and adjacent surfaces as specified in Section 07 9200.

3.3 INSTALLATION - TRIM

A. Install in accordance with manufacturer's instructions.

B. Butt joints tight.

C. Set plumb and level.

D. Cut to fit at perimeter and around penetrations with maximum ¼ inch gaps. Smooth cut edges.

E. Fasten at maximum 16 inches on center.

END OF SECTION

SECTION 076200

SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Metal flashings and trim.
   2. Edge flashings.
   3. Gutters and downspouts.
   4. Counterflashings over membrane roof base flashings.
   5. Counterflashings at roof mounted equipment and utility penetrations.

B. Related Sections:
   1. Division 01: Administrative, procedural, and temporary work requirements.
   2. Section 07 9200 - Joint Sealers.

1.2 REFERENCES

A. American Architectural Manufacturers Association (AAMA):
   1. 611 - Voluntary Specification for Anodized Architectural Aluminum.
   2. 621 - Voluntary Specifications for High Performance Organic Coatings on Coil Coated Architectural Hot Dipped Galvanized (HDG) and Zinc-Aluminum Coated Steel Substrates.
   3. 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Architectural Extrusions and Panels.
   4. 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Architectural Extrusions and Panels.

B. American National Standards Institute/Single Ply Roofing Institute (ANSI/SPRI) ES-1 - Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems.

C. ASTM International (ASTM):
   1. A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process.
   2. A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
   3. A755/A755M - Standard Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products.
   4. A792/A792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
   5. B32 - Standard Specification for Solder Metal.
   6. B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
   7. B370 - Standard Specification for Copper Sheet and Strip for Building Construction.
   8. B506 - Specification for Copper-Clad Stainless Steel Sheet and Strip for Building Construction.
   9. B749 - Standard Specification for Lead and Lead Alloy Strip, Sheet, and Plate Products.

D. Sheet Metal and Air Conditioning Manufacturer’s Association International (SMACNA) - Architectural Sheet Metal Manual.

1.3 SUBMITTALS

A. Submittals for Review:
   1. Shop Drawings: Show locations, types and thicknesses of metal, profiles, dimensions, fastening methods, provisions for expansion and contraction, and joint details.

1.4 QUALITY ASSURANCE

A. Design, fabricate, and install edge flashings in accordance with ANSI/SPRI ES-1.

B. Conform to SMACNA Manual for nominal sizing of gutters and downspouts for rainfall intensity determined by a storm occurrence of 1 in 25 years.

PART 2 PRODUCTS

2.1 MATERIALS

A. Galvanized Steel Sheet:
   1. ASTM A653/A653M, Structural Quality, G90 galvanized coating class, 24 gage core steel unless noted otherwise.
   2. Where sheet metal is to be painted, apply phosphate film at factory.

B. Precoated Aluminum-Zinc Alloy Coated Steel Sheet:
   1. ASTM A792/A792M, Commercial Quality, AZ50 aluminum-zinc alloy coating, 24 gage core steel unless noted otherwise.
   2. Finish: AAMA 621, fluoropolymer coating, containing minimum 70 percent PVDF resins, color to be selected from manufacturer's full color range.

2.2 ACCESSORIES

A. Solder: ASTM B32.

B. Fasteners: Same material and finish as sheet metal, with neoprene gasketed washers where exposed.

C. Joint Sealers: Specified in Section 07 9200.

2.3 FABRICATION

A. Fabricate components in accordance with SMACNA Manual.

B. Profiles:
   1. Gutters: SMACNA Style A.
   2. Downspouts: SMACNA rectangular
   3. Fabricate end caps, downspout outlets and headers, straps, brackets, and downspout strainers in profile to suit gutters and downspouts.

C. Pre tin edges of sheet.

D. Solder shop formed joints except pop rivet and seal joints at prefinished metal. After soldering, remove flux and wash clean.

E. Fabricate corners in single units with minimum 18inch long legs.

F. Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip.

G. Form sections accurate to size and shape, square and free from distortion and defects.

H. Provide for thermal expansion and contraction in sheet metal:
   1. Gutters:
      a. Place expansion joints at maximum 50 feet on center.
      b. Locate expansion joints between downspouts; prevent water flow over joint.
   2. Other sheet metal:
      a. Provide expansion joints in sheet metal exceeding 15 feet in running length.
      b. Place expansion joints at 10 feet on center maximum and maximum 2 feet from corners and intersections.

3. Joint width: Consistent with types and sizes of materials, minimum width ¼ inch.

I. Fabricate expansion joints in edge flashings with backing and cover plates formed to flashing profile, minimum 8 inches long.

J. Unless otherwise indicated, provide minimum 3/4 inch wide flat lock seams; lap in direction of water flow.

K. Fabricate cleats and starter strips of same material as sheet metal.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install flashing and sheet metal as indicated and in accordance with SMACNA Manual.

B. Install cleats and starter strips before starting installation of sheet metal. Fasten at 6 inches on center maximum.

C. Expansion Joints in Edge Flashings
1. Center backing plate between flashing pieces at end joints.
2. Apply two continuous beads of joint sealer between backing plate and flashing sections at each end.
3. Install flashing pieces with 1/2 inch expansion space at abutting ends; apply sealer to expansion space.
4. Apply two continuous beads of joint sealer between cover plate and flashing sections at each end.

D. Secure flashings with concealed fasteners where possible.

E. Apply plastic cement between metal and bituminous flashings.

F. Fit flashings tight, with square corners and surfaces true and straight.

G. Seam and seal field joints.

H. Separate dissimilar metals with bituminous coating or non-absorptive gaskets.

I. Reglets:
1. Install reglets true to line and level. Seal top of surface mounted reglet with joint sealer.
2. Install flashings into reglets to form tight fit. Secure with lead or plastic wedges at 9 inches on center maximum. Seal remaining space with joint sealer.

J. Gutters: Secure with straps spaced maximum 36 inches on center and within 12 inches of ends.

K. Downspouts:
1. Secure with straps spaced maximum 8 feet on center and within 2 feet of ends and elbows.
2. Flash downspouts into gutters and fasten.
3. Flash upper sections into lower sections minimum 2 inches at joints; fasten sections together.

L. Apply joint sealers as specified in Section 07 9200.

3.2 CLEANING

A. Clean sheet metal; remove slag, flux, stains, spots, and minor abrasions without etching surfaces.

END OF SECTION

SECTION 076500

FLEXIBLE FLASHINGS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Rubberized asphalt sheet for concealed wall flashings.

B. Related Sections:
   1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

A. ASTM International (ASTM) D1970 - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.

1.3 SUBMITTALS

A. Submittals for Review:
   1. Product Data: Manufacturer's descriptive data and installation instructions.

1.4 PROJECT CONDITIONS

A. Do not apply flashings at ambient or surface temperatures less than 40 degrees F.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
   1. Grace Construction Products. (www.graceconstruction.com)
   2. W.R. Meadows, Inc. (www.wrmeadows.com)
   3. Polyguard Products, Inc. (www.polyguardproducts.com)

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Rubberized Asphalt Flashings:
   1. Description: ASTM D1970; minimum 32 mil thick butyl rubber modified asphalt laminated to 8 mil thick cross-laminated HDPE film, release paper facing, self adhering.
   2. Source: Grace Vycor V40 by Grace Construction Products or approved substitute.

2.3 ACCESSORIES

A. Termination Mastic: Type recommended by flashing manufacturer.

PART 3 EXECUTION

3.1 INSTALLATION

A. Provide flexible flashings in exterior wall assemblies at:
   1. Base of walls.
   2. Heads of openings in walls.
   3. Transitions between materials.
   4. Around openings and penetrations through walls.

B. Lap ends 4 inches minimum.

C. Press to full bond with substrate without voids, wrinkles, bridging, or fishmouths.

D. Roll ends and edges with hand held roller; ensure tight seal.

E. Apply trowel coat of mastic along flashing at top edge, seams, cuts, and penetrations.

END OF SECTION

SECTION 078400

FIRESTOPPING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Firestopping perimeter of and penetrations through fire and smoke rated assemblies.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

A. ASTM International (ASTM):
1. E814 - Standard Test Method for Fire Tests of Through-Penetration Firestops.
2. E1966 - Standard Test Method for Fire-Resistive Joint Systems.
3. E2307 - Standard Test Method for Determining Fire Resistance of Perimeter Fire Barrier Systems Using Intermediate-Scale, Multi-Story Test Apparatus.

B. Underwriters Laboratories, Inc. (UL):
1. 1479 - Fire Tests of Through-Penetration Firestops.
2. 2079 - Fire Resistance of Building Joint Systems.

1.3 SYSTEM DESCRIPTION

A. Provide continuous protection against passage of heat, fire, smoke, and gases at perimeter of and penetrations through rated assemblies.

1.4 SUBMITTALS

A. Submittals for Review:
1. Product Data:
a. Firestopping schedule; prepare in tabular format and identify:
1) Type of assembly receiving firestop and required fire rating.
2) Type of penetrating item.
3) Proposed firestop system.
b. Include UL or equivalent details for each firestop system.
2. Test Reports: Indicate conformance with ASTM E814, ASTM E1966, ASTM E2307, UL 1479, or UL 2079.

B. Quality Control Submittals:
1. Certificates of Compliance: Indicate conformance of installed systems with specified requirements.

1.5 QUALITY ASSURANCE

A. Applicator Qualifications: Minimum 5 years documented experience in work of this Section.

B. Firestopping: Fire resistance rating as noted on drawings tested to ASTM E814, ASTM E1966, ASTM E2307, UL 1479, or UL 2079.

1.6 PROJECT CONDITIONS

A. Do not apply sealants, mortars, or putties when temperature of substrate material and surrounding air is below 40 degrees F or is anticipated to drop below that temperature within 24 hours after installation.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
1. Hilti, Inc. (www.us.hilti.com)
2. 3M Fire Protective Products. (www.3m.com)
3. Tremco, Inc. (www.tremcosealants.com)

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Firestopping: One or more of the following:
1. Silicone elastomer compound: Single or multiple component, low modulus, moisture curing silicone sealant.
2. Ceramic sealant: Single component, moisture curing ceramic sealant.
3. Intumescent sealant: Single component, water based intumescent sealant.
4. Acrylic sealant: Single component acrylic sealant, suitable for painting.
5. Putty: Single component ceramic fiber base putty or intumescent elastomer putty that expands on exposure to surface heat gain.
6. Mortar: Hydraulic cementitious mortar.
7. Pillows or blocks: Formed intumescent or mineral fiber pillows or blocks.
8. Intumescent strips: Solvent free intumescent wrap strips.
9. Mechanical devices: Incombustible fillers or silicone elastomer covered with sheet stainless steel jacket, joined with collars, penetration sealed with flanged stops.
10. Cast-in-place devices: Containing intumescent material and smoke/water seals.

2.3 ACCESSORIES

A. Forming and Damming Materials: As recommended by firestopping manufacturer for intended use.
1. Permanent: Mineral fiber board, mineral fiber matting, or mineral fiber putty.
2. Temporary: Plywood, particle board, or other.

PART 3 EXECUTION

3.1 PREPARATION

A. Prepare openings to receive firestopping as directed by manufacturer:
1. Remove incidental and loose materials from penetration opening.
2. Remove free liquids and oil from involved surfaces and penetration components.
3. Install damming materials to accommodate and ensure proper thickness and fire rating requirements and provide containment during installation.
4. Remove combustible materials and materials not intended for final penetration seal system.

3.2 INSTALLATION

A. Install firestopping at perimeter of and penetrations through fire and smoke rated assemblies.

B. Apply materials in accordance with manufacturer's instructions.

C. Apply firestopping material in sufficient thickness to achieve required ratings.

D. Compress fibered material to achieve a density of 40 percent of its uncompressed density.

E. Place foamed material in layers to ensure homogenous density, filling cavities and spaces.

F. Place sealant to completely seal junctions with adjacent dissimilar materials.

G. Place intumescent coating in sufficient coats to achieve rating required.

H. Remove dam material after firestopping material has cured.

I. Finish exposed surfaces to smooth, flush appearance.

END OF SECTION

SECTION 079200

JOINT SEALERS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Joint backup materials.
   2. Joint sealers.

B. Related Sections:
   1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

A. ASTM International (ASTM):
   1. C510 - Standard Test Method for Staining and Color Change of Single- or Multicomponent Joint Sealants.
   2. C719 - Standard Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement (Hockman Cycle).
   3. C794 - Standard Test Method for Adhesion-In-Peel of Elastomeric Joint Sealants.
   4. C834 - Standard Specification for Latex Sealing Compounds.
   5. C919 - Standard Practice for Use of Sealants in Acoustical Applications.
   6. C920 - Standard Specification for Elastomeric Joint Sealants.
   7. C1193 - Standard Guide for Use of Joint Sealants.
   8. C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants.
   9. C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants.
   10. C1472 - Standard Guide for Calculating Movement and Other Effects When Establishing Sealant Joint Width.
   11. C1521 - Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints.
   12. D2203 - Standard Test Method for Staining from Sealants.
   13. D6690 - Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements.

1.3 SUBMITTALS

A. Submittals for Review:
   1. Product Data: Indicate sealers, primers, backup materials, bond breakers, and accessories proposed for use.
   2. Warranty: Sample warranty form.

1.4 QUALITY ASSURANCE

A. Applicator Qualifications: Minimum 5 years documented experience in work of this Section.

1.5 PROJECT CONDITIONS

A. Do not apply sealers at temperatures below 40 degrees F unless approved by sealer manufacturer.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
   1. BASF Building Systems. (www.buildingsystems.basf.com)
   2. Dow Corning Corp. (www.dowcorning.com)

3. GE Silicones. (www.siliconeforbuilding.com)
4. Pecora Corp. (www.pecora.com)
5. Sika Corp. (www.sikausa.com)
6. Tremco, Inc. (www.tremcosealants.com)

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Joint Sealer Type 1:
1. ASTM D6690, Type 1, hot-poured polymer modified asphalt.
2. Movement capability: Plus or minus 25 percent.
3. Color: Black.

B. Joint Sealer Type 2:
1. ASTM C920, Grade NS, multiple component polyurethane type, self-leveling and slope grades.
2. Movement capability: Plus or minus 25 percent.
3. Color: To be selected from manufacturer's full color range

C. Joint Sealer Type 3:
1. ASTM C920, Grade NS, single or multiple component polyurethane type, non sag.
2. Movement capability: Plus or minus 25 percent.
3. Color: To be selected from manufacturer's full color range

D. Joint Sealer Type 4:
1. ASTM C920, Grade NS, single component silicone, non sag, mildew resistant.
2. Movement capability: Plus or minus 25 percent.
3. Color: To be selected from manufacturer's full color range

E. Joint Sealer Type 5:
1. ASTM C834, single component synthetic rubber or acrylic latex, non sag, non-hardening, non-corrosive, recommended by manufacturer for acoustical applications.
2. Movement capability: Plus or minus 7-1/2 percent.
3. Color: White.

F. Joint Sealer Type 6:
1. ASTM C834, single component acrylic latex, non sag.
2. Movement capability: Plus or minus 7-1/2 percent.
3. Color: White.

2.3 ACCESSORIES

A. Primers, Bondbreakers, and Solvents: As recommended by sealer manufacturer.

B. Joint Backing:
1. ASTM C1330, closed cell polyethylene foam, preformed round joint filler, non absorbing, non staining, resilient, compatible with sealer and primer, recommended by sealer manufacturer for each sealer type.
2. Size: Minimum 1.25 times joint width.

2.4 MIXES

A. Mix multiple component sealers in accordance with manufacturer's instructions.
1. Mix with mechanical mixer; prevent air entrainment and overheating.
2. Continue mixing until color is uniform.

PART 3 EXECUTION

3.1 PREPARATION

A. Remove loose and foreign matter that could impair adhesion. If surface has been subject to chemical contamination, contact sealer manufacturer for recommendation.

B. Clean and prime joints in accordance with manufacturer's instructions.

C. Protect adjacent surfaces with masking tape or protective coverings.

D. Calculate joint dimensions in accordance with ASTM C1472.

3.2 APPLICATION

A. Apply products in accordance with manufacturer's instructions.

B. Install sealers and accessories in accordance with ASTM C1193.

C. Install acoustical sealers and accessories in accordance with ASTM C919.

D. Install joint backing to maintain required sealer dimensions. Compress backing approximately 25 percent without puncturing skin. Do not twist or stretch.

E. Use bondbreaker tape where joint backing is not installed.

F. Fill joints full without air pockets, embedded materials, ridges, and sags.

G. Tool sealer to smooth profile.

H. Apply sealer within manufacturer’s recommended temperature range.

3.3 CLEANING

A. Remove masking tape and protective coverings after sealer has cured.

B. Clean adjacent surfaces.

3.4 SCHEDULE

JOINT LOCATION OR TYPE	SEALER TYPE
Exterior Joints:	
Joints in horizontal surfaces subject to vehicular traffic	1
Joints at dissimilar materials	2
Other joints	3
Interior Joints:	
Joints in toilet rooms, countertops, kitchens	4
Joints in acoustical assemblies	5
Other joints	6

END OF SECTION

SECTION 081113

HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Hollow steel doors and frames.

B. Related Sections:
   1. Division 01: Administrative, procedural, and temporary work requirements.
   2. Section 087100 - Door Hardware.
   3. Section 088000 - Glazing.

1.2 REFERENCES

A. American National Standards Institute (ANSI)/Steel Door Institute (SDI):
   1. A250.3 - Test Procedure and Acceptance Criteria for Factory Applied Finished Painted Steel for Steel Doors and Frames.
   2. A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames, Frame Anchors and Hardware Reinforcings.
   3. A250.8 - Recommended Specifications for Standard Steel Doors and Frames.
   4. A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.
   5. A250.11 - Recommended Erection Instructions for Steel Frames.

B. ASTM International (ASTM):
   1. A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process.
   2. A924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
   3. A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
   4. C518 - Standard Test Method for Steady State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
   5. E413 - Classification for Rating Sound Insulation.

C. National Fire Protection Association (NFPA) 80 - Standard for Fire Doors and Fire Windows.

D. Steel Door Institute (SDI) 117 - Manufacturing Tolerances for Standard Steel Doors and Frames.

E. Underwriters Laboratories (UL):
   1. 10C - Standard for Positive Pressure Fire Tests of Door Assemblies.

1.3 SUBMITTALS

A. Submittals for Review:
   1. Shop Drawings: Show locations, elevations, dimensions, model designations, fire, thermal, acoustical ratings, preparation for hardware, and anchoring details.
   2. Product Data: Show elevations, dimensions, gages of metal, hardware reinforcing gages and locations, and anchor types.

B. Quality Control Submittals:
   1. Certificates of Compliance: Certification that products furnished comply with ANSI/SDI A250.3, ANSI/SDI 250.4, and ANSI/SDI A250.10.

1.4 QUALITY ASSURANCE

A. Frames: ANSI/SDI A250.8

B. Paint: Doors and frames shall be provided with one coat of oven-cured neutral color primer paint. Primer coat shall conform to ANSI A250.10. The primer coat is preparatory base for necessary finish painting. Finish color to be selected by Owner/Architect from manufacturer's chart. Color finish to be electrostatically applied, oven- cured urethane enamel and shall conform to ANSI A250.3.

C. Fire Door and Frame Construction: Conform to UL 10C.

D. Installed Fire Rated Door and Frame Assemblies: Conform to NFPA 80.

E. Acoustic Door and Frame Assemblies: Minimum STC rating of 49, measured in accordance with ASTM E413.

1.5 DELIVERY, STORAGE AND HANDLING

A. Ship door frames with removable angle spreader; do not remove until frame is installed.

B. Store doors upright in protected, dry area, off ground or floor, with at least 1/4 inch space between individual units.

C. Do not cover with non vented coverings that create excessive humidity.

D. Remove wet coverings immediately.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
1. Ceco Door. (www.cecodoor.com)
2. Curries. (www.curries.com)
3. Mesker Door, LLC (www.meskerdoor.com)
4. Republic Doors and Frames. (www.republicdoor.com)
5. Steelcraft. (www.steelcraft.com)

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Interior Steel Doors: Dry Areas
1. Level: 2 - Heavy Duty
2. Model: Full Flush
3. Material: 18 gauge steel sheet.
4. Thickness: 1-3/4 inches.
5. Finish: Factory primed and painted.
6. Accessories:
   a. See Door Schedule.
   b. Glazing stops.
   c. Silencers.

B. Interior Steel Frames: Dry Areas
1. Grade: 2 - Heavy Duty
2. Material: 16 gauge steel sheet.
3. Type: Knockdown.
4. Type: Drywall slip-on.
5. Finish: Factory primed and painted.

C. Exterior Steel Doors

1. Level: 3 - Extra Heavy Duty
2. Model: Seamless
3. Material: 16 gauge galvanized steel sheet.
4. Door Thickness: 1-3/4 inches, thermally insulated.
5. Finish: Factory primed on all surfaces with rust inhibiting primer and factory painted.
6. Accessories:
    a. See Door Schedule
    b. Glazing stops.
    c. Silencers.

D. Exterior Steel Frames:
1. Material: 16 gauge galvanized steel sheet.
2. Corners: Mitered or coped.
3. Type: Welded.
4. Type: For frame wall or masonry.
5. Finish: Factory primed on all surfaces with rust inhibiting primer and factory painted.

E. Steel Sheet: Dry Areas
1. ASTM A1008/1008M, cold rolled.

F. Door Core:
1. Exterior doors: Foamed-in-place polyurethane insulation or Rigid polystyrene insulation.
2. Interior fire-rated and non-fire rated doors: Resin impregnated fibrous honeycomb or Vertical steel stiffeners with batt insulation.

2.3 ACCESSORIES

A. Glass, Glazing Sealers, and Accessories: Specified in Section 088000.

B. Primer: Zinc rich type. Rust inhibiting primer on exterior doors and frames.

2.4 FABRICATION

A. Fabricate doors and frames in accordance with ANSI/SDI A250.8.

B. Doors:
1. Close top and bottom edges of doors with steel channel, match gage, extending full width of door, and spot welded to both faces, with top channel flush and bottom channel recessed.
2. Fill voids between vertical steel stiffeners with batt insulation.
3. Fabricate vertical door edges as vertical seam edge filled, dressed smooth, intermittently welded seams, edge filled, dressed smooth, or continuously welded seam, dressed smooth.

C. Frames:
1. Fabricate from minimum gage sheets as indicated above.
2. Include the following for knock-down frames.
3. Provide self aligning tabs and slots to hold corners in alignment.

D. Accurately form to required sizes and profiles.

E. Grind and dress exposed welds to form smooth, flush surfaces.

F. Do not use metallic filler to conceal manufacturing defects.

G. Fabricate with internal reinforcement for hardware specified in Section 087100; weld in place.

H. Glazing Stops:
1. Manufacturer's standard, screw on type with mitered corners.
2. Form stops from minimum 20 gage steel; prefit for field glazing.
3. Locate screws within 1 inch of ends of stops and maximum 8 inches on center.
4. Install glazing stops on secure side of frames.

I. Design Clearances:
   1. Between door and frame: Maximum 1/8 inch.
   2. Between meeting edges of pairs of doors:
      a. Non-fire rated doors: 3/16 inch plus or minus 1/16 inch.
      b. Fire-rated doors: 1/8 inch plus or minus 1/16 inch.
   3. Undercut:
      a. Non-fire rated doors: Maximum 3/4 inch.
      b. Fire-rated doors: Comply with NFPA 80.
   4. Between face of door and stop: 1/16 to 3/32 inch.

J. Manufacturing Tolerances: In accordance with SDI-117.

2.5 FINISHES

A. Dress tool marks and surface imperfections to smooth surfaces.

B. Clean and chemically treat steel surfaces.

C. Touch up damaged metallic coatings.

D. Apply manufacturer's standard rust inhibiting primer paint, air-dried or baked on, meeting requirements of ANSI/SDI A250.10.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install doors and frames in accordance with ANSI/SDI A250.11.

B. Set plumb and level.

C. Secure to adjacent construction using fastener type best suited to application.

D. Install glass as specified in Section 088000.

E. Install hardware in accordance with Section 087100.

3.2 ADJUSTING

A. Touch up minor scratches and abrasions in primer paint to match factory finish.

END OF SECTION

SECTION 081416

FLUSH WOOD DOORS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Wood veneer faced flush doors.
2. Factory finishing.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
2. Section 087100 - Door Hardware.
3. Section 088000 - Glazing.

1.2 REFERENCES

A. Architectural Woodwork Institute/Architectural Woodwork Manufacturers of Canada/Woodwork Institute (AWI/AWMAC/WI) - Architectural Woodwork Standards.

B. ASTM International (ASTM) E90 - Standard Test Method for Measurement of Airborne-Sound Transmission Loss of Building Partitions.

C. National Fire Protection Association (NFPA) 80 - Standard for Fire Doors and Fire Windows.

D. Underwriters Laboratories (UL):
1. 10C - Standard for Positive Pressure Fire Tests of Door Assemblies.

1.3 SUBMITTALS

A. Submittals for Review:
1. Shop Drawings: Show locations, elevations, dimensions, fire and acoustical ratings, and preparation for hardware.
2. Samples:
a. 12 x 12 inch veneer samples showing selected stain color and finish.
3. Warranty: Sample warranty form.

B. Quality Control Submittals:
1. Certificates of Compliance: Manufacturer's certification that doors comply with specified acoustical requirements.

1.4 QUALITY ASSURANCE

A. Fire Door Construction: Conform to UL 10C.
B. Installed Fire Rated Door Assembly: Conform to NFPA 80.

C. Acoustic Rated Doors: Tested by independent testing laboratory in accordance with ASTM E90 and certified for STC Class of 49.

1.5 DELIVERY, STORAGE AND HANDLING

A. Package doors in heavy plastic with identifying marks; slit plastic wrap on site to permit ventilation, but do not remove from plastic until ready to install.

B. Do not deliver doors until building is substantially water and weather tight.

C. Store doors flat and level, with spacers between doors to allow for air circulation, in protected, dry area.

D. Environmental Requirements: Maintain following conditions in building for minimum 7 days prior to, during, and after installation of doors:
   1. Temperature: 60 to 80 degrees F.
   2. Humidity: 17 to 50 percent.

1.6 WARRANTIES

A. Furnish manufacturer's and installer's year warranty providing coverage against defects in materials and workmanship and warpage beyond specified amount

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
   1. Lambton Doors (lambtondoors.com)
   2. Masonite (architectural.masonite.com)

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Flush Wood Doors:
   1. Source: Aspiro Series – Marshfield-Algoma by Masonite or approved substitute.
   2. AWI/AWMAC/WI Architectural Woodwork Standards, Section 9.
   3. Core type:
      a. Solid, fire rated: Fire-Resistant Composite Core.
      b. Solid, non rated: Particleboard, Medium Density Fiberboard, Structural Composite or Staved Lumber.
   4. Wood veneers faces: Rotary cut white birch species of quality suitable for transparent finish
   5. Glazing beads: Solid wood of species and cut to match face veneers. Noncombustible material with wood veneer of species and cut to match face veneers.
   6. Adhesives: Water Resistant type.

2.3 ACCESSORIES

A. Glass and Glazing Accessories: Specified in Section 088000.

2.4 FABRICATION

A. Fabricate doors in accordance with AWI/AWMAC/WI Architectural Woodwork Standards, Section 9.
   1. Grade: Custom.
   2. Performance Level: Heavy Duty.
   3. Edge Type: Manufacturer's option.
   4. Number of plies: 5.

B. Prefitting; fit doors to frames at factory with following clearances:
   1. Fire and Acoustic rated doors:
      a. Width: Cut lock edge only; 3/16 inch maximum.
      b. Height: Cut bottom edge only; 1 inch maximum.
   2. Non-rated doors:
      a. Width: Cut hinge and lock edges equally.
      b. Height: Cut bottom edge only; maximum 3/4 inch.
   3. Edge clearances:
      a. Jambs and head: 1/8 inch maximum between door and frame.
      b. Sills without thresholds: 1/8 inch maximum between door and top of finish floor.
      c. Sills with thresholds: 1/4 inch maximum between door and top of threshold.

d. Meeting stiles of pairs: 1/8 inch maximum between doors.
4. Lock edge: Bevel 1/8 inch in 2 inches.

C. Premachining: Machine doors at factory to receive hardware specified in Section 087100.

2.5 FINISHES

A. Factory Finishing (G1):
1. Factory finish doors in accordance with AWI/AWMAC/WI Architectural Woodwork Standards, Section 5.
2. Finish system: See Section 099100 Painting.
3. Color: See Interior Drawings and Specifications.
4. Sheen: Satin.

PART 3 EXECUTION

3.1 PREPARATION

A. Condition doors to average humidity that will be encountered after installation.

3.2 INSTALLATION

A. Install doors in accordance with AWI/AWMAC/WI Architectural Woodwork Standards.

B. Install doors plumb and level.

C. If field cutting for height is necessary, cut bottom edge only, 3/4 inch maximum.

D. Seal field cut surfaces.

E. Install door hardware in accordance with Section 087100.

F. Install glass as specified in Section 088000.

G. Installation Tolerances:
1. Warp: Maximum 1/4 inch in any 3'-0" x 7'-0" portion of door, measured with taut string or straight edge on concave face of door.

END OF SECTION

SECTION 083100

ACCESS DOORS AND PANELS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Access doors and frames for wall and ceiling surfaces.

B. Related Sections:
   1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

A. ASTM International (ASTM):
   1. A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
   2. A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.

B. Underwriters Laboratories (UL) 10B - Standard for Fire Tests of Door Assemblies.

1.3 SUBMITTALS

A. Submittals for Review:
   1. Product Data: Provide sizes, types, finishes, scheduled locations, and details of adjoining work.

1.4 QUALITY ASSURANCE

A. Fire Door Construction: Conform to UL 10B.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
   1. Acudor Products, Inc. (www.acudor.com)
   2. Babcock-Davis, Inc. (www.babcockdavis.com)
   3. J.L. Industries. (www.jlindustries.com)
   4. Karp Associates, Inc. (www.karpinc.com)
   5. Milcor. (www.milcorinc.com)
   6. Nystrom, Inc. (www.nystrom.com)

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Steel Sheet: ASTM A1008/A1008M, cold rolled.

B. Galvanized Steel Sheet: ASTM A653/A653M, Structural Quality.

2.3 FABRICATION

A. Fabricate door frame of steel sheet:
   1. Doors 16 x 16 inches and smaller: Minimum 18 gage.
   2. Doors over 16 x 16 inches: Minimum 16 gage.
   3. Fabricate frames with flange type to suit installation conditions.

B. Fabricate door panels of minimum 14 gage steel sheet.

C. Fabricate fire rated door panels of two sheets of minimum 20 gage steel sheet. Fill core with noncombustible insulation.

D. Recess door face to receive gypsum board flush with adjacent surface.

E. Weld, fill, and grind joints to flush and square appearance.

F. Hardware:
   1. Continuous steel hinges, 175 degree opening.
   2. Screwdriver operated cam latch.
   3. Automatic closers for fire rated doors.

2.4 FINISHES

A. Exterior Doors and Interior Doors in Wet Locations: Hot dip galvanized, G90 coating class.

B. Other Interior Doors: One coat rust-inhibiting primer paint, sprayed and baked.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install units in accordance with manufacturer's instructions.

B. Install plumb and level in openings. Secure rigidly in place.

C. Position units where indicated or where required to provide convenient access to concealed work requiring maintenance.

END OF SECTION

SECTION 083203

SLIDING GLASS DOORS AND WALLS, MULTI-SLIDE

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Multi-Slide Doors and Walls, Thermally Broken:
   1. Aluminum. TS.83,

1.2 RELATED SECTIONS

A. Section 03 30 00 - Cast-in-Place Concrete.

B. Section 07 60 00 - Flashing and Sheet Metal.

C. Section 07 91 23 - Backer Rods.

D. Section 08 11 16 - Aluminum Doors and Frames.

E. Section 08 51 13 - Aluminum Windows.

F. Section 08 70 00 - Hardware.

1.3 REFERENCES

A. ASTM International (ASTM):
   1. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles and Tubes.
   2. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass.
   3. ASTM E283 - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
   4. ASTM E330 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
   5. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.
   6. ASTM E547 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Cyclic Static Air Pressure Difference.
   7. ASTM E1423 - Standard Practice for Determining Steady State Thermal Transmittance of Fenestration Systems.
   8. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation.
   9. ASTM E1886 - Test Method for Performance of Exterior Windows, Curtain Walls, Doors and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.
   10. ASTM E1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.
   11. ASTM F842 - Standard Test Methods for Measuring the Forced Entry Resistance of Sliding Door Assemblies, Excluding Glazing Impact.
B. American Architectural Manufacturers Association (AAMA):
   1. AAMA/WDMA/CSA 101/I.S.2/A440 - North American Fenestration Standard/Specification for Windows, Doors, and Skylights.
   2. AAMA 506 - Voluntary Specifications for Hurricane and Impact and Cycle Testing of Fenestration Products.

3. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections.
4. AAMA 2604 - Voluntary Specifications, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.
5. AAMA 2605 - Voluntary Specifications, Performance Requirements and Test Procedures for Superior Performance Organic Coatings on Aluminum Extrusions and Panels.

C. American National Standards Institute (ANSI):
1. ANSI Z97.1 - Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test.

D. Consumer Product Safety Commission (CPSC):
1. CPSC 16 CFR 1201 - Safety Standard for Architectural Glazing Materials.

E. Glass Association of North America (GANA):
1. GANA Glazing Manual.

F. National Fenestration Rating Council (NFRC):
1. NFRC 100 - Procedure for Determining Fenestration Product U-Factors.
2. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficients and Visible Transmittance at Normal Incidence.
3. NFRC 500 - Procedure for Determining Fenestration Product Condensation Resistance Values.

G. South Florida Building Code Impact Test Procedures (Miami-Dade TAS):
1. TAS 201 - Impact Test Procedures.
2. TAS 202 - Criteria for Testing Impact and Non-Impact Resistant Building Envelope Components Using Uniform Static Air Pressure Loading.
3. TAS 203 - Criteria for Testing Products Subject to Cyclic Wind Pressure Loading.

1.4 SUBMITTALS

A. Submit under provisions of Section 012500 - Administrative Requirements.

B. Product Data:
1. Manufacturer's data sheets on each product to be used.
2. Preparation instructions and recommendations.
3. Storage and handling requirements and recommendations.
4. Typical installation methods.

C. Verification Samples:
1. Two 6 inch (152 mm) samples of window profile.
2. Two 12 x 12 inches (304 x 304 mm) samples of glazing.
3. Two sample chips of frame finish.

D. Shop Drawings: Include details of materials, measurements, hardware, glass, and finish.Include relationship with adjacent construction per request.

E. Design Data: Engineering data illustrating compliance with specified design and performance criteria. Have submittal signed and sealed by a Licensed Professional Engineer.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with a minimum five years documented experience.

B. Installer Qualifications: Company specializing in performing Work of this section with minimum two years documented experience with projects of similar scope and complexity.

C. Source Limitations: Provide each type of product from a single manufacturing source to ensure uniformity.

D. Mock-Up: Construct a mock-up with actual materials in sufficient time for Architect's review and to not delay construction progress. Locate mock-up as acceptable to Architect and provide temporary foundations and support.
   1. Intent of mock-up is to demonstrate quality of workmanship and visual appearance.
   2. If mock-up is not acceptable, rebuild mock-up until satisfactory results are achieved.
   3. Retain mock-up during construction as a standard for comparison with completed work.
   4. Do not alter or remove mock-up until work is completed or removal is authorized.

1.6 PRE-INSTALLATION CONFERENCE

A. Convene a conference approximately two weeks before scheduled commencement of the Work. Attendees shall include Architect, Contractor and trades involved. Agenda shall include schedule, responsibilities, critical path items and approvals.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's original packaging with identification labels intact and in sizes to suit project.

B. Store and handle in strict compliance with manufacturer's written instructions and recommendations.
   1. Store product flat in dry well-ventilated area protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.

C. Prior to installation, keep the protective film to prevent product from getting scratched or damaged by dirt and debris. Remove as recommended by Manufacturer following installation.

D. Protect from damage due to weather, excessive temperature, and construction operations.

1.8 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Panda Windows & Doors, which is located at: 3415 Bellington Rd.; N. Las Vegas, NV 89030; Tel: 702-643-5700; Fax: 702-643-5715; Email:request info (Marketing@panda-windows.com); Web:http://www.panda-windows.com

B. Substitutions: Not permitted.

C. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

2.2 PERFORMANCE REQUIREMENTS

A. Standards Compliance:

1. Comply with the recommendations of the GANA Glazing Manual.
2. Safety Glazing Requirements: Per ANSI Z97.1 and CPSC 16CFR 1201.
3. Laminated Glass Requirements: ASTM C 1172.
4. Insulating Glass Unit Requirements: ASTM E 2190.
5. Aluminum Profiles: 6063-T5 extruded aluminum per ASTM B221.

B. Thermal Movement: Design to allow movement based on the following:
   1. Ambient Temperature: 120 degrees F (49 degrees C).
   2. Surface Temperature: 180 degrees F (82 degrees C).

2.3 MULTI-SLIDE DOORS AND WALLS, ALUMINUM, THERMALLY BROKEN

A. Basis of Design: Aluminum, Thermally Broken TS.83 as manufactured by Panda Windows and Doors:
   1. Performance Criteria:
      a. NFRC 102:
         1) Result: U-Value of 0.43.
         2) Tested Unit Size: 78-3/4 x 79 inches (2000 x 2007 mm).
         3) Tested Glazing: Double pane 1/4 inch (6 mm) glazing, 0.50 inch (13 mm) argon filled air space, Guardian 62/27 coating on No. 2 surface.
      b. Surface: Accommodate any flooring conditions.
         1) Track Size: 5/8 inch (16 mm) track.
   2. Panel Configuration:
      a. Straight.
      b. Fixed Panel: 4 panel, 2 fixed, bi-parting.
   3. Panel Size: As indicated on Drawings.
   4. Stile and Rail Profile Width: 3-5/16 inches (84 mm).
   5. Stile and Rail Profile Thickness or Depth: 1-7/8 inches (48 mm).
   6. Panel Overlap: 4 inches (102 mm).
   7. Divided Lite Mullion: 2-3/4 inches (70 mm).
   8. Glass Thickness: 1-7/16 inch (37 mm); standard.

2.4 FINISHES

A. Aluminum Finish:
   1. Color: As determined by Architect from Manufacturer's standard range.

2.5 ACCESSORIES

A. Fasteners:
   1. Manufacturer's standard fasteners.
   2. Manufacturer's standard, stainless steel noncorrosive fasteners.
   3. Exposed Fasteners: Avoid exposed fasteners to the greatest extent possible. Use fasteners that match finish hardware being fastened.

B. Shims: Manufacturer recommended plastic precision shims.

C. PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly constructed and prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect in writing of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Ensure structure and substrate are adequate to support sliding door and wall systems.

C. Verify rough opening conditions and dimensions:
   1. Verify opening is properly flashed and waterproofed.
   2. Verify opening is level, plumb, and square with no unevenness on the floor.

D. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A. Install in accordance with manufacturer's instructions approved submittals and in proper relationship with adjacent construction.
   1. Install level, straight, plumb, and square.
   2. Accurately fit, align, and securely fasten.

B. Adjust components and systems for correct function and operation in accordance with manufacturer's written instructions.

3.4 FIELD QUALITY CONTROL

A. Field Inspection: Coordinate field inspection in accordance with appropriate sections in Division 01.

3.5 DEMONSTRATION AND TRAINING

A. Instruct Owner's personnel in care, adjustment and operation of sliding wall and door systems.

B. Provide competent instructor for not less than one four-hour training session after completion and acceptance of work.

3.6 CLEANING AND PROTECTION

A. Clean products in accordance with the manufacturer's recommendations.

B. All protective film or plastic wrap shall be removed within 48 hours of installation.

C. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 083616

SECTIONAL DOORS

PART 1GENERAL

1.1 SUMMARY

A. Section Includes:
1. Sectional doors.
2. Operating hardware, controls, and supports.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
2. Section 087100 - Door Hardware.

1.2 REFERENCES

A. American Architectural Manufacturers Association (AAMA) 611 - Voluntary Specification for Anodized Architectural Aluminum.

B. American National Standards Institute / Door and Access Systems Manufacturers Association International (ANSI/DASMA) 102 - American National Standard Specifications for Sectional Doors.
2. 105 - Test Method for Thermal Transmittance and Air Infiltration of Garage Doors.

C. American Society of Civil Engineers (ASCE) 7 - Minimum Design Loads for Buildings and Other Structures.

D. ASTM International (ASTM):
1. A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
2. B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
3. B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

E. National Fenestration Rating Council (NFRC) 400 - Procedure for Determining Fenestration Product Air Leakage.

1.3 SYSTEM DESCRIPTION

A. Design Requirements: Design doors to withstand:
1. Positive and negative design wind loads in accordance with Building Code 2018 Virginia Construction Code without permanent deformation or damage.
2. Movement caused by an ambient temperature range of 120 degrees F and a surface temperature range of 160 degrees F.

B. Design Cycle Life: 25,000 cycles.

C. Panels: Flush steel, sandwich construction.

D. Track and Operating Hardware: High lift type.

E. Operation: Electric.

F. Air Infiltration: Maximum 1.0 cubic feet per square foot, tested to NFRC 400 or ANSI/DASMA 105.

1.4 SUBMITTALS

A. Submittals for Review:

1. Shop Drawings: Indicate opening dimensions and required tolerances, connection details, anchorage spacing, hardware locations, and installation details.
2. Product Data: Provide information on component construction, anchorage method, and hardware.

B. Closeout Submittals:
1. Operation and Maintenance Data.

1.5 QUALITY ASSURANCE

A. Door Assembly: Meet requirements of ANSI/DASMA 102.

1.6 WARRANTIES

A. Furnish manufacturer's warranties providing coverage against:
1. Panel delamination: 10 years.
2. Door and operating system: 3 years.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
1. Amarr. (www.amarr.com)
a. Style: Classica Flush
b. Model: CL3000

B. Substitutions: [Under provisions of Division 01.] [Not permitted.]

2.2 MATERIALS

A. Steel Sheet:
1. ASTM A653/A653M, Structural Quality, G60 coating class.

B. Aluminum Sheet:
1. ASTM B209, 5005 alloy, H14 temper, plain surface.

C. Aluminum Extrusions:
1. ASTM B221, 6063 alloy, T5 or T6 temper.

D. Insulation: Rigid polyurethane.

E. Glazing: Clear float glass, insulated 3/4 inch thick.

F. Primer Paint: Zinc rich type.

2.3 COMPONENTS

A. Sections:
1. Type: Flush steel, sandwich type.
2. Outside face: 25 gage, flat profile.
3. Rails: Tongue-and-groove.
4. Meeting joints: Square.
5. End caps: Wrap-around box style, galvanized steel, full height of section.
6. Inside face: 27 gage galvanized steel.
7. R-value: Minimum 13.35.

B. Door Nominal Thickness: 2 inches.

C. Glazed Lights: three glazed lights per panel, set in place with resilient glazing channel.

D. Track: 2 inches wide, roll formed galvanized steel, continuous one piece per side, with galvanized steel mounting brackets.

E. Hinge and Roller Assemblies: Heavy duty hinges and adjustable roller holders of galvanized steel, with floating hardened steel bearing rollers, located at top and bottom of each panel, each side.

F. Lift Mechanism: Torsion spring on cross head shaft, with braided steel lift cables.

G. Sill Weatherstripping: Resilient strip, one piece, fitted to bottom of door panel, full length contact.

H. Head and Jamb Weatherstripping: Roll formed steel section, fitted with resilient weatherstripping.

I. Lock: Inside center mounted type, adjustable keeper, spring activated latch bar with feature to retain in locked or retracted position. Interior and exterior handle, locks keyed alike.

J. Door Bottom Safety Edge: Full door width, electro-mechanical sensitized type, to reverse door upon striking object.

K. Photoelectric Sensor: Detect obstruction and reverse door without requiring door to contact obstruction.

L. Electric Operator:
   1. Center mounted draw bar assembly.
   2. Sufficient power to operate door at average speed of 12 inches per second.
   3. Manually operable in case of power failure.
   4. Electrical characteristics: 208 VAC, 3 phase.

2.4 FINISHES

A. Galvanized Steel: Epoxy primer and polyester finish coat color to be selected from manufacturer’s full color range.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install door assembly in accordance with manufacturer's instructions.

B. Anchor to adjacent construction without distortion or stress.

C. Securely brace door tracks suspended from structure. Secure tracks to structural members only.

D. Fit and align door assembly including hardware, level and plumb, to provide smooth operation.

E. Position head and jamb weatherstripping to contact door sections when closed; secure in position.

F. Make connections between power supply, operator, and controls as specified in Section [_____].

3.2 ADJUSTING

A. Adjust to operate smoothly throughout full operating range.

B. Touch up minor scratches and abrasions in [prime] [finish] coat to match factory finish.

END OF SECTION

SECTION 083800

TRAFFIC DOORS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Light to medium duty traffic doors.
   2. Hardware and accessories.

B. Related Sections:
   1. Division 01: Administrative, procedural, and temporary work requirements.
   2. Section 087100 - Door Hardware.
   3. Section 088000 - Glazing.

1.2 REFERENCES

A. American National Standards Institute (ANSI)/Steel Door Institute (SDI):
   1. A250.3 - Test Procedure and Acceptance Criteria for Factory Applied Finished Painted Steel for Steel Doors and Frames.
   2. A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames, Frame Anchors and Hardware Reinforcings.
   3. A250.8 - Recommended Specifications for Standard Steel Doors and Frames.
   4. A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.
   5. A250.11 - Recommended Erection Instructions for Steel Frames.

B. ASTM International (ASTM):
   1. A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process.
   2. A924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
   3. A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
   4. C518 - Standard Test Method for Steady State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
   5. E413 - Classification for Rating Sound Insulation.

C. National Fire Protection Association (NFPA) 80 - Standard for Fire Doors and Fire Windows.

D. Steel Door Institute (SDI) 117 - Manufacturing Tolerances for Standard Steel Doors and Frames.

E. Underwriters Laboratories (UL):
   1. 10C - Standard for Positive Pressure Fire Tests of Door Assemblies.

1.3 SUBMITTALS

A. Submittals for Review:
   1. Shop Drawings: Show locations, elevations, dimensions, model designations, fire, thermal, acoustical ratings, preparation for hardware, and anchoring details.
   2. Product Data: Show elevations, dimensions, gages of metal, hardware reinforcing gages and locations, and anchor types.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation. Do not lay flat.

1.5 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.6 WARRANTY

A. Provide manufacturer's standard two-year warranty that products are free of defects in material and workmanship and guaranteeing to replace (exclusive of freight and labor) parts proven defective within two years after date of shipment to purchaser.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
1. Eliason Corp. (www.eliasoncorp.com)

B. Substitutions: Under provisions of Division 01.

2.2 TRAFFIC DOORS

A. Source: SCP4 by Eliason Corp or approved substitute.

B. Light to Medium Duty Doors: 3/4 inch (19 mm) exterior grade solid wood core; 1 inch (25 mm) total thickness; light to medium duty. Easy swing hardware.
1. Facing: Reinforcing metal plates.
   a. Top Panels: 0.032 inch tempered aluminum alloy, satin anodized finish, both sides.
   b. Base Plates: 40 inches high 20 gauge stainless steel both sides.
   c. Back Channel: 20 gauge stainless steel.
2. Window Size: 18 inches wide by 30 inches high.
3. Glazing: Clear acrylic, set in black rubber molding.
4. Provide options as specified in Accessories below.

2.3 HARDWARE AND ACCESSORIES

A. Hinges: Double Action Easy Swing hinges.
1. Finish: Zinc plated.

B. Hinge Covers: Molded plastic in matching color.

C. Base Plates: Base plates to install on base of door surface; in pairs for front and back.
1. Material: Stainless steel, both sides.
2. Height: 40 inches.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. Verify jambs are plumb and square.

C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Anchor assembly to wall construction and building framing without distortion or stress.

C. Fit and align door assembly including hardware.

D. Minimum jamb construction of double studded 2 by 4 wood construction or equivalent.

E. Reinforce hollow metal jambs at hardware locations.

F. Steel channel jambs are required for heavy duty traffic doors.

G. Adjust door assembly to smooth operation and in full contact with weatherstripping.

3.4 CLEANING

A. Clean doors, frames and glass.

B. Remove temporary labels and visible markings.

3.5 PROTECTION

A. Protect installed products until completion of project.

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

END OF SECTION

SECTION 085113

ALUMINUM WINDOWS AND GLASS DOORS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Aluminum framed windows, with fixed sash.
   2. Field glazing.

B. Related Sections:
   1. Division 01: Administrative, procedural, and temporary work requirements.
   2. Section 08 8000 - Glazing.

1.2 REFERENCES

A. American Architectural Manufacturers Association (AAMA):
   1. CW-10 - Care and Handling of Architectural Aluminum from Shop to Site.
   2. 502 - Voluntary Specification for Field Testing of Newly Installed Fenestration Products.
   3. 611 - Voluntary Specification for Anodized Architectural Aluminum.
   4. 1503.1 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections.
   5. 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Architectural Extrusions and Panels.
   6. 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Architectural Extrusions and Panels.
   7. 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Architectural Extrusions and Panels.

B. American Architectural Manufacturers Association/Window and Doors Manufacturers Association/Canadian Standards Association (AAMA/WDMA/CSA) 101/I.S.2/A440 - Standard/Specification for Windows, Doors and Unit Skylights.

C. American Society of Civil Engineers (ASCE) 7 - Minimum Design Loads for Buildings and Other Structures.

D. ASTM International (ASTM):
   1. B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

1.3 SYSTEM DESCRIPTION

A. Windows and Glass Doors: AAMA/WDMA/CSA 101/I.S.2/A440.
   1. Product type:
      a. Fixed windows: F - Fixed.

1.4 SUBMITTALS

A. Submittals for Review:
   1. Shop Drawings: Include locations, elevations, sections, materials, finishes, and attachments.
   2. Samples: 3 x 3 inch finish samples in specified color.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Minimum 5 years documented experience in work of this Section.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
   1. C. R. Laurence Co., Inc (www.crlaurence.com)

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Aluminum Sash Extrusions:
   1. Source: CRL # S010A.by C. R. Laurence Co., Inc or approved substitute.
   2. Finish: Class I clear satin anodized.
   3. Snap in sash with clips.

B. Glass and Glazing Accessories: Specified in Section 088000.

2.3 ACCESSORIES

A. Fasteners: Stainless steel, hot-dip galvanized steel, or fluoropolymer coated steel; type best suited to application.

2.4 FABRICATION

A. Fabricate to manufacturer’s instructions.

B. Fabricate with minimum clearances and shim spaces around perimeter, yet enabling installation and dynamic movement.

C. Accurately fit and secure joints and intersections. Make joints flush, hairline, and weathertight.

D. Fabricate in largest practical units.

E. Conceal fasteners and attachments from view.

F. Reinforce corners and intersections of frames and mullions.

2.5 FINISHES

A. Aluminum: AAMA 611, Architectural Class II anodized to 0.0004 inch minimum thickness, clear.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install windows and glass doors in accordance with ASTM E2112, manufacturer's instructions, and approved Shop Drawings.

B. Set plumb, level, and rigid, free from warpage.

C. Anchor to supporting construction.

D. Installation Tolerances:
   1. Maximum variation from plumb or level: 1/8 inch in 3 feet or 1/4 inch in any 10 feet, whichever is less.
   2. Maximum misalignment of members abutting end to end: 1/32 inch.

3.2 ADJUSTING

A. Touch up minor scratches and abrasions to match original finish.

END OF SECTION

SECTION 087100

DOOR HARDWARE

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Hardware for steel, wood and aluminum doors.
2. Weatherstripping and thresholds.
3. Sound seals.
4. Hardware for other sections referencing this section.

B. Related Sections
1. Division 01: Administrative, procedural, and temporary work requirements.
2. Section 081113 Hollow Metal Doors and Frames
3. Section 081416 Flush Wood Doors
4. Section 084113 Aluminum-Framed Entrances and Storefronts

1.2 REFERENCES

A. American National Standards Institute/Builders Hardware Manufacturers Association (ANSI/BHMA):
1. A156.1 - Butts and Hinges.
2. A156.2 - Bored and Preassembled Locks and Latches.
3. A156.3 - Exit Devices.
4. A156.4 - Door Controls - Closers.
5. A156.5 - Auxiliary Locks and Associated Products.
6. A156.13 - Mortise Locks and Latches.
7. A156.18 - Materials and Finishes.
8. A156.26 - Continuous Hinges.
9. A156.31 - Electric Strikes.

B. Door and Hardware Institute (DHI)

C. Steel Door Institute

1.3 SUBMITTALS

A. Submittals for Review:
1. Shop Drawings: Schedule hardware by door type and location; show door size, hand, thickness, edge bevel, hardware components and quantities, keying, and finishes.
2. Product Data: Manufacturer's descriptive data for each component.
3. Samples: One sample of each hardware item, if requested. [Samples will be returned for installation on Project.]
4. Warranty: Sample warranty form.

B. Closeout Submittals:
1. Copy of approved hardware schedule.
2. Keying list.
3. Keys; tag with mark corresponding to keying schedule.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Minimum 3 years documented experience in work of this Section.

B. Provide hardware labeled by recognized independent testing laboratory and meeting requirements of NFPA 80 for fire rated doors.

C. Provide smoke gasketing at fire rated doors in accordance with NFPA 105.

D. Conform to applicable accessibility code for locating hardware and for door opening force requirements.

1.2 DELIVERY, STORAGE AND HANDLING

A. Pack hardware items separately, with fasteners, installation instructions, and templates.

B. Mark containers with item number corresponding to hardware schedule.

1.3 WARRANTIES

A. Furnish manufacturer's standard warranty for hardware.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers
1. Bommer Industries, Inc. (www.bommer.com)
2. Corbin Russwin, Inc. (www.corbin-russwin.com)
3. Hager Companies. (www.hagerco.com)
4. Ives by Allegion. (www.allegion.com)
5. LCN by Allegion. (www.allegion.com)
6. McKinney Products Co., Inc. (www.mckinneyhinge.com)
7. National Guard Products, Inc. (www.ngpinc.com)
8. Pemko Manufacturing Co., Inc. (www.pemko.com)
9. Reese Enterprises, Inc. (www.reeseusa.com)
10. Sargent Manufacturing Company. (www.sargentlock.com)
11. Schlage. (www.schlage.com)
12. Stanley Black and Decker. (www.stanleyblackanddecker.com)
13. Von Duprin by Allegion. (www.allegion.com)
14. Yale Security, Inc. (www.yalelocks.com)

2.2 MATERIALS

B. Butt Hinges:
1. Source: Stanley or approved substitute.
2. Description: ANSI/BHMA A156.1, full mortise type, five knuckle, non-rising pin, hole in bottom tip for pin removal.
3. Exterior outswinging doors: Provide set screw in barrel making hinge non-removable when door is closed.
4. Bearing type: Ball bearing.
5. Size: 4-1/2 x 4-1/2 inches.

C. Locksets and Latchsets:
1. Source:
   a. Entrance: H Series by Schlage or approved substitute.
   b. Interior: A-L Series by Schlage or approved substitute.
2. Type: ANSI/BHMA A156.2, Grade 2 cylindrical design
3. Deadbolts:
   a. Type: ANSI/BHMA A156.5, cylindrical type with 1-inch bolt throw.
   b. Functions: As scheduled.
4. Strike plates: Curved lip, minimum lip projection necessary to protect door frame and trim and to conceal edges of strike cutout.
5. Strike boxes: Steel.
6. Cylinders: Pin, solid brass, removable core type.
7. Keys: Nickel silver.

8. Keying: Owner's requirements for keying and key control system.
9. Restroom Doors: Provide occupied indicator.

A. Door Closers:
1. Source:
   a. Low frequency: 4030/4130 series by LCN or approved substitute.
   b. Entry doors: LCN 4010/4110 series by LCN or approved substitute.
2. Description: ANSI/BHMA A156.4, overhead exposed, metal cover, sized to door conditions.

B. Exit Devices:
1. Source: Van Duprin or approved substitute.
2. Description: ANSI/BHMA A156.3, Grade 2, push pad type.

C. Door Stops:
1. Source: Ives or approved substitute.
2. Description: Wall mounted, aluminum housing with resilient bumper.

D. Push Pull Plates:
1. Description: Stainless steel, secured with through bolts.

E. Kick Plates and related trim:
1. Source: Brookline or approved substitute.
2. Description: 16 gage, square edges, secured with flathead countersunk screws.
3. Size: Height per door schedule x door width less 2 inches.

F. Weatherstripping:
1. Source:
   a. Head and Jambs: Pemko or approved substitute.
   b. Automatic Door Bottoms: 412 Series.by Pemko or approved substitute.

G. Threshold:
1. Source: Reese or approved substitute.

H. Sound Seals:
1. Source: S88D by Pemko or approved substitute.
2. Description: Adhesive-backed gasketing at head and jamb

I. Door Sweep:
1. Source: 315 Series by Pemko or approved substitute.
2. Description: Neoprene

J. Pocket Door:
1. Source: Johnson Hardware or approved substitute.
2. Pocket door frame kit:
   a. 2 x 4 construction: 2000 series.
   b. 2 x 6 construction: 2060 series.
3. Pull: 134US15, satin nickel finish.
4. Lock: 153415P1, satin nickel finish.
5. Edge Pull: 150US15, satin nickel finish.

2.3 FINISHES

A. Finishes: To ANSI/BHMA A156.18.

B. Hardware: No. 626, satin chrome plated.

C. Thresholds and Door Seal Housings: Clear anodized.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verification of conditions: Examine doors, frames, related items and conditions under which Work is to be performed and identify conditions detrimental to proper and or timely completion. Do not proceed until unsatisfactory conditions have been corrected.

3.2 HARDWARE LOCATIONS

A. Mount hardware units at heights indicated in the following publications except as specifically indicated or required to comply with the governing regulations
   1. Recommended Locations for Builder’s Hardware for Standard Steel Doors and Frames, by the Door and Hardware Institute (DHI).
   2. Recommended locations for Architectural Hardware for flush wood doors (DHI).
   3. WDMA Industry Standard I.S.-1A-04, Industry Standard for Architectural wood flush doors.

3.3 INSTALLATION

A. Install hardware in accordance with approved hardware schedule and manufacturer's instructions.

B. Install mortise items flush with adjacent surfaces.

C. Install locksets, closers, and trim after finish painting.

D. Set thresholds in mastic and secure.

E. Mount closers so that closers and closer arms are not visible on corridor or public side of doors or on exterior of building.

3.4 SCHEDULE

A. See Sheet A601-Door Schedule and Types.

END OF SECTION

SECTION 089119

FIXED LOUVERS

PART 1GENERAL

1.1 SUMMARY

A. Section Includes:
1. Fixed louvers and frames.
2. Insect screens.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

A. Air Movement and Control Association International, Inc. (AMCA) Standard 500 - Test Methods for Louvers, Dampers and Shutters.

1.3 SYSTEM DESCRIPTION

A. Design Requirements: Design louvers to withstand:
1. Design wind pressure in accordance with Building Code, 2018 Virginia Construction Code with maximum allowable deflection of L/180, tested in accordance with ASTM E330].
2. Movement caused by an ambient temperature range of 120 degrees F and a surface temperature range of 160 degrees F.

1.4 SUBMITTALS

A. Submittals for Review:
1. Shop Drawings: Include locations, elevations, sections, dimensions, materials, finishes, attachment, and relationship to adjacent construction.

1.5 DELIVERY, STORAGE AND HANDLING

A. Handle products in accordance with AAMA CW-10.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
1. Mid-America Components. (www.midamericacomponents.com)
a. 22” Insulated Round

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Vinyl.

B. Screen: 16 gage x 1/2 mesh aluminum.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install in accordance with manufacturer's instructions and approved Shop Drawings.

B. Set plumb, level, and rigid, with flush hairline joints.

C. Anchor to supporting construction.

D. Prevent contact of aluminum and dissimilar metals by use of zinc rich paint, bituminous coating, or non absorptive gaskets.

E. Install screen on inside face.

3.2 ADJUSTING

A. Touch up minor scratches and abrasions in prime finish coat to match factory finish.

B. Adjust operable louvers for proper operation.

END OF SECTION

SECTION 088000

GLAZING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Transparent and translucent glass glazing for general and special purpose applications including tempered glass.

B. Related Sections:
   1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

A. American Architectural Manufacturers Association (AAMA) 800 - Voluntary Specifications and Test Methods for Sealants.

B. American National Standards Institute (ANSI) Z97.1 - Safety Performance Specifications and Methods of Test for Safety Glazing Material Used in Buildings.

C. American Society of Civil Engineers (ASCE) 7 - Minimum Design Loads for Buildings and Other Structures.

D. ASTM International (ASTM):
   1. C509 - Standard Specification for Elastomeric Cellular Preformed Gasket and Sealing Material.
   2. C794 - Standard Test Method for Adhesion-In-Peel of Elastomeric Joint Sealants.
   3. C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers.
   4. C920 - Standard Specification for Elastomeric Joint Sealants.
   5. C1036 - Standard Specification for Flat Glass.
   6. C1048 - Standard Specification for Heat-Treated Flat Glass-Kind HS, Kind FT, Coated and Uncoated Glass.
   7. C1115 - Standard Specification for Dense Elastomeric Silicone Rubber Gaskets and Accessories.
   8. C1281 - Standard Specification for Preformed Tape Sealants for Glazing Applications.
   9. C1294 - Standard Test Method for Compatibility of Insulating Glass Edge Sealants with Liquid-Applied Glazing Materials.
   10. C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants.
   11. E119 - Standard Test Method for Fire Tests of Building Construction and Materials.
   12. E152 - Standard Test Method for Fire Test of Door Assemblies.
   13. E163 - Standard Test Method for Fire Tests of Window Assemblies.
   14. E330 - Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors By Uniform Static Air Pressure Difference.
   15. E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings.
   16. E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation.

E. Consumer Product Safety Commission (CPSC) 16 CFR 1201 - Safety Standard for Architectural Glazing Materials.

F. Glass Association of North America (GANA):
   1. Engineering Standards Manual.
   2. Glazing Manual.

G. Insulating Glass Manufacturers Alliance (IGMA):
   1. SIGMA TM-3000 - Glazing Guidelines for Sealed Insulating Glass Units.

H. National Fenestration Rating Council (NFRC):
   1. 100 - Procedure for Determining Fenestration Product Thermal Properties.
   2. 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficients at Normal Incidence.
   3. 300 - Procedures for Determining Solar Optical Properties of Simple Fenestration Products.

1.3 SYSTEM DESCRIPTION

A. Glass Thicknesses:
   1. Indicated thicknesses are minimums; select actual glass thicknesses by analyzing loads and conditions.
   2. Size glass to withstand positive and negative wind pressure acting normal to plane in accordance with Building Code as measured in accordance with ASTM E330.
   3. Provide glass in thicknesses and strengths to meet or exceed following criteria:
      a. Comply with ASTM E1300.

B. Thermal and Optical Performance Properties: Provide glass meeting specified performance properties, based on manufacturer's published test data for units of thickness indicated:
   1. U-factor: Per NFRC 100 expressed as Btu/square foot x hour x degree F.
   2. Solar heat gain coefficient: Per NFRC 200.
   3. Solar optical properties: Per NFRC 300.

1.4 SUBMITTALS

A. Submittals for Review:
   1. Product Data: Descriptive data and performance attributes for glass.
   2. Warranty: Sample warranty form.

B. Quality Control Submittals:
   1. Test Report: Preconstruction adhesion and compatibility test report from glazing sealant manufacturer, based on submitted samples or acceptable data from previous testing of current formulations with similar products.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Minimum 5 years documented experience in work of this Section.

B. Regulatory Requirements:
   1. Provide safety glass for locations subject to human impact as required by Building Code.
   2. Safety glass: Tested and labeled to CPSC 16 CFR 1201.

1.6 PROJECT CONDITIONS

A. Perform glazing when ambient temperature is above 40 degrees F.

B. Perform glazing on dry surfaces.

1.7 WARRANTIES

A. Insulating Glass Units: Provide manufacturer’s 10-year warranty against material obstruction of vision through unit due to:
   1. Intrusion of dust or moisture.
   2. Internal condensation.
   3. Film formation on internal glass surfaces caused by failure of hermetic seal except failure caused in whole or in part by breakage or fracturing of any portion of glass surface.

B. Provide a written 5-year warranty from date of manufacture for fully tempered glass that has been Heat Soaked. Warrants that heat-soaked tempered glass will not break spontaneously as a result of

Nickel Sulfide (NiS) inclusions at a rate exceeding 0.5% (5/1000) for a period of five years from the date of manufacture.

C. Glass Coatings: Provide manufacturer's 10-year warranty against peeling, cracking, or deterioration of coating under normal conditions.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers - Glass:
1. Guardian Industries Corp. (www.guardian.com)
2. Oldcastle Building Envelope. (www.oldcastlebe.com)
3. PPG Industries, Inc. (www.ppg.com)
4. SaftiFirst (www.safti.com)

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Clear Glass: ASTM C1036, Type 1 transparent flat, Class 1 clear, Quality q3 glazing select.

B. Clear Tempered Glass: ASTM C1048, Type 1 transparent flat, Class 1 clear, Quality q3 glazing select, Kind FT fully tempered.

C. Fire Rated Safety Glass:
1. Type: Specially tempered glass, clear, of fire resistance ratings indicated.
2. Source:
   a. 20 Minute Fire Protective Glazing: SuperLite I by SaftiFirst or approved substitute.
   b. 45 Minute Fire Protective Glazing: SuperLite 45-HS by SaftiFirst or approved substitute.

2.3 ACCESSORIES

A. Glazing Materials: Select glazing sealants, tapes, gaskets and additional glazing materials of proven compatibility with other materials they will contact, including glass products, seals of insulating glass units and glazing channel substrates, under conditions of installation and service, as demonstrated by testing and field experience.
1. Setting blocks to be 100% silicone with a durameter hardness of 85±5.

B. Spacers: ASTM C864, neoprene or EPDM, or ASTM C1115, silicone; Elastomeric blocks or continuous extrusions with a shore A durometer hardness required by glass manufacturer to maintain glass lites in place.

C. Glazing Gaskets:
1. Dense compression gaskets: ASTM C864, neoprene or EPDM, or ASTM C1115, silicone or thermoplastic polyolefin rubber, molded or extruded shape to fit glazing channel retaining slot; of profile hardness required to maintain watertight seal.
2. Soft compression gaskets: ASTM C509, Type II, black, molded or extruded, neoprene, EPDM, silicone or thermoplastic polyolefin rubber, of profile and hardness required to maintain watertight seal

D. Glazing Sealant:
1. Type: ASTM C1184, multi component, high modulus, neutral chemical curing silicone glazing and curtain wall sealant.
2. Movement capability: 12 percent in extension and compression.
3. Compatible with glass unit edge seals.
4. Color: Black.

E. Sealant Backing: ASTM C1330, Type O, size and density to control glazing sealant depth and produce optimum glazing sealant performance.

F. Primer: As recommended by glazing sealant manufacturer. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction sealant-substrate testing.

G. Weatherseal Sealant:
1. Type: Single component, low modulus, neutral moisture curing silicone sealant; ASTM C920, Type S, Grade NS, Class 25, Use NT, M, G and A.
2. Movement capability: 25 percent in extension and compression.
3. Compatible with glass unit edge seals; tested to ASTM C1294.
4. Color: Black.

H. Butt Joint Glazing Sealant: ASTM C920, Type S, Grade NS, Class 25; single component silicone, low modulus type, non-sag, color to be selected from manufacturer's full color range.

I. Glazing Tape: AAMA 800; closed cell polyvinyl chloride foam, maximum 2 percent water absorption by volume, designed for 25 percent compression percent for air barrier and vapor retarder seal, black color, coiled on release paper over adhesive on two sides; widths required for installation.

J. Glazing Compound: Modified oil type, non-hardening, knife grade consistency, color to be selected from manufacturer's full color range.

2.4 FABRICATION

A. Annealed Glass: Comply with ASTM C1036.

B. Tempered Glass:
1. Comply with ASTM C1048.
2. Process in horizontal position so that inherent roller distortion will run parallel to building floor lines after installation.

C. Sealed Insulating Glass:
1. Comply with ASTM E2190.
2. Fabricate spacer bar frame of tubular aluminum filled with desiccant.
3. Bond spacer bar frame to glass panes with twin primary seals.
4. Fill space outside frame to glass edge with elastomeric sealant.

D. Low-E Coated Glass: Apply low-emissivity coating to scheduled glass surface.

PART 3 EXECUTION

3.1 PREPARATION

A. Clean glazing rabbets; remove loose and foreign matter.

B. Remove protective coatings on metal surfaces.

C. Clean glass just prior to installation.

3.2 INSTALLATION - GENERAL

A. Install glass in accordance with glass manufacturer's instructions.

B. Maintain manufacturer's recommended edge and face clearances between glass and frame members.

3.3 INSTALLATION - SILICONE GLAZING METHOD

A. Mask both sides of joint for full length.

B. Install temporary glass retainers to align faces of glass.

C. Provide temporary joint backing for one side of joint.

D. Apply sealant to completely fill spaces; tool to smooth, slightly concave surface.

E. Allow sealant to cure minimum time required by manufacturer. Remove temporary backing and fill voids with additional sealant.

3.4 INSTALLATION - GASKET GLAZING METHOD

A. Fabricate gaskets to fit openings; allow for stretching of gaskets during installation.

B. Set soft compression gasket against fixed stop or frame with bonded miter cut joints at corners.

C. Set glass centered in openings on setting blocks.

D. Install removable stops and insert dense compression gaskets at corners, working toward centers of glass, compressing glass against soft compression gaskets to produce weathertight seal.

E. Seal joints in gaskets.

F. Allow gaskets to protrude past face of glazing stops.

3.5 INSTALLATION - PRESSURE GLAZING METHOD

A. Set glass unit in opening as recommended by system manufacturer.

B. Tighten fasteners simultaneously at rate recommended by manufacturer to avoid unequal point pressures on glass.

C. Torque fasteners to achieve required pressure against glass. Do not over tighten.

3.6 INSTALLATION - SEALANT GLAZING METHOD

A. Apply sealant to full depth of permanent stops.

B. Press glass into sealant with slight lateral movement to ensure adhesion.

C. Apply sealant to full depth of removable stops. Secure stops in position, forcing contact with sealant bead and completely filling joint.

3.7 INSTALLATION - SEALANT AND TAPE GLAZING METHOD

A. Apply tape to permanent stops, projecting slightly above sight line.

B. Press glass into contact with tape.

C. Install removable stops with spacer shims between stop and glass.

D. Fill gap between removable stop and glass with glazing sealant.

E. Trim protruding tape edges.

3.8 INSTALLATION - TAPE GLAZING METHOD

A. Apply tape to permanent stops, projecting slightly above sight line.

B. Press glass into contact with tape.

C. Place glazing tape on removable stop side of glass.

D. Install removable stop and apply pressure to ensure contact.

E. Trim protruding tape edges.

3.9 PROTECTION

A. After installation, mark glass with an 'X' using removable plastic tape.

3.12 SCHEDULE

A. Type A:
   1. Description: Clear Insulating Glass.
   2. Locations: At exterior non-hazardous locations.
   3. Outboard Lite: Annealed float glass, tinted, 1/8 inch thick, minimum.
   4. Inboard Lite: Annealed float glass, 1/8 inch thick, minimum.
   5. Total Thickness: 3/4 inch.
   6. Visible Light Transmittance (VLT): 70 percent
   7. U-Value (Winter Night): 0.47
   8. Solar Heat Gain Coefficient (SHGC): 0.67

B. Type B:
   1. Description: 1/4 inch thick clear tempered glass.
   2. Locations: Interior doors and sidelights and at hazardous locations.

C. Type C:
   1. Description: 1/4 inch thick clear glass.
   2. Locations: Interior non-hazardous locations.

D. Type D:
   1. Description: 1/4 inch thick clear glass in compliance with ANSI Z97.1 (latest edition)
   2. Locations: Casework doors

E. Type E:
   1. Description: 1/4 inch thick clear fire-rated safety glass, 20 min.
   2. Locations: Interior fire-rated glazed openings at rated corridors.

F. Type F:
   1. Description: 3/4 inch thick clear fire-rated safety glass, 45 min.
   2. Locations: Interior fire-rated glazed openings at shaft wall doors.

END OF SECTION

SECTION 084113

ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Aluminum entrance doors and frames.
2. Aluminum framed glazed storefronts.
3. Glass infill panels.
4. Door hardware.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
2. Section 079200 - Joint Sealers.
3. Section 087100 - Door Hardware.
4. Section 088000 - Glazing.

1.2 REFERENCES

A. American Architectural Manufacturers Association (AAMA):
1. 611 - Voluntary Specification for Anodized Architectural Aluminum.
2. 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections.
3. 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Architectural Extrusions and Panels.
4. 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Architectural Extrusions and Panels.
5. 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Architectural Extrusions and Panels.

B. American National Standards Institute/Builders Hardware Manufacturers Association (ANSI/BHMA) A156.3 - Exit Devices.

C. American Society of Civil Engineers (ASCE) 7 - Minimum Design Loads for Buildings and Other Structures.

D. ASTM International (ASTM):
1. B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
2. B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
3. E283 - Standard Test Method for Rate of Air Leakage through Exterior Windows, Curtain Walls and Doors.
4. E330 - Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors under the Influence of Wind Loads.
5. E331 - Standard Test Method for Water Penetration of Exterior Windows, Doors, and Curtain Walls by Uniform Static Air Pressure Differential.
6. E547 - Standard Test Method for Water Penetration of Exterior Windows, Doors, and Curtain Walls by Cyclical Static Air Pressure Differential.
7. E783 - Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors.
8. E1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform or Cyclic Static Air Pressure Difference.

E. Underwriters Laboratories (UL) 305 - Safety Panic Hardware.

1.3 SYSTEM DESCRIPTION

A. Design Requirements: Design exterior systems to withstand:
   1. Design wind pressure in accordance with Building Code, with maximum allowable deflection of L/175, tested in accordance with ASTM E330.
   2. Movement caused by an ambient temperature range of 120 degrees F and a surface temperature range of 160 degrees F.
   3. Movement between door system and adjacent construction.
   4. Dynamic loading and release of loads.
   5. Deflection of supports.
   6. Overhead structure deflection of ½ inch.

B. Performance Requirements:
   1. Air infiltration, tested to ASTM E283.
      a. Entrances:
         1) Single door: Maximum 0.5 CFM per minute per linear foot of perimeter crack, at static pressure differential of 1.57 PSF.
         2) Pairs of doors: Maximum 1.0 CFM per minute per linear foot of perimeter crack, at static pressure differential of 1.57 PSF.
      b. Storefront: 0.06 CFM per square foot of fixed area at static pressure differential of 6.24 PSF.
   2. Water infiltration: No uncontrolled water leakage, tested to ASTM E331 at minimum test pressure of 6.24 PSF for inswing doors and 8.0 PSF for outswing doors and storefront.
   3. Uniform structural loading: No glass breakage or permanent damage to fasteners or system components, tested to ASTM E330 at 1.5 times design pressure.
   4. Thermal transmittance due to conduction (Uc): As required by glazing type- AAMA 1503.
   5. Condensation resistance factor (CRF): As required by glazing type- AAMA 1503.

1.4 SUBMITTALS

A. Submittals for Review:
   1. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, trim, sealers, hardware, and accessories.
   2. Samples:
      a. 3 x 3 inch coating samples in specified color.

B. Quality Control Submittals:
   1. Test Reports: Certified results of previous tests by a recognized independent laboratory substantiating compliance with specified design and performance criteria, current within past 5 years.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Minimum 5 years documented experience in work of this Section.

B. Conform to applicable accessibility code for locating hardware and for door opening force requirements.

1.6 DELIVERY, STORAGE AND HANDLING

A. Handle products in accordance with AAMA CW-10.

1.7 WARRANTIES

A. Furnish manufacturer’s and installer’s 2 year warranty providing coverage against water leakage through storefront system and reduction of performance.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
   1. EFCO Corporation. (www.efcocorp.com)
   2. Kawneer Co., Inc. (www.kawneer.com)
   3. Oldcastle BuildingEnvelope. (www.oldcastlebe.com)
   4. Tubelite, Inc. (www.tubeliteinc.com)
   5. YKK AP America, Inc. (www.ykkap.com)

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Aluminum:
   1. Extrusions: ASTM B221, 6063-T5 alloy and temper.
   2. Sheet: ASTM B209, alloy and temper best suited to application.

2.3 COMPONENTS

A. Entrances Doors-Exterior:
   1. Source: 350 Medium Stile Entrance Door by Kawneer or approved substitute.
   2. Description: Medium stile configuration with nominal 3-1/2 inch vertical stiles and top rail and 10 inch bottom rail x 1-3/4 depth, thermally broken.

B. Entrances Doors-Interior:
   1. Source: 350 Medium Stile Entrance Door by Kawneer or approved substitute.
   2. Description: Narrow stile configuration with nominal 3-1/2 inch vertical stiles and top rail and 10 inch bottom rail x 1-3/4 depth.

C. Storefront-Exterior:
   1. Source: Trifab 451 Framing System by Kawneer or approved substitute.
   2. Description: Flush glazing system designed to receive 1 inch glass by means of elastomeric gaskets; 2 inch face width x 4-1/2 inch depth, center glass application, thermally broken.

D. Storefront-Interior:
   1. Source: Trifab 400 Framing System by Kawneer or approved substitute.
   2. Description: Flush glazing system designed to receive 1/4 inch glass by means of elastomeric gaskets; 1-3/4 inch face width x 4 inch depth, center glass application.

E. Door Hardware: Specified in Section 087100.

2.4 ACCESSORIES

A. Fasteners:
   1. Series 300 stainless steel for wet locations and exposed fasteners.
   2. Stainless or fluoropolymer coated steel for other locations.

B. Joint Sealers: Specified in Section 07 9200.

C. Glass and Glazing Accessories: Specified in Section 08 8000.

D. Weatherstripping: Replaceable, resilient bulb type.

2.5 FABRICATION

A. Fabricate with minimal clearances and shim spaces around perimeter.

B. Accurately fit and secure joints and intersections. Make joints flush, hairline, and weathertight.

C. Fabricate in largest practical units.

D. Conceal fasteners and attachments from view.

E. Fabricate fascias, covers, closures, flashings, and trim members from same material as storefront.

F. Fabricate aluminum components with integral low conductance thermal barrier located between exterior and interior exposed components that eliminates metal-to-metal contact.

G. Doors:
   1. Mechanically fastened and welded corner construction.
   2. Fabricate stiles and rails of minimum 0.125 inch thick extrusions and glass stops from minimum 0.050 inch thick extrusions.
   3. Provide weatherstripping at door head, jambs, meeting stiles, and sills.
   4. Prepare with internal reinforcements for door hardware.

2.6 FINISHES

A. Interior locations: Aluminum: AAMA 611, Architectural Class II anodized to 0.0004 inch minimum thickness, clear.
   1. Color: Dark Bronze.

B. Exterior locations: Aluminum: AAMA 2605, fluoropolymer coating containing minimum 70 percent PVDF resins, two coat system.
   1. Color: Dark Bronze.

C. Apply bituminous coating to aluminum surfaces in contact with cementitious materials.

PART 3 EXECUTION

3.1 INSTALLATION

A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work. Verify rough opening dimensions, levelness of sill plate and operational clearances. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure a coordinated, weather tight installation.

B. Install in accordance with manufacturer's instructions and approved Shop Drawings.

C. Install components plumb and level, in proper plane, free from warp and twist.

D. Anchor to supporting construction.

E. Set thresholds and sill members exposed to weather in mastic and secure.

F. Install hardware using templates provided by manufacturer.

G. Install glass and accessories in accordance with Section 08 8000.

H. Installation Tolerances:
   1. Maximum variation from plumb or level: 1/8 inch in 3 feet or ¼ inch in any 10 feet, whichever is less.
   2. Maximum misalignment of members abutting end to end: 1/32 inch.
   3. Sealant space between framing members and adjacent construction: 1/4 inch plus or minus.

3.2 FIELD QUALITY CONTROL

A. Testing and Inspection Services:
   1. At beginning of installation, Architect will select one location for field testing:
      a. Test specimen size: Minimum 100 square feet.
      b. Include two glass panels, perimeter sealers, splices, and frame intersections.

2. Perform water infiltration testing in accordance with AAMA 501.2:
    a. Test pressure: 30 to 35 PSF.
    b. Allowable water infiltration: None.
3. Perform air infiltration testing in accordance with AAMA 503:
    a. Minimum test pressure: 2/3 of laboratory test pressure with minimum pressure of 4.18 PSF.
    b. Maximum allowable rate of air leakage: 1.5 times laboratory test rate.
4. If test area fails to meet specified air or water infiltration testing:
    a. Submit description of proposed remedial work to Architect.
    b. Complete remedial work on test specimen and repeat testing.
    c. When test results meet specified requirements, incorporate remedial work into other work on Project.
5. When installation is 50 percent complete, Architect will select one additional location for field testing.
6. For each area with failing test results, Architect will select one additional locations for field testing.

3.3 ADJUSTING

A. Adjust hardware for smooth operation.

B. Adjust doors to operate with maximum opening forces in accordance with applicable accessibility code.

C. Touch up minor scratches and abrasions to match original finish.

D. Adjust weatherstripping to contact appropriate surfaces and form weather seal.

END OF SECTION

SECTION 101423

INTERIOR PANEL SIGNS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Plastic interior panel signs.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

A. United States Department of Justice (USDOJ) - ADA Standards for Accessible Design (SAD).

1.3 SUBMITTALS

A. Submittals for Review:
1. Shop Drawings: Include sign locations, sizes, mounting heights, and content.
2. Samples:
a. 3 x 3 inch sign samples showing available colors.
b. Typical sign illustrating pictograms, characters, and Braille indications.

1.4 QUALITY ASSURANCE

A. Conform to applicable accessibility code for sign design, construction, location, and mounting height.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
1. APCO Graphics, Inc. (www.apcosigns.com)
2. Best Sign Systems, Inc. (www.bestsigns.com)
3. Seton Identification Products. (www.seton.com)

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Signs:
1. Type: Melamine plastic laminate with contrasting color core, non-static, fire retardant, self-extinguishing, matte finish.
2. Thickness: 1/8 inch.
3. Face and core colors: To be selected from manufacturer's full color range.

2.3 ACCESSORIES

A. Tape: Double sided, waterproof, pressure sensitive.

2.4 FABRICATION

A. Fabricate signs by reverse engraving process to produce characters and graphics in contrasting color, raised 1/32 inch.

B. Characters:

1. Height: 5/8 inch.
2. Style: Sans serif style to be selected, upper case.
3. Stroke width, strike thickness, character spacing, and line spacing: In accordance with applicable accessibility code.

C. Pictograms:
1. Utilize standard international pictograms.
2. Locate pictograms within 6 inch vertical void with text descriptors below pictogram.

D. Provide round Grade II Braille indications with contractions placed below each corresponding character.

E. Corners: 1/2 inch radius.

F. Edges: Square.

PART 3 EXECUTION

3.1 PREPARATION

A. Clean surfaces of loose and foreign matter.

3.2 INSTALLATION

A. Install in accordance with manufacturer's instructions and approved Shop Drawings.

B. Locate signs on wall adjacent to scheduled doors.

3.3 SCHEDULE

LOCATION	SIGN SIZE	CONTENT
Men’s Restroom 000	6 x 8 inches	“MEN” and male pictogram
Women’s Restroom 000	6 x 8 inches	“WOMEN” and female pictogram
Unisex Restroom 000	6 x 8 inches	“TOILET” and male and female pictograms

END OF SECTION

SECTION 102123

CURTAIN CUBICLES AND TRACK

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Suspended overhead metal track and guides.

B. Track Components
   1. I.V.Track
   2. I.V. Support Carriage

1.2 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Blocking and supports for track.

B. Section 09 5100 - Acoustical Ceilings: Suspended ceiling system to support track.

1.3 REFERENCE STANDARDS

A. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2010.

1.4 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate a reflected ceiling plan view of track, hangers and suspension points, and attachment details.

C. Samples:
   1. Product Data: Manufacturer's printed product data for:
      a. Each type of cubicle tracking system specified.
   2. Detail Drawings: Mounting details with the appropriate fasteners for specific project substrates.
   3. Samples: Verification samples of cubicle track, 4" long, in full size, with carriers and end cap.
   4. Manufacturer's Installation Instruction: Printed installation instructions for:
      a. Each type of cubicle tracking system specified.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in unopened factory packaging to the jobsite.

B. Inspect materials at delivery to assure that specified products have been received.

C. Store in original packaging in a climate-controlled location away from direct sunlight.

1.6 WARRANTY

A. Manufacturer's standard Limited Lifetime Warranty against material and manufacturing defects.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers
   1. Inpro Corporation (www.inpro.com)

A. Substitutions: Under provisions of Division 01.

2.2 TRACKS AND COMPONENTS

A. Track:
1. Source: Ultra Cube Cubicle Tracking System by Inpro Corporation or approve substitute.
2. Description: Suspended-mounted tracks of heavy duty extruded aluminum cubicle track with white baked acrylic enamel finish. Aluminum shall be 6063-T5.
3. Structural Performance: Capable of supporting vertical test load of 50 lbs. without visible deflection of track or damage to supports, safely supporting moving loads, and sufficiently rigid to resist visible deflection and without permanent set.
4. Track Attachment: Provide appropriate attachment accessories as required for ceiling grid members.
5. Track Splice: Extruded aluminum splice to join track sections.
6. Track End Caps: Molded thermoplastic end caps for end of track section.
7. Track Bends: Minimum 12 inch radius; fabricated without deformation of track section or impeding movement of carriers.
8. Angle Bracket: Provide angle bracket for level support on suspended ceiling.

B. I.V. Support Carriage:
1. Source: Ultra Cube CE9502 by Inpro Corporation or approve substitute.
2. Description: Carriage with ball bearing wheels, twist lock device. Provide two carriages per I.V. track location, sized appropriately per ceiling height. Verify length with Owner prior to ordering.

C. I.V. Bag Holders: Not In Contract.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions in which the cubicle tracking systems will be installed.
1. Complete all finishing operations, including painting, before beginning installation of cubicle tracking system materials
2. Verify that surfaces and above ceiling supports are ready to receive work.

3.2 PREPARATION

A. General: Prior to installation, clean substrate to remove dust, debris and loose particles.

3.3 INSTALLATION

A. General: Locate the cubicle track as indicated on the approved detail drawing for the appropriate substrate and in compliance with the manufacturer’s installation instructions.

B. Installation of Cubicle Tracking Systems:
1. Install cubicle track, secure, rigid, and true to ceiling line.
2. Slide carriers onto the track.
3. Install end cap or stop device.
4. Secure or suspend track to ceiling system. Install with mechanical fasteners or grid clips.
5. Install curtains on carriers ensuring smooth operation.

3.4 CLEANING

A. At completion of the installation, remove any debris and clean surfaces in accordance with manufacturer’s cleaning and maintenance instructions.

END OF SECTION

SECTION 104413

FIRE EXTINGUISHERS AND CABINETS

GENERAL

1.1 SUMMARY

A. Section Includes:
1. Portable fire extinguishers.
2. Cabinets and wall brackets

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

A. ASTM International (ASTM) E814 - Standard Test Method for Fire Tests of Through-Penetration Firestops.

B. National Fire Protection Association (NFPA) 10 - Portable Fire Extinguishers.

C. Underwriters Laboratories (UL):
1. 154 - Carbon Dioxide Fire Extinguishers.
2. 299 - Dry Chemical Fire Extinguishers.
3. 626 - 2-1/2 Gallon Stored Pressure, Water Type Fire Extinguishers.
4. 711 - Rating and Fire Testing of Fire Extinguishers.
5. 2129 - Halocarbon Clean Agent Fire Extinguishers.

1.3 SUBMITTALS

A. Submittals for Review:
1. Shop Drawings: Indicate bracket locations and mounting heights.
2. Product Data: Include data on extinguishers and brackets, operational features, materials, finishes, and anchorage.

B. Closeout Submittals:
1. Maintenance Data: Include test, refill, or recharge schedules and re-certification requirements.

1.4 QUALITY ASSURANCE

A. Provide fire extinguishers complying with UL 711 and applicable code.

B. Cabinets in Fire Rated Partitions: Tested in accordance with ASTM E814 with fire resistance rating equivalent to adjacent construction

C. Conform to applicable accessibility code for locating extinguishers.

1.5 PROJECT CONDITIONS

A. Do not install extinguishers when ambient temperature may cause freezing of extinguisher ingredients.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
1. Larsen's Mfg. Co. (www.larsensmfg.com)

B. Substitutions: Under provisions of Division 01.

2.2 COMPONENTS

A. Extinguishers:
1. Multi-purpose dry chemical type, UL 299, cast steel tank, Class 2A:10B:C, 5 pound nominal

B. Cabinets:
1. Formed aluminum sheet.
2. Configuration: Recessed, or Semi-recessed, sized to accommodate extinguishers.
3. Trim: Flat trim.
4. Door:
a. Vertical glass style, equipped with pull handle and latch.
b. Hinge doors for 180 degree opening with continuous piano hinge.
c. Glazing: Clear acrylic.
d. Graphics: Letter FIRE EXTINGUISHER vertically on door in red die-cut vinyl pressure sensitive letters.
5. capacity.

C. Brackets: Formed steel, sized to accommodate extinguisher.

2.3 ACCESSORIES

A. Mounting Hardware: Type best suited to application.

2.4 FINISHES

A. Cabinet:
1. Interior: Baked enamel, color to be selected from manufacturer's full color range.

B. Extinguishers: Baked enamel, red color.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install brackets in accordance with manufacturer's instructions.

B. Set plumb, level, and rigid.

C. Place an extinguisher on each bracket.

END OF SECTION

SECTION 102813

TOILET ACCESSORIES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Toilet and shower accessories.
2. Framed mirrors.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

A. ASTM International (ASTM):
1. A123/A123M - Standard Specification for Zinc (Hot-Galvanized) Coatings on Iron and Steel Products.
2. A269 - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
3. A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
4. A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
5. B456 - Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium.
6. C1036 - Standard Specification for Flat Glass.

B. Underwriters Laboratories, Inc. - Listed Products.

1.3 SUBMITTALS

A. Submittals for Review:
1. Product Data:
a. Schedule accessories by room; show plans and elevations, and identify room name and number, type and quantity of accessories, and mounting heights.
b. Include manufacturer's brochures showing sizes, details of function, finishes, and attachment methods.
2. Warranty: Sample warranty form.

1.4 QUALITY ASSURANCE

A. Conform to applicable accessibility code for locating accessories.

1.5 WARRANTIES

A. Furnish manufacturer’s 5 year warranty providing coverage against mirror silver spoilage.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design Manufacturer:
1. Bobrick Washroom Equipment, Inc.

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Stainless Steel:
   1. Sheet: ASTM A666, Type 304, rollable temper.
   2. Tubing: ASTM A269.

B. Galvanized Steel:
   1. ASTM A1008/A1008M.

C. Mirror Glass: ASTM C1036, Type I, Class 1, Quality q1, ¼ inch thick.

2.3 ACCESSORIES

A. Fasteners: Stainless steel where exposed, hot dip galvanized where concealed; type best suited to substrate conditions.

2.4 FABRICATION

A. Use stainless steel for exposed surfaces; galvanized steel may be used in concealed locations.

B. Form exposed surfaces from single sheet of stock, free from joints, and flat, without distortion.

C. Weld joints of fabricated components and grind smooth.

D. Fabricate grab bars of tubing, free of visible joints, return to wall with end attachment flanges.

E. Fabricate soap dispensers to operate with less than 5 pound force.

F. Provide hangers, adapters, anchor plates, and accessories required for installation.

G. Key locks alike; furnish six keys.

H. Mirrors:
   1. Frame: One piece, roll formed stainless steel channel, 1/2 x ½ inch, with corners mitered.
   2. Mirror: Apply one coat of silver, one coat of electroplated copper, and one coat of organic mirror backing compound to back surface of glass.
   3. Backing: Galvanized steel sheet.
   4. Isolate glass from frame and backing with resilient, waterproof padding.

I. Shop assemble units and package complete with anchors and fittings.

2.5 FINISHES

A. Stainless Steel: No. 4 satin.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Set plumb, level, square, and rigid.

3.2 SCHEDULE

MARK	DESCRIPTION	MANUFACTURER	MODEL NO.
A	Paper Towel Dispenser – 1 per Restroom	Bobrick	B-262
B	Toilet Tissue Dispenser – 1 per toilet fixture	Bobrick	B-685
C	Soap Dispenser – 1 per Restroom	Bobrick	B-4112
D	Grab Bars – Per Floor Plan	Bobrick, 1-1/4" diameter	B-5806-36 B-5806-42
E	Utility Hook – 1 per toilet room	Bobrick	B-233
F	Shelf with Mop and Broom Holder – 1 per Janitors Closet.	Bobrick	B-224 x 30
G	Under Lavatory Pipe Insulation – At each accessible lavatory	Truebro "Handi Lav Guard, appropriate model, white.	
H	Standard Plate Glass Mirror, 24x36 – 1 per lavatory	Bobrick	B-165

END OF SECTION

SECTION 118119

VACUUM CLEANING SYSTEMS

GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Vacuum cleaning system.

B. Related Sections:
   1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 SUBMITTALS

A. Submittals for Review:
   1. Shop Drawings: Indicate motor units and inlet valve locations and mounting heights.
   2. Product Data: Include data on motor units and inlet valve, operational features, materials, finishes, and anchorage.

B. Closeout Submittals:
   1. Maintenance Data: Include operations and maintenance manual.

1.3 WARRANTY

A. Provide manufacturer's standard warranty.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
   1. Vacu-Maid. (www.vacumaid.com)

B. Substitutions: Under provisions of Division 01.

2.2 COMPONENTS

A. Central Cleaning System
   1. Provide and install one engineered central vacuum system manufactured by Vacu-Maid, Ponca City OK, 1-800-546-76224. Medi-vac model #S2600. *NOTE verify with manufacturer the number and/or size of vac motors to function properly in the project spaces. Furnish standard inlets and vac pans, suction hose, and accessories.

   2. Equipment.
      a. Power Unit: S2600
      b. Dirt Canister: S1200
      c. Interceptor: ICC211

   3. Accessories:
      a. 12" floor brush
      b. Telescopic wand
      c. Premium Crevice Tool
      d. Premium Dusting Brush
      e. Upholstery Tool w/ Brush
      f. Wall Mounted Wand Holder
      g. Clip on Caddy
      h. Mesh Tool Caddy Bag

4. Hoses.
   a. (1) 30ft hose
   b. (2) 15ft hose

5. System to be provided by Plumbing Contractor and electrical work to be done by Electrical Contractor.

6. System to be located where noted in building with outlets in Treatment Room, Exam Rooms and other areas as designated on the drawings. Outlet locations based on 30 foot hose length. Notify Architect if different length is used, so appropriate relocation of outlets can be made.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install equipment in accordance with manufacturer's instructions.

B. Set mounting devices plumb, level, and rigid.

END OF SECTION

SECTION 313116

TERMITE CONTROL

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Soil treatment for termite control.

B. Related documents: Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to Work of this Section.

1.2 SUBMITTALS

A. Product Data: Submit manufacturer’s product data and installation instructions for each material and product used.

1.3 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Use installers with experience on similar projects.

1.4 DELIVERY AND STORAGE

A. Deliver, handle, and store materials in accordance with manufacturer's instructions. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

1.5 WARRANTY

A. Manufacturer’s Warranty:
1. Provide written warranty agreeing to re-treat soil and repair damage caused by termite infestation, carpenter ants and other pests during 5-year period from date of substantial completion.

PART 2 PRODUCTS

2.1 MATERIALS

A. Soil treatment materials which bear Federal registration number of U.S. Environmental Protection Agency and acceptable to authorities having jurisdiction.

PART 3 EXECUTION

2.1 INSTALLATION

A. Treat soil in strict compliance with National Pest Control Association standards and with manufacturer's printed instructions and recommendations. Do not apply treatment to frozen or excessively wet soils.

B. Treat areas under floor slabs prior to placement of concrete if possible, to avoid drilling. Treat areas outside foundation walls after excavation, filling and grading are complete.

C. Post signs and other warnings indicating that soil poisoning has been applied. Protect persons and property from injury or damage from soil treatment work.

END OF SECTION

SECTION 323132

WOOD COMPOSITE FENCES AND GATES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Wood composite fences
2. Wood composite gates
3. Excavation for posts

1.2 RELATED SECTIONS

A. Section 03 30 00 - Cast-in-Place Concrete.

1.3 REFERENCES

A. ASTM C 94 - Standard Specification for Ready-Mixed Concrete.

B. ASTM C 177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus.

C. ASTM D 143 - Standard Test Methods for Small Clear Specimens of Timber.

D. ASTM D 198 - Standard Test Methods of Static Tests of Lumber in Structural Sizes.

E. ASTM D 1037 - Standard Test Methods for Evaluating Properties of Wood-Base Fiber and Particle Panel Materials.

F. ASTM D 1413 - Standard Test Method for Wood Preservatives by Laboratory Soil-Block Cultures.

G. ASTM D 1761 - Standard Test Methods for Mechanical Fasteners in Wood.

H. ASTM D1929 - Standard Test Method for Determining Ignition Temperature of Plastics.

I. ASTM D 2047 - Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine.

J. ASTM D 2394 - Standard Methods for Simulated Service Testing of Wood and Wood-Base Finish Flooring.

K. ASTM D 2395 - Standard Test Methods for Specific Gravity of Wood and Wood-Based Materials.

L. ASTM D 4761 - Standard Test Methods for Mechanical Properties of Lumber and Wood-Base Structural Material.

M. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

N. ASTM F 1679 - Standard Test Method for Using a Variable Incidence Tribometer (VIT).

O. American Wood Preservers Association (AWPA) E1-06 - Standard Method for Laboratory Evaluation to Determine Resistance to Subterranean Termites.

1.4 DESIGN / PERFORMANCE REQUIREMENTS

A. Design Requirements: Design fence system to withstand Miami/Dade County 110 MPH steady wind and 130 MPH gusting wind tests.

1.5 SUBMITTALS

A. Submit under provisions of Section 01 25 00 – Substitution Procedures.

B. Product Data: Manufacturer's data sheets on each product to be used indicating sizes, profiles, surface finishes, and performance characteristics, and including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.
   4. Instructions on care and cleaning of composite wood products.

C. Verification Samples: For each finish product specified, two samples, minimum size 9 inches (229 mm) square, representing actual product, color, and patterns.

D. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

E. Closeout Submittals: Provide manufacturer's maintenance instructions that include recommendations for cleaning and maintenance.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store and handle products in accordance with the manufacturer's instructions.

B. Store level and flat, off ground or floor, with supports at each end and maximum 24 inches on center.

C. Do not stack wood composite over 8 feet (203 mm) high.

D. Cover wood composite with waterproof covering, vented to prevent moisture buildup.

1.7 WARRANTY

A. Provide manufacturer's 25 year residential warranty / 10 year commercial warranty providing coverage against checking, splitting, splintering, rotting, structural damage from termites, and fungal decay of wood composite.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Trex Fencing, which is located at: Web:https://www.trexfencing.com

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Wood composite: Reclaimed wood and plastic with integral coloring; free from toxic chemicals and preservatives:
   1. Characteristics:
      a. Abrasion resistance: 0.01 inch wear per 1000 revolutions, tested to ASTM D 2394.
      b. Hardness: 1124 pounds, tested to ASTM D 143.
      c. Self ignition temperature: 743 degrees F, tested to ASTM D 1929.
      d. Flash ignition temperature: 698 degrees F, tested to ASTM D 1929.
      e. Flame spread rating: 80, tested to ASTM E 84.
      f. Water absorption, 24 hour immersion, tested to ASTM D 1037:
      g. Sanded surface: 4.3 percent.
      h. Unsanded surface: 1.7 percent.
      i. Thermal expansion coefficient, 36 inch long samples:
      j. Width: 35.2 x 10-6 to 42.7 x 10-6.
      k. Length: 16.1 x 10-6 to 19.2 x 10-6.
      l. Fastener withdrawal, tested to ASTM D 1761:
      m. Nail: 163 pounds per inch.

n. Screw: 558 pounds per inch.
o. Static coefficient of friction:
1) Dry: 0.53 to 0.55, tested to ASTM D 2047.
2) Dry: 0.59 to 0.70, tested to ASTM F 1679.
3) Wet: 0.70 to 0.75, tested to ASTM F 1679.
p. Fungus resistance, white and brown rot: No decay, tested to ASTM D 1413.
q. Termite resistance: 9.6 rating, tested to AWPA E-1.
r. Specific gravity: 0.91 to 0.95, tested to ASTM D 2395.
s. Compression:
1) Parallel: 1806 PSI ultimate, 550 PSI design, tested to ASTM D 198.
2) Perpendicular: 1944 PSI ultimate, 625 PSI design, tested to ASTM D 143.
t. Tensile strength: 854 PSI ultimate, 250 PSI design, tested to ASTM D 198.
u. Shear strength: 561 PSI ultimate, 200 PSI design, tested to ASTM D 143.
v. Modulus of rupture: 1423 PSI ultimate, 250 PSI design, tested to ASTM D 4761.
w. Modulus of elasticity: 175,000 PSI ultimate, 100,000 PSI design, tested to ASTM D 4761.
x. Thermal conductivity: 1.57 BTU per inch per hour per square foot at 85 degrees F, tested to ASTM C 177.

2.3 COMPONENTS

A. Fence System: Seclusions Privacy Fence System.
1. Fence height:
a. 6 feet.
2. Components:
a. Fence posts.
b. Post caps:
1) Pyramid.
c. Top rail
d. Aluminum bottom rail inserts.
e. Bottom rail covers/Pickets, 67 inch.
f. Bottom rail covers/Pickets, 91 inch.
g. Fence brackets.
3. Surface texture: Smooth.
4. Color:
a. Winchester Grey.
b. Painting option: White to match building trim.

2.4 ACCESSORIES

B. Fasteners: 1-5/8 inch galvanized or corrosion-resistant coated steel. Provide finish nails where applicable.

C. Concrete: Provide concrete conforming to ASTM C 94; minimum 2500 PSI compressive strength at 28 days, with a 3 to 5 inch slump.

D. Gate Hardware:
1. Provide two Trex hinges per gate leaf minimum, and size to gate weight and conditions.
2. Provide center gate stop and drop rod for double gates.
3. Provide with latching mechanism.
4. Provide with padlock provisions.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Cut and drill wood composite using carbide tipped blades.

C. Space posts maximum 8 feet on center.

D. Drill post holes into undisturbed or compacted soil; excavate deeper in soft or loose soils and for posts with heavy lateral loads.

E. Drill posts to 12 inch diameter. Locate bottom of post 30 inches below grade or below frost line whichever is greater.

F. Place top of concrete 2 inches below finished grade.

G. Place top of concrete flush with finished grade.

H. Place top of concrete 2 inches above finished grade.

I. Screw fence brackets to posts with four 1-5/8 inch long exterior screws.

J. Cut top rails, pickets, bottom rail covers and aluminum bottom rails to lengths required.

K. Slide bottom rail covers over aluminum bottom rail pieces.

L. Position aluminum bottom rail on fence brackets with deeper side of rail channel facing downward.

M. Cut end pickets to height to provide clearance under brackets and screw to posts.

N. Insert pickets into bottom rail, interlocking adjacent pieces.

O. Position top rail and screw attach to top brackets with 1-5/8 inch long exterior screws.

P. Use finish nails to secure pickets to rails if the pickets are not tightly interlocked.

Q. Place post caps over post tops and secure with construction adhesive or four finish nails.

3.4 CLEANING

A. Clean wood composite to remove stains:
   1. Mold, mildew, and berry and leaf stains: Clean surfaces with conventional deck wash containing detergent or sodium hypochlorite.
   2. Rust and ground-in dirt: Clean surfaces with cleaner containing oxalic or phosphoric acid.
   3. Oil and grease: Clean surfaces with detergent containing degreasing agent.

3.5 PROTECTION

A. Protect installed products until completion of project.

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

END OF SECTION