Summer Bay II Apartments

Lake County, Florida

FK Project No. 5389

PROJECT MANUAL

Issue For Permit

June 22, 2018



Summer Bay II Apartments

Lake County, Florida

PROJECT MANUAL TABLE OF CONTENTS

INTR	ODUCTORY INFORMATION	DATE	BY
A. B.	PROJECT COVER PAGE TABLE OF CONTENTS	01/18/18 01/18/18	FK FK
DIVI	SION 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS		
0031	32 GEOTECHNICAL REPORT	01/18/18	FK
DIVI	SION 01 - GENERAL REQUIREMENTS		
0110	00 SUMMARY	01/18/18	FK
0121	00 ALLOWANCES	01/18/18	FK
0123	00 ALTERNATES	01/18/18	FK
0125	00 SUBSTITUTION PROCEDURES	01/18/18	FK
0126	00 CONTRACT MODIFICATION PROCEDURES	01/18/18	FK
0129	00 PAYMENT PROCEDURES	01/18/18	FK
0131	00 PROJECT MANAGEMENT AND COORDINATION	01/18/18	FK
0132	00 CONSTRUCTION PROGRESS DOCUMENTATION	01/18/18	FK
0133	00 SUBMITTAL PROCEDURES	01/18/18	FK
0140	00 QUALITY REQUIREMENTS	01/18/18	FK
0142	00 REFERENCES	01/18/18	FK
0150	00 TEMPORARY FACILITIES AND CONTROLS	01/18/18	FK
0160	00 PRODUCT REQUIREMENTS	01/18/18	FK
0173	00 EXECUTION	01/18/18	FK
0177	00 CLOSEOUT PROCEDURES	01/18/18	FK
01782	23 OPERATION AND MAINTENANCE DATA	01/18/18	FK
0178	39 PROJECT RECORD DOCUMENTS	01/18/18	FK
0179	DEMONSTRATION AND TRAINING	01/18/18	FK
DIVI	SION 03 – CONCRETE		
0354	13 GYPSUM CEMENT UNDERLAYMENT	01/18/18	FK

DIVISION 04 - MASONRY

047200	CAST STONE MASONRY	01/18/18	FK
DIVISION	N 05 – METALS		
055000	METAL FABRICATIONS	01/18/18	FK
055100	METAL STAIRS	01/18/18	FK
055213	PIPE AND TUBE RAILINGS	01/18/18	FK
DIVISION	N 06 - WOOD, PLASTICS, AND COMPOSITES		
062023	INTERIOR FINISH CARPENTRY	01/18/18	FK
DIVISION	N 07 - THERMAL AND MOISTURE PROTECTION		
071326	SELF-ADHERING SHEET WATERPROOFING	01/18/18	FK
072100	THERMAL INSULATION	01/18/18	FK
072500	WATER RESISTIVE BARRIERS/AIR BARRIERS	01/18/18	FK
073113	ASPHALT SHINGLES	01/18/18	FK
074600	FIBER CEMENT SIDING, TRIM AND SOFFIT	01/18/18	FK
076100	SHEET METAL ROOFING	01/18/18	FK
076200	SHEET METAL FLASHING AND TRIM	01/18/18	FK
076500	MANUFACTURED FLASHING PANELS	01/18/18	FK
078413	PENETRATION FIRESTOPPING AND		
	FIRE-RESISTIVE JOINT SYSTEMS	01/18/18	FK
079200	JOINT SEALANTS	01/18/18	FK
DIVISION	N 08 - OPENINGS		
081113	HOLLOW METAL DOORS AND FRAMES	01/18/18	FK
081416	INTERIOR WOOD DOORS	01/18/18	FK
083613	SECTIONAL DOORS	01/18/18	FK
084113	ALUMINUM-FRAMED ENTRANCE DOORS	01/18/18	FK
085313	VINYL WINDOWS	01/18/18	FK
087100	DOOR HARDWARE	01/18/18	FK
088000	GLAZING	01/18/18	FK
088300	MIRRORS	01/18/18	FK
DIVISION	N 09 - FINISHES		
092216	NON-STRUCTURAL METAL FRAMING	01/18/18	FK
092400	PORTLAND CEMENT PLASTERING	01/18/18	FK
092900	GYPSUM BOARD	01/18/18	FK
093000	TILING	01/18/18	FK
096519	RESILIENT STRIP FLOORING	01/18/18	FK
096816	SHEET CARPETING	01/18/18	FK
099113	EXTERIOR PAINTING	01/18/18	FK
099123	INTERIOR PAINTING	01/18/18	FK

DIVISION 10 - SPECIALTIES

101400	SIGNAGE	01/18/18	FK
102800	TOILET AND BATH ACCESSORIES	01/18/18	FK
103000	PRE FABRICATED FIREPLACES	01/18/18	FK
104416	FIRE EXTINGUISHERS AND CABINETS	01/18/18	FK
105500	POSTAL SPECIALTIES	01/18/18	FK
105610	CLOSET SPECIALTIES	01/18/18	FK
DIVISIO	N 11 – EQUIPMENT		
113100	RESIDENTIAL APPLIANCES	01/18/18	FK
DIVISIO	N 12 – FURNISHINGS		
122113	HORIZONTAL LOUVER BLINDS	01/18/18	FK
123530	RESIDENTIAL CASEWORK	01/18/18	FK
123640	STONE COUNTERTOPS	01/18/18	FK
123661	SIMULATED STONE COUNTERTOPS	01/18/18	FK
DIVISIO	N 31 – EARTHWORK		
313116	TERMITE CONTROL	01/18/18	FK

END OF TABLE OF CONTENTS



ECS Florida, LLC

Geotechnical Engineering Report

Summer Bay Apartments Phase 2

West Irlo Bronson Memorial Highway Lake County, Florida

ECS Project Number 24:6036

April 26, 2017







Geotechnical • Construction Materials • Environmental • Facilities

April 26, 2017

Ms. Vanessa Spitzer **Exploria Resorts** 25 Town Center Boulevard, Suite C Clermont, Florida 34714

ECS Project No. 24:6036

Reference: Geotechnical Engineering Report Summer Bay Apartments Phase 2 West Irlo Bronson Memorial Highway Lake County, Florida

Dear Ms. Spitzer:

ECS Florida, 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 Proposal No. 24:12113-GP, dated February 8, 2017. This report presents our understanding of the geotechnical aspects of the project, the results of the field exploration and laboratory testing conducted, and our design and construction.

It has been our pleasure to be of service to Exploria Resorts 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 the assumptions of subsurface conditions made for this report. Should you have any questions concerning the information contained in this report, or if we can be of further assis please contact us.

Respectfully submitted,

ECS Florida, LLC

Mohammed Muzammil, E.I. Geotechnical Project Engineer mmuzammil@ecslimited.com

Jose N. Gómez, P.E., D.GE VP/ Senior Principal Geotechnical Engineer FL PE No. 78289 jgomez@ecslimited.com

MM/JNG/mm

TABLE OF CONTENTS

EXECUTIVE SUMMARY1
1.0 INTRODUCTION
1.1 GeneraL2
1.2 Scope of Services2
1.3 Authorization2
2.0 PROJECT INFORMATION
2.1 Project Location
2.2 Current Site Conditions
2.3 Proposed COnstrction
2.3.1 Structural Information/Loads4
3.0 FIELD EXPLORATION
3.1 Field Exploration Program4
3.1.1 Test Borings4
3.2 REgional/site geology5
3.3 Soil Survey Mapping6
3.4 Subsurface Characterization7
3.5 Groundwater Observations7
4.0 LABORATORY TESTING PROGRAM8
5.0 DESIGN RECOMMENDATIONS FOR BUILDINGS8
5.1 Building Design
5.0 Design Recommendations For Boildings 8 5.1 Building Design 8 5.1.1 Foundations 8 5.1.2 Floor Slabs 9 5.2 Site Design Considerations 10 5.2.1 Pavement Sections 10
5.0 Design Recommendations For Boildings 8 5.1 Building Design 8 5.1.1 Foundations 8 5.1.2 Floor Slabs 9 5.2 Site Design Considerations 10 5.2.1 Pavement Sections 10 6.0 SITE CONSTRUCTION RECOMMENDATIONS 11
5.0 Design Recommendations For Bolibings 8 5.1 Building Design 8 5.1.1 Foundations 8 5.1.2 Floor Slabs 9 5.2 Site Design Considerations 10 5.2.1 Pavement Sections 10 6.0 SITE CONSTRUCTION RECOMMENDATIONS 11 6.1 Subgrade Preparation 11
5.0 DESIGN RECOMMENDATIONS FOR BOILDINGS 8 5.1 Building Design 8 5.1.1 Foundations 8 5.1.2 Floor Slabs 9 5.2 Site Design Considerations 10 5.2.1 Pavement Sections 10 6.0 SITE CONSTRUCTION RECOMMENDATIONS 11 6.1 Subgrade Preparation 11 6.1.1 Subgrade Preparation, Stripping and Grubbing 11
5.0 Design Recommendations For Boildings 8 5.1 Building Design 8 5.1.1 Foundations 8 5.1.2 Floor Slabs 9 5.2 Site Design Considerations 10 5.2.1 Pavement Sections 10 6.0 SITE CONSTRUCTION RECOMMENDATIONS 11 6.1 Subgrade Preparation 11 6.1.1 Subgrade Preparation, Stripping and Grubbing 11 6.1.2 Proofrolling 12
5.0 Design Recommendations For Bolibings 8 5.1 Building Design 8 5.1.1 Foundations 8 5.1.2 Floor Slabs 9 5.2 Site Design Considerations 10 5.2.1 Pavement Sections 10 6.0 SITE CONSTRUCTION RECOMMENDATIONS 11 6.1 Subgrade Preparation 11 6.1.1 Subgrade Preparation, Stripping and Grubbing 11 6.1.2 Proofrolling 12 6.1.3 Subgrade Stabilization 12
5.0 Design Recommendations For Bolibings 8 5.1 Building Design 8 5.1.1 Foundations 8 5.1.2 Floor Slabs 9 5.2 Site Design Considerations 10 5.2.1 Pavement Sections 10 6.0 SITE CONSTRUCTION RECOMMENDATIONS 10 6.1 Subgrade Preparation 11 6.1.1 Subgrade Preparation 11 6.1.2 Proofrolling 12 6.1.3 Subgrade Stabilization 12 6.2 Earthwork Operations 12
5.0 Design Recommendations For BoltDings 8 5.1 Building Design 8 5.1.1 Foundations 8 5.1.2 Floor Slabs 9 5.2 Site Design Considerations 10 5.2.1 Pavement Sections 10 5.2 Site Construction Recommendations 10 6.0 SITE CONSTRUCTION RECOMMENDATIONS 11 6.1 Subgrade Preparation 11 6.1.1 Subgrade Preparation, Stripping and Grubbing 11 6.1.2 Proofrolling 12 6.1.3 Subgrade Stabilization 12 6.2 Earthwork Operations 12 6.2.1 Structural Fill Materials 13
5.0 DESIGN RECOMMENDATIONS FOR BUILDINGS 8 5.1 Building Design 8 5.1.1 Foundations 8 5.1.2 Floor Slabs 9 5.2 Site Design Considerations 10 5.2.1 Pavement Sections 10 6.0 SITE CONSTRUCTION RECOMMENDATIONS 11 6.1 Subgrade Preparation 11 6.1.1 Subgrade Preparation 11 6.1.2 Proofrolling 12 6.1.3 Subgrade Stabilization 12 6.2 Earthwork Operations 12 6.2.1 Structural Fill Materials 13 6.2.2 Compaction 13
5.0 DESIGN RECOMMENDATIONS FOR BUILDINGS 8 5.1 Building Design 8 5.1.1 Foundations 8 5.1.2 Floor Slabs 9 5.2 Site Design Considerations 10 5.2.1 Pavement Sections 10 6.0 SITE CONSTRUCTION RECOMMENDATIONS 11 6.1 Subgrade Preparation 11 6.1.1 Subgrade Preparation, Stripping and Grubbing 11 6.1.2 Proofrolling 12 6.1.3 Subgrade Stabilization 12 6.2 Earthwork Operations 12 6.2.1 Structural Fill Materials 13 6.2.2 Compaction 13 6.3 Foundation and slab observations 14
5.0 DESIGN RECOMMENDATIONS FOR BUILDINGS 8 5.1 Building Design 8 5.1.1 Foundations 8 5.1.2 Floor Slabs 9 5.2 Site Design Considerations 10 5.2.1 Pavement Sections 10 5.2.1 Pavement Sections 10 6.0 SITE CONSTRUCTION RECOMMENDATIONS 11 6.1 Subgrade Preparation 11 6.1.1 Subgrade Preparation, Stripping and Grubbing 11 6.1.2 Proofrolling 12 6.1.3 Subgrade Stabilization 12 6.2 Earthwork Operations 12 6.2.1 Structural Fill Materials 13 6.2.2 Compaction 13 6.3 Foundation and slab observations 14 6.4 Utility Installations 15
5.0 Design Recommendations for Buildings 8 5.1 Building Design 8 5.1 Foundations 8 5.1.1 Foundations 8 5.1.2 Floor Slabs 9 5.2 Site Design Considerations 10 5.2.1 Pavement Sections 10 6.0 SITE CONSTRUCTION RECOMMENDATIONS 11 6.1 Subgrade Preparation 11 6.1.1 Subgrade Preparation, Stripping and Grubbing 11 6.1.2 Proofrolling 12 6.1.3 Subgrade Stabilization 12 6.2 Earthwork Operations 12 6.2.1 Structural Fill Materials 13 6.2.2 Compaction 13 6.3 Foundation and slab observations 14 6.4 Utility Installations 15 6.5 General Construction Considerations 16

APPENDICES

Appendix A – Drawings & Reports

- Site Location Diagram
- Boring Location Diagram

Appendix B – Field Operations

- Reference Notes for Boring Logs
- Boring Logs B-1 through B-23



EXECUTIVE SUMMARY

The following summarizes the main findings of the exploration, particularly those that may have a cost impact on the planned development of Summer Bay Apartments Phase 2 in Lake County, Florida. 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 purpose of this study was to provide geotechnical information for the design and construction of proposed four-story multi-family development referred as Summer Bay Apartments Phase 2. Based on our field observations and aerial images, the site is currently undeveloped virgin site with overgrown grass and scattered trees.
- The geotechnical exploration performed for the planned development included 23 soil test borings drilled to depths between 10 and 35 feet.
- Subsurface conditions within the borings generally consisted of fine sand (SP) with various amounts of fines from existing grade to the termination of the borings (35 feet below existing grade).
- The six four-story buildings, pool bath building, club house building and a fitness building may be supported on conventional shallow foundations consisting of column or strip footings bearing on natural sandy soils with an allowable net bearing capacity of 2,500 psf.
- Details of the foundation subgrade elevations and loads are contained in the body of the report.



1.0 INTRODUCTION

1.1 GENERAL

The purpose of this study was to provide geotechnical information for the design and construction of proposed four-story multi-family development referred as Summer Bay Apartments Phase 2. Based on our field observations and aerial images, the site is currently undeveloped virgin site with overgrown grass and scattered trees.

The recommendations developed for this report are based on project information supplied by Exploria Resorts. This report contains the results of our subsurface explorations, site characterization, results of engineering analyses, and recommendations for the design and construction of six four-story buildings, pool bath building, club house building and a fitness building with associated driving/parking areas.

1.2 SCOPE OF SERVICES

To obtain the necessary geotechnical information required for design of proposed four-story muti-family buildings and driving/parking areas, soil test borings were performed at locations selected by our office. A laboratory testing program was also implemented to characterize the physical and engineering properties of the subsurface soils.

This report discusses our exploratory and testing procedures, presents our findings and evaluations and includes the following.

- 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 boring logs.
- Recommendations for site preparation and construction of compacted fills, including an evaluation of on-site soils for use as compacted fills and delineation of potentially unsuitable soils and/or soils exhibiting excessive moisture at the time of sampling.
- Recommended foundation type(s).
- General recommendations for pavement design, including a recommended design LBR value.
- Evaluation and recommendations relative to groundwater control.

1.3 AUTHORIZATION

Our services were provided in accordance with our Proposal No. 24:12113-GP, dated February 8, 2017, as authorized by Exploria Resorts on March 7, 2017, and includes the Terms and Conditions of Service outlined with our Proposal/Contract between ECS Florida, LLC and Exploria Resorts.



2.0 PROJECT INFORMATION

2.1 PROJECT LOCATION

The site is located north of West Irlo Bronson Memorial Highway in Lake County, Florida. The site is bounded by Crooked Lake on the west side and Resort Way on the south side, as shown below on Figure 2.1.1 Site Location.



Figure 2.1.1. Site Location

2.2 CURRENT SITE CONDITIONS

The site is currently undeveloped virgin site with overgrown grass and scattered trees. Based on available topographic information, the site does have a significant amount of elevation change with ground surface elevations of approximately +105 to +130 feet, MSL. Please note that ground surface elevations at the boring locations were provided by Associated Land Surveying and Mapping, Inc. The ground surface elevations are provided on the boring logs.

2.3 PROPOSED CONSTRCTION

Based on the information provided to us, we understand that the project may consist of construction of six four-story buildings, pool bath building, club house building and a fitness building. The remainder of the site will consist of paved driveways and landscaped areas.



2.3.1 Structural Information/Loads

The following information explains our understanding of the structures and their loads; please note that loading details of the construction of the proposed buildings were provided by Ken Linehan from Fugleberg Koch.

SUBJECT	DESIGN INFORMATION / EXPECTATIONS					
Building Type	Apartments	Pool & Bath Club House Fitness				
# of Stories	Four stories above	One story above	One story above	One story above		
	grade	grade	grade	grade		
Framing	We anticipate that t	We anticipate that the buildings will be principally cast-in-place concrete with				
	minor reinforced masonry.					
Column Loads	ds 50 kips 10 kips 20 kips					
Wall Loads	8 kips per linear	3 kips per linear foot (klf) maximum				
	foot (klf) maximum					
Lowest Finish	Assumed two feet	Assumed two	Assumed two	Assumed two		
Floor	above existing	feet above	feet above	feet above		
Elevation	grades	existing grades	existing grades	existing grades		

Table	2.3.2.	1 Desig	gn Values	

3.0 FIELD EXPLORATION

3.1 FIELD EXPLORATION PROGRAM

The field exploration was planned with the objective of characterizing the project site in general geotechnical and geological terms and to evaluate subsequent field and laboratory data to assist in the determination of geotechnical recommendations.

3.1.1 Test Borings

The subsurface conditions were explored by drilling 23 soil test borings (B-1 through B-23). An allterrain vehicle (ATV)-mounted drill rig was utilized to drill the soil test borings. Borings were generally advanced to depths between 10 and 35 feet below the current ground surface. Subsurface explorations were completed under the general supervision of an ECS geotechnical engineer.

Boring locations were identified in the field by ECS personnel using GPS techniques or by taping from existing features prior to mobilization of our drilling equipment. The approximate as-drilled boring locations are shown on the Boring Location Diagram in Appendix A. Ground surface elevations noted on our boring logs were provided by Associated Land Surveying and Mapping, Inc.

Standard penetration tests (SPTs) were conducted in the borings at regular intervals in general accordance with ASTM D 1586. Small representative samples were obtained during these tests and were used to classify the soils encountered. The standard penetration resistances obtained to provide a general indication of soil shear strength and compressibility.



3.2 REGIONAL/SITE GEOLOGY

Central Florida geologic conditions can generally be described in terms of three basic sedimentary layers. The near-surface layer is primarily composed of sands containing varying amounts of silt and clay fines that are underlain by a layer of clay, clayey sand, phosphate, and limestone, which are locally referred to as the "Hawthorn Group". The third layer underlies the "Hawthorn Group" and is composed of limestone. The thickness of these three strata varies throughout Central Florida. In general, the surficial sands typically extend to depths of 40 to 70 feet below the ground surface, while the "Hawthorn Group" ranges from nearly absent in some locations to thicknesses greater than 100 feet. The limestone formation may be several thousand feet thick.

The groundwater hydrogeology of Central Florida can be described in terms of the nature and relationship of the three basic geologic strata. The near surface and upper stratum are fairly permeable and comprise the water table (unconfined) aquifer. The deep limestone formation of the Floridian aquifer is highly permeable due to the presence of large interconnected channels and cavities throughout the rock. The Floridian aquifer is the primary source of drinking water in Central Florida. These two permeable strata are separated by the relatively low permeability clays in the "Hawthorn Group." The amount of groundwater flow between the two aquifer systems is dependent on the thickness and consistency of the "Hawthorn Group" clay confining beds which, as previously stated, varies widely throughout Central Florida.



Figure 3.3.1 Regional Geologic Map



3.3 SOIL SURVEY MAPPING

Based on the Soil Survey for Lake County, Florida by the US Department of Agriculture Soil Conservation Service (USDA) the predominant predevelopment soil types at the site are identified and a summary of characteristics of this soil series is included below in Table 3.3.1.

Soil Type	Constituents	Drainage Class	Water Table		
8—Candler sand, 0 to 5 percent slopes	Fine sand	Excessively drained	> 6		
28—Myakka, wet, sands, 0 to 2 percent slopes	Fine sand	Poorly drained	0.5 to 1.5 feet		
42—Pompano sand	Fine sand	Poorly drained	0.5 to 1.5 feet		

Soil mapping of the site vicinity is presented in Figure 3.3.1.



Figure 3.3.1 Site Soil Survey



3.4 SUBSURFACE CHARACTERIZATION

The subsurface conditions encountered were generally consistent with published geological mapping. The following sections provide generalized characterizations of the soil strata encountered during our subsurface exploration. For subsurface information at a specific location, refer to the Boring Logs included in Appendix B.

Approximate Depth Range (ft)	Approximate Elev. Range (ft) ⁽²⁾	Stratum	Description	Ranges of SPT ⁽¹⁾ N-values (bpf)
0 to 35 ft	115-128.5 to 80-93.5	I	Fine sand with various amounts of fines (SP).	4 to 68

Table	3.4.1	Subsurface	Stratigraphy
-------	-------	-------------------	--------------

Notes: (1) Standard Penetration Test

(2) The Elevations were provided by Associated Land Surveying and Mapping, Inc.

3.5 GROUNDWATER OBSERVATIONS

Water levels were measured in our borings as noted on the soil boring logs in Appendix B. Average groundwater elevations measured at the time of drilling ranged between elevation 111 and 118 ft-datum. No further water measurements were conducted after finishing the borings. 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. The groundwater will fluctuate seasonally depending upon local rainfall. The rainy season in Central Florida is normally between June and September. Based upon our site specific field data, our review of the USDA Soils Survey of Lake County, the USGS topographic map of the area, published lake level data, the expected regional hydrogeology and our experience in the area, we estimate the seasonal high groundwater levels to be between elevation 113.5 and 122.5 ft datum. Variations in the location of the long-term water table may occur as a result of changes in precipitation, evaporation, surface water runoff, and other factors not apparent at the time of this exploration. Please note that ground surface elevations at the boring locations were provided by Associated Land Surveying and Mapping, Inc. Also, the ground surface elevations are provided on the boring logs. Additionally, Estimated Groundwater parameters are provided in the table below 3.5.1.

Boring ID	Ground Surface Elevation (ft- datum)	Encountered Groundwater Depth (ft)	Encountered Groundwater Elevation (ft-datum)	Seasonal High Ground Water Depth (ft)	Seasonal High Ground Water Elevation (ft- datum)
B-1	128.5	10	118.5	6	122.5
B-2	128.12	10	118.12	6	122.12
B-3	125.72	10	115.72	4	121.72
B-4	124.79	10	114.79	4	120.79
B-5	121.51	10	111.51	4	117.51
B-6	119.08	9	110.08	4	115.08
B-7	116.22	6	110.22	2.5	113.72
B-8	116.3	6	110.3	2.5	113.8
B-9	116.81	6	110.81	2.5	114.31
B-10	116.36	6	110.36	2.5	113.86

Table 3.5.1 Estimated Groundwater Parameters



B-11	116.6	6	110.6	2.5	114.1
B-12	115.26	4.5	110.76	1.5	113.76
B-13	115.79	5	110.79	2	113.79
B-14	116.22	6	110.22	2.5	113.72
B-15	116.26	6	110.26	2.5	113.76
B-16	115.43	5	110.43	1.5	113.93
B-17	115.56	5	110.56	1.5	114.06
B-18	116.75	5	111.75	2.5	114.25
B-19	127.8	NE*	NE*	>6	<121.8
B-20	117.55	7	110.55	3	114.55
B-21	116.97	7	109.97	3	113.97
B-22	NS*	7	NS*	3	NS*
B-23	117.63	8	109.63	3.5	114.13

Notes: NS: Not Surveyed NE: Not Encountered

4.0 LABORATORY TESTING PROGRAM

Representative soil samples were selected and tested in our laboratory to confirm the field classifications and to determine pertinent engineering properties. The laboratory testing program included visual sample classifications, moisture content tests and washed sieve gradation tests. Data obtained from the laboratory tests are included on the respective boring logs in the Appendix.

A Geotechnical Engineer classified each soil sample on the basis of texture and plasticity per the Unified Soil Classification System (USCS). The group symbols for each soil type are indicated in parentheses before the soil descriptions on the boring logs. A brief explanation of the Unified System is included with this report. The Geotechnical Engineer grouped the various soil types into the major zones noted on the boring logs. The stratification lines designating the interfaces between earth materials on the boring logs and profiles are approximate; in the field, the transitions may be gradual.

5.0 DESIGN RECOMMENDATIONS FOR BUILDINGS

5.1 BUILDING DESIGN

5.1.1 Foundations

According to the soil borings and soil testing for the proposed buildings, the materials anticipated at normal footing depths below the proposed floor slabs should consist of sandy soils with varying amounts of fines, with no roots and less than five percent organic content.

Structural information has been provided to us by Ken Linehan from Fugleberg Koch for the proposed development, the structural loads for the buildings range 10 to 50 kips and 3 to 8 kips/lf for columns and walls, respectively. We also assumed that final grades will be within about two feet of existing elevations.



Once the site is prepared based upon our geotechnical recommendations, the geotechnical analyses of the test boring data indicate the sandy soils expected at footing bearing levels and provided subgrades and structural fills are prepared as discussed herein, the proposed structure can be supported by conventional shallow foundations: individual column footings and continuous wall footings. The design of the foundation shall utilize the following parameters in table below.

Design Parameter Column Facting Wall Facting							
Design Faranteter	Column Footing	waii rooting					
Net Allowable Bearing Pressure ⁽¹⁾	2,500 psf	2,500 psf					
Acceptable Bearing Soil Material	(SP) Very Loose to Medium Dense SAND - Stratum I	(SP) Very Loose to Medium Dense SAND - Stratum I					
Minimum Width	24 inches	16 inches					
Minimum Footing Embedment Depth (below slab or finished grade)	24 inches	18 inches					
Estimated Total Settlement	1 inch	1 inch					
Estimated Differential Settlement	Less than 0.5 inches between columns	Less than 0.5 inches over 50 feet					

Table	5.1.1.1	Foundation	Design
-------	---------	------------	--------

Notes: (1) Net allowable bearing pressure is the applied pressure in excess of the surrounding overburden soils above the base of the foundation.

Our settlement analysis assumes the soils from the bottom of the footings to depths two feet below the bottom of the footing have been compacted prior to placing concrete in the footings when placed on structural fill material. As such, we recommend this zone be compacted to at least 98 percent of the maximum dry density, as determined by the Modified Proctor Compaction Test (ASTM D-1557), and bearing capacity must be checked with Dynamic Core Penetrometer (DCP) under each footing footprint.

5.1.2 Floor Slabs

The on-site natural sandy soils are considered suitable for support of the lowest floor slabs, although moisture control during earthwork operations may be necessary. It appears that the slabs for the structure will bear on the Stratum I. The following graphic depicts our soil-supported slab recommendations:



1. Drainage Layer Material: GRAVEL (GP, GW), SAND (SP, SW)



2. Subgrade compacted to 98% maximum dry density per ASTM D698

Subgrade Modulus: Provided the placement of Structural Fill and Granular Drainage Layer per the recommendations discussed herein, 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 one foot by one foot plate load test basis and assuming that subgrade is properly compacted.

5.2 SITE DESIGN CONSIDERATIONS

5.2.1 Pavement Sections

General Recommendations: Our scope of services did not include extensive sampling and LBR testing of existing subgrade or potential sources of imported fill for the specific purpose of a detailed pavement analysis. Instead, we have assumed pavement-related design parameters that are considered to be typical for the area soil types. The recommended pavement thicknesses presented in this report section are considered typical and minimum for the assumed parameters in the general site area. We understand that budgetary considerations sometimes warrant thinner pavement sections than those presented. However, the client, the owner, and the project designers should be aware that thinner pavement sections may result in increased maintenance costs and lower than anticipated pavement life. We recommend the following pavement section designs included in Table 5.2.1.1.

	Aspl	halt	Concrete			
Component	Standard	Heavy	Standard	Heavy		
Stabilized Subgrade	12"	12"	12"	12"		
Base Course (Limerock)	6″	8″	N/A	N/A		
Surface Course	1.5″	2″	5″	6″		

Table 5.2.1.1: Pavement Structures Sections

All pavement subgrades should be prepared in accordance with the recommendations presented in the section entitled Earthwork Operations.

In areas where Portland cement concrete pavement is planned, the concrete should be placed upon a minimum of 12 inches of compacted, free draining material and compacted to 98% of the Modified Proctor maximum dry density (ASTM D-1557).

In areas where asphaltic concrete pavements are used, we suggest stabilizing the subgrade materials to a minimum Florida Bearing Value (FBV) of 75 pounds per square inch (psi). As an alternate for the FBV, materials can have a Limerock Bearing Ratio (LBR) of 40 percent. All stabilized subgrade materials should be compacted to 98 percent of the Modified Proctor (ASTM D-1557) maximum dry density and meet specification requirements for Type B or Type C Stabilized Subgrade by the Florida Department of Transportation (FDOT). The stabilized subgrade materials of a blend of on-site soils and imported materials. If a blend is



proposed, we recommend that the contractor performs a mix design to find the optimum mix proportions.

Base Course: Based on the encountered water table we have assumed that groundwater will be within two feet below pavement subgrade. ECS anticipates that crushed concrete will be the most economical base course for this project.

Crushed concrete should follow the FDOT specification for material qualifications and placement. Place crushed concrete base in maximum six-inch lifts and compact to a minimum density of 95 percent of the Modified Proctor maximum dry density according to specification in ASTM D-1557.

Perform compliance testing for the base course to a depth of one foot at a frequency of one test per 5,000 square feet, or at a minimum of two test locations, whichever is greater.

Effects of Groundwater: One of the most critical influences on the pavement performance in Western Central Florida is the relationship between the pavement subgrade and the seasonal high groundwater level. Many roadways and parking areas have been destroyed as a result of deterioration of the base and the base/surface course bond. Regardless of the type of base selected, we recommend that the seasonal high groundwater and the bottom of the base course be separated by at least 12 inches for crushed concrete and 18 inches for limerock.

Landscape Drains and Curbing: If needed, where landscaped sections are located adjacent to parking lots or driveways, we recommend that drains be installed around these landscaped sections to protect the asphalt pavement from excess rainfall and over irrigation. Migration of irrigation water from the landscape areas to the interface between the asphalt and the base usually occurs unless landscape drains are installed. This migration often causes separation of the wearing surface from the base and subsequent rippling and pavement deterioration. The underdrains or strip drains should be routed to a positive outfall at the pavement area catch basins.

It is recommended to construct curbing around landscaped sections adjacent to parking lots and driveways with full-depth curb sections. Using extended curb sections which lie directly on top of the final asphalt level, or eliminating curbing entirely, can allow migration of irrigation water from the landscaped areas to the interface between the asphalt and the base. This migration often causes separation of the wearing surface from the base and subsequent rippling and pavement deterioration.

6.0 SITE CONSTRUCTION RECOMMENDATIONS

6.1 SUBGRADE PREPARATION

6.1.1 Subgrade Preparation, Stripping and Grubbing

Stripping soft or unsuitable material from the building and pavement areas should also be performed. Unsuitable material consists of soils with more than five percent organics content or more than 12 percent passing the No. 200 sieve. Any other soft or unsuitable materials from the ten-foot expanded building and five-foot expanded pavement limits and to five feet beyond the



toe of structural fills. ECS should be called to verify that topsoil and unsuitable surficial materials have been completely removed prior to the placement of Structural Fill or construction of structures.

6.1.2 Proofrolling

After removing all unsuitable surface materials, and prior to the placement of any structural fill or other construction materials, the exposed subgrade should be examined by the Geotechnical Engineer or authorized representative. The exposed subgrade should be thoroughly proofrolled with previously approved construction equipment having a minimum axle load of 10 tons (e.g. fully loaded tandem-axle dump truck). The areas subject to proof rolling should be traversed by the equipment in two perpendicular (orthogonal) directions with overlapping passes of the vehicle under the observation of the Geotechnical Engineer or authorized representative. This procedure is intended to assist in identifying any localized yielding materials. In the event that unstable or "pumping" subgrade is identified by the proofrolling, those areas should be marked for repair prior to the placement of any subsequent structural fill or other construction materials. Methods of repair of unstable subgrade, such as undercutting or moisture conditioning should be discussed with the Geotechnical Engineer to determine the appropriate procedure with regard to the existing conditions causing the instability. A test pit(s) may be excavated to explore the shallow subsurface materials in the area of the instability to help in determined the cause of the observed unstable materials and to assist in the evaluation of the appropriate remedial action to stabilize the subgrade.

6.1.3 Subgrade Stabilization

Subgrade Compaction: Upon completion of subgrade documentation, the exposed subgrade within the 10-foot expanded building and five-foot expanded pavement limits should be moisture conditioned to within -1 and +3 % of the soil's optimum moisture content and be compacted with suitable equipment (minimum 10-ton roller) to a depth of 10 inches. Subgrade compaction within the expanded building and pavement limits should be to a dry density of at least 98 percent of the Modified Proctor maximum dry density (ASTM D1557). ECS should be called on to document that proper subgrade compaction has been achieved.

Subgrade Compaction Control: The expanded limits of the proposed construction areas should be well defined, including the limits for buildings, pavements, fills, and slopes, etc. Field density testing of subgrades will be performed at frequencies in Table 6.1.3.1.

Table of 2002 Trequency of ourbarde compaction recting						
Location	Frequency of Tests					
Expanded Building Limits	One test per 2,000 sq. ft. per lift					
Pavement Areas	One test per 5,000 sq. ft. per lift					
Utility Trenches	One test per 200 linear ft. per lift					
All Other Non-Critical Areas	One test per 10,000 sq. ft. per lift					

 Table 6.1.3.1 Frequency of Subgrade Compaction Testing

6.2 EARTHWORK OPERATIONS



6.2.1 Structural Fill Materials

Unsatisfactory Materials: Unsuitable material typically consists of soils with more than five percent organics content or more than 12 percent passing the No. 200 sieve, as well as topsoil and organic materials (OH, OL).

Borrow Suitability: The following Engineered/Structural Fill types are recommended for use on this project:

Fine sand (SP) can be utilized as structural and pavement subgrade fill material provided that the natural moisture content is within a desirable range to obtain compaction.

Fine sand with silt (SP-SM) and fine sand with clay (SP-SC) can be utilized as structural and pavement subgrade fill material provided that the natural moisture content is within a desirable range to obtain compaction. It should be noted that due to higher fine content, soil may be more sensitive to moisture and may require more handling.

Clayey fine sand (SC) and silty fine sand (SM) is more difficult to use as fill because they are more moisture sensitive. These soils may be used as structural fill but will require moisture conditioning.

It is recommended that all materials to be used for Engineered Fill be analyzed and approved by the Geotechnical Engineer prior to their use on the site.

Subgrade soils disturbed by contractor operations shall be recompacted to the specifications of this report. Subgrade soils which are excessively wet but otherwise suitable by soil classification (inorganic soil material meeting the specifications above) are not considered unsuitable by definition and shall be moisture conditioned and recompacted.

6.2.2 Compaction

Structural Fill Compaction: Assuming that the organic content of the soils does not exceed 10 percent, structural fill should be placed in loose lifts, which do not exceed 12 inches in thickness, and should be compacted to at least 98 percent of the maximum dry density, as determined by the Modified Proctor Compaction Test (ASTM D-1557) within the lift thickness. Generally, the moisture content of the fill materials should be maintained between two percentage points below to the optimum moisture content for the fill material, as determined by ASTM D-1557. Fill placed in non-structural areas (e.g. grassed areas) should be compacted to at least 90 percent of the maximum dry density according to ASTM D-1557, in order to avoid significant subsidence. ECS should be called on to document that proper fill compaction has been achieved.

Fill Compaction Control: The expanded limits of the proposed construction areas should be well defined, including the limits of the fill zones for building and pavements at the time of fill placement. Grade controls should be maintained throughout the filling operations. All filling operations should be observed on a full-time basis by a qualified representative of the construction testing laboratory to determine that the minimum compaction requirements are being achieved. Field density testing of fills will be performed at the frequencies shown in Table 6.2.2.1, but not less than one test per lift.



Table 0.2.2.1 frequency of compaction rests in fin Areas						
Location	Frequency of Tests					
Expanded Building Limits	One test per 2,500 sq. ft. per lift					
Pavement Areas	One test per 10,000 sq. ft. per lift					
Utility Trenches	One test per 200 linear ft. per lift					
Outparcels/SWM Facilities	One test per 5,000 sq. ft. per lift					
All Other Non-Critical Areas	One test per 10,000 sq. ft. per lift					

Table 6.2.2.1 Frequency of Compaction Tests in Fill Areas

Compaction Equipment: Compaction equipment suitable to the soil type being compacted should be used to compact the subgrades and fill materials. A vibratory steel drum roller should be used for compaction of coarse-grained soils (Sands) as well as for sealing compacted surfaces.

Fill Placement Considerations: Fill materials should not be placed on excessively wet soils. Excessively wet soils or aggregates should be scarified, aerated, and moisture conditioned.

At the end of each work day, all fill areas should be graded to facilitate drainage of any precipitation and the surface should be sealed by use of a smooth-drum roller to limit infiltration of surface water. During placement and compaction of new fill at the beginning of each workday, the Contractor may need to scarify existing subgrades to a depth on the order of four inches so that a weak plane will not be formed between the new fill and the existing subgrade soils.

Proper drainage should be maintained during the earthwork phases of construction to prevent ponding of water which has a tendency to degrade subgrade soils.

If any problems are encountered during the earthwork operations, or if site conditions deviate from those encountered during our subsurface exploration, the Geotechnical Engineer should be notified immediately.

We recommend that favorable unit rates be established in the construction contract for undercutting and backfilling. Unit rates could be established as follows:

- a. Undercut and backfill with Imported Engineered Fill, per cubic yard in place;
- b. Undercut and backfill with On-site Borrow Engineered Fill, per cubic yard in place;
- c. Undercut and backfill with Aggregate Base Material, per ton;
- d. Undercut and backfill with No. 57 Stone (wet areas and below footings), per ton;
- e. Dispose of undercut material off-site, per cubic yard,
- f. Place medium duty, woven and non-woven geotextile fabrics, per square yard. Suitable non-woven fabric for use in stabilization and separation would include Mirafi 160N or equivalent. Suitable woven fabric would include Mirafi 600X or equivalent.

The Geotechnical Engineer should be called on to recommend and/or approve material type and placement procedures where subgrade remediation is required.

6.3 FOUNDATION AND SLAB 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 the same day that excavations are made. If the bearing soils are softened by surface water intrusion or exposure, the softened soils must be removed from the foundation excavation bottom immediately prior to placement of concrete. If the excavation must remain open overnight, or if rainfall becomes imminent while the bearing soils are exposed, a 1 to 3-inch thick "mud mat" of "lean" concrete should be placed on the bearing soils before the placement of reinforcing steel.

Footing Subgrade Observations: Most of the soils at the foundation bearing elevation are anticipated to be suitable for support of the proposed structure. It will be important to have the geotechnical engineer of record observe the foundation subgrade prior to placing foundation concrete, to confirm the bearing soils are what was anticipated. If 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 lean concrete ($f'_c \ge 1,000$ psi at 28 days) up to the original design bottom of footing elevation; the original footing shall be constructed on top of the hardened lean concrete.

Slab Subgrade Verification: A representative of ECS should be called on to observe exposed subgrades within the expanded building limits prior to Structural Fill Placement to assure that adequate subgrade preparation has been achieved. A proofrolling using a drum roller or loaded dump truck should be performed in their presence at that time. Once subgrades have been prepared to the satisfaction of ECS, subgrades should be properly compacted and new Structural Fill can be placed. Existing subgrades to a depth of at least 10 inches and all Structural Fill should be moisture conditioned to within -1/+3 percentage points of optimum moisture content then be compacted to the required density. If there will be a significant time lag between the site grading work and final grading of concrete slab areas prior to the placement of the subbase stone and concrete, a representative of ECS should be called on to verify the condition of the prepared subgrade. Prior to final slab construction, the subgrade may require scarification, moisture conditioning, and re-compaction to restore stable conditions.

6.4 UTILITY INSTALLATIONS

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

Utility Backfilling: The granular bedding material should be at least four inches thick, but not less than that specified by the project drawings and specifications. Fill placed for support of the utilities, as well as backfill over the utilities, should satisfy the requirements for Structural Fill given in this report. Compacted backfill should be free of topsoil, roots, ice, or any other material designated by ECS as unsuitable. The backfill should be moisture conditioned, placed, and compacted in accordance with the recommendations of this report.

Excavation Safety: All excavations and slopes should be made and maintained in accordance with OSHA excavation safety standards. The contractor is solely responsible for designing and



constructing stable, temporary excavations and slopes and should shore, slope, or bench the sides of the excavations and slopes as required to maintain stability of both the excavation sides and bottom. 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.

6.5 GENERAL CONSTRUCTION CONSIDERATIONS

Moisture Conditioning: During rainy season of the year, delays and additional costs should be anticipated. At these times, moisture conditioning may be required. The rainy season in Florida is normally between June and September. Alternatively, during the drier times of the year, moisture may need to be added to the soil to provide adequate moisture for successful compaction according to the project requirements.

Subgrade Protection: Measures should also be taken to limit site disturbance, especially from rubber-tired heavy construction equipment, and to control and remove surface water from development areas, including structural and pavement areas. It would be advisable to designate a haul road and construction staging area to limit the areas of disturbance and to prevent construction traffic from excessively degrading sensitive subgrade soils and existing pavement areas. Haul roads and construction staging areas could be covered with excess depths of aggregate to protect those subgrades. The aggregate can later be removed and used in pavement areas.

Surface Drainage: Surface drainage conditions should be properly maintained. Surface water should be directed away from the construction area, and the work area should be sloped away from the construction area at a gradient of one percent or greater to reduce the potential of ponding water and the subsequent saturation of the surface soils. At the end of each work day, the subgrade soils should be sealed by rolling the surface with a smooth drum roller to minimize infiltration of surface water.

Erosion Control: The surface soils may be erodible. Therefore, the Contractor should provide and maintain good site drainage during earthwork operations to maintain the integrity of the surface soils. All erosion and sedimentation controls should be in accordance with sound engineering practices and local requirements.

7.0 CLOSING

ECS has prepared this report of findings, evaluations, and recommendations to guide geotechnical-related design and construction aspects of the project.

The description of the proposed project is based on information provided to ECS by Exploria Resorts and your office. If any of this information is inaccurate, either due to our interpretation of the documents provided or site or design changes that may occur later, ECS should be contacted



immediately in order that we can review the report in light of the changes and provide additional or alternate recommendations as may be required to reflect the proposed construction.

We recommend that ECS be allowed to review the project's plans and specifications pertaining to our work so that we may ascertain consistency of those plans/specifications with the intent of the geotechnical report.

Field observations, monitoring, and quality assurance testing during earthwork and foundation installation are an extension of and integral to the geotechnical design recommendation. We recommend that the owner retains these quality assurance services and that ECS be allowed to continue our involvement throughout these critical phases of construction to provide general consultation as issues arise. ECS is not responsible for the conclusions, opinions, or recommendations of others based on the data in this report.



APPENDIX A – Drawings & Reports

Site Location Diagram Boring Location Diagram









SITE LOCATION DIAGRAM Summer Bay Apartments 2 Lake County, Florida

FIGURE NO. 2
CHECKED BY AVR
DATE 04-05-2017

SOURCE: Google Earth



APPENDIX B – Field Operations

Reference Notes for Boring Logs Boring Logs B-1 and B-23





REFERENCE NOTES FOR BORING LOGS

MATERIAL ¹	,2		DRILLING SAMPLING SYMBOLS & ABBREVIATIONS								
	ASPH	ALT	SS	Split Spoo	n Sample	r	PM	Press	suremeter T	est	
			ST	Shelby Tu	be Sample	er	RD	Rock	Bit Drilling		
	CONC	RETE	WS	Wash San	nple		RC	Rock	Core, NX, E	BX, AX	
			BS	Bulk Sam	ole of Cutt	ings	REC	Rock	Sample Re	covery %	
00002	GRAVEL		PA	Power Aug	ger (no sample) RQD R				Quality Des	signation %	
N/XV			HSA	Hollow Ste	em Auger						
SXII)	TOPS	DIL				PARTICLE	SIZE ID	ENTIF			
	VOID		DESIGNA	DESIGNATION PARTICLE SIZES							
<u> </u>			Boulders	3	12 inc	ches (300 m	m) or la	rger			
	BRICK		Cobbles		3 incl	nes to 12 in	ches (7	5 mm t	to 300 mm)		
80 .0	ACCP	EGATE BASE COURSE	Gravel:	Coarse	3⁄4 inc	h to 3 inche	s (19 m	n to 7	5 mm)		
⁰ 0 00 vo (Addn	EGATE BASE COURSE		Fine	4.75 ı	mm to 19 m	m (No. 4	sieve	e to ¾ inch)		
A 200 4	FILL ³	MAN-PLACED SOILS	Sand:	Coarse	2.00 ו	mm to 4.75	mm (No	. 10 to	No. 4 sieve	e)	
	~~~			Medium	0.425	mm to 2.00	) mm (N	o. 40 t	o No. 10 sie	eve)	
8 W L 4	GW	gravel-sand mixtures, little or no fines		Fine	0.074	mm to 0.42	25 mm (l	No. 20	0 to No. 40	sieve)	
	GP	POOBLY-GRADED GRAVEL	Silt & Cla	ay ("Fines")	<0.07	'4 mm (sma	ller than	a No.	200 sieve)		
\$ ? <u>.</u> .		gravel-sand mixtures, little or no fines						_			r
Philip	GM	SILTY GRAVEL		COHESIVE SILTS & CLAYS					COARSE	FINE	
		gravel-sand-silt mixtures	UNCO	NFINED	5		7			GRAINED	
7.42	GC		Сомря	RESSIVE	SPT	CONSISTE	NCY'	_		( /0)	(%)
<u> ISS 7 2</u>	0.11		STRENG	GTH, Q _P ⁻	(BPF)	(COHESI	VE)	Tra	ace	<u>&lt;</u> 5	<u>&lt;</u> 5
	511	gravelly sand, little or no fines	<0	).25	<3	very S	οπ	Du	ual Symbol	10	10
	SP	POOBLY-GRADED SAND	0.25 -	- <0.50	3-4 5 0	Soli	C+iff	(ex	(: SW-SM)		
8 8 	0.	gravelly sand, little or no fines	0.50 -	- <1.00	0-0 0-15	Stiff	Sun	W	ith	15 - 20	15 - 25
	SM	SILTY SAND	1.00 -	- <2.00	9-15 16-30	Vory S	tiff	Ac	ljective « "Siltv")	<u>&gt;</u> 25	<u>&gt;</u> 30
8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8		sand-silt mixtures	2.00 -	- <4.00	31 - 50	Harc		(0)	(. Only)		
fre forstrader	SC	CLAYEY SAND	4.00 \S	- 0.00 2.00	>50	Verv H	ard	<b>—</b>			6
par		sand-clay mixtures	>0	5.00	200	Very II	aru		W	ATER LEVELS	S ^o
	ML	SILT	CRAVE				ен те	Ť	WL	Water Level (	(WS)(WD)
	мн		GRAVEL	20, 3AND3						(WS) While	Sampling
	IVIT I	high plasticity		581		DENSITY		খাচ	CLIM/	(WD) While	
	CL	LEAN CLAY		<5		Very Loose		÷		Seasonal Hig	n w i Domovol
		low to medium plasticity	5	5 - 10		Loose		- The second sec	AUN SWT	Stabilized We	
	СН	FAT CLAY	1.	1 - 30	M	edium Dens	se	<u></u>			aler radie
		high plasticity	3.	1 - 50		Dense			WCI	Wet Cave-In	
$\mathcal{D}\mathcal{D}$	OL	ORGANIC SILT or CLAY non-plastic to low plasticity		>50		Very Dense			WCI	Wel Cave-III	
2 <u>2</u> <u>8</u> 3007 (200), 5507 (200 7007 (200), 5507 (200 7007 (200), 5507 (200 7007 (200), 5507 1000 (200), 5507 1000 (200), 5507	ОН	ORGANIC SILT or CLAY high plasticity									
	РТ	PEAT highly organic soils									

¹Classifications and symbols per ASTM D 2488-09 (Visual-Manual Procedure) unless noted otherwise.

²To 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.

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

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

⁵Standard 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).

⁶The 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.

⁷Minor deviation from ASTM D 2488-09 Note 16.

⁸Percentages are estimated to the nearest 5% per ASTM D 2488-09.

Reference Notes for Boring Logs (FINAL 10-13-2016)

GRAINED (%)⁸

15 - 25 <u>></u>30











Bryanstone Partnership     24:6036     B-6       PROJECT NAME     ARCHITECT-ENGINEER       Summer Bay Apartments 2 GEO     Bryanstone Partnership       SITE LOCATION        US 192, Four Corners, Lake County, FL     FOR CONTRACT CONTR	1 OF 1				
Summer Bay Apartments 2 GEO     Bryanstone Partnership       SITE LOCATION     -O-       US 192, Four Corners, Lake County, FL     -O-       NORTHING     EASTING     STATION	CALIBRATED PENETROMETER TONS/FT ²				
US 192, Four Corners, Lake County, FL NORTHING EASTING STATION ROOM					
OS 192, Four corners, Lake County, FL       Northing     Easting       Station     Rot	CK OUALITY DESIGNATION & RECOVERY				
	RQD% REC%				
LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN LIN	STIC WATER LIQUID IIT% CONTENT% LIMIT%				
	$\leftarrow$ $\frown$ $\triangle$				
U HI	STANDARD PENETRATION BLOWS/FT				
0 S-1 ST 0 0 (SP) SAND, brown, dry					
S-3 SS 24 24 (SP) SAND, brown to gray, dry to wet, loose 3 3 and medium dense 114 4 8-5	8				
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	\- I-⊗				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	- ≪				
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	I=⊗ : : : : : :  : : : : :				
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$					
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	18-⊗:				
	20-⊗				
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU TH	S. IN-SITU THE TRANSITION MAY BE GRADUAL.				
¥ WL 9.0' WS □ WD ⊠ BORING STARTED 03/30/17      CAVE IN DEF          ¥ WL(SHW) 4.0' ¥ WL(ACR)         BORING COMPLETED 03/30/17      HAMMER TY	PTH PE Manual				
₩     WL     RIG Track     FOREMAN K Hicks     DRILLING M	DRILLING METHOD				
























CLIENT							JOB # BORING #				SHEET					
Bryan PROJECT	Ston NAME	e Pa	artn	ersh	ip		2 ARCHIT	4:6036		B-19			1 OF 1	- 2	CQ	
SUMM		Bay <i>I</i>	Apa	irtme	ents 2 GEO		Bryanstone Partnership					i				
			~			-						-O- CALIBRATED PENETROMETER TONS/FT ²				
NORTHIN	<u>our</u>		EASTIN	<u>, Lake Count</u> ^{IG}	STATION	ROCK QUALITY RQD%					K quality de Rqd%	ESIGNATION & RECOVERY - REC% ———				
			(NI)	7	DESCRIPTION OF I	MATERIAL		ENGLISH	UNITS	S (F		PLAS LIMIT	TIC F% CC	WATER DNTENT%	LIQUID LIMIT%	
Ē	9. g	ТҮРЕ	DIST	ERY (II	BOTTOM OF CASIN	IG 🗩	LOSS	OF CIRCULATIO	N 2008	LEVEI ION (F	.9	×		•	Δ	
<b>DEPTH</b> (	SAMPLE	SAMPLE	SAMPLE	RECOVE	SURFACE ELEVAT	ION 127.80				WATER ELEVAT	BLOWS/		⊗ STANDA B	RD PENETR LOWS/FT	ATION	
°	S-1	ST	0	0	(SP) SAND, b	rown, dry			_	_					· · · · · · · · · · · · · · · · · · ·	
	S-2	ST	0	0						— 126 						
	S-3	SS	24	24	(SP) SAND, b	rown, dry, loose				<u> </u>	2 3 3	6-⊗				
6	S-4	SS	24	24						= 	4 3 3 3	6-🔗				
	S-5	SS	24	24						120 	2 2 3	$\otimes$				
=					END OF BOR	ING @ 10'			-	_	3			÷		
12-										=						
									-	_ 114						
									-							
=													· · ·			
18 —										=			: :	:		
									F							
										108 			: :			
=										=						
24													: :		: :	
=										102						
										=			:	÷		
										_						
30 —									E	=						
										96			· · ·	:		
										=						
										-			: :	÷		
36													<u> </u>			
							TE BOUNDARY LINES BETWEEN SOIL TYPES. IN				ES. IN-					
₩ WL(SHW) >6.0' ₩ WL(ACR) BORING COMP							TED	03/29/17			HAM	MER TYP	E Manual			
₩ WL RIG Track							FOREMAN K Hicks DRILLING METHOD					THOD				

CLIENT							JOB # BORING #						SHEET				
Bryar PROJEC	e Pa	artn	ersh	ip		ARCHI	24:6036 TECT-ENGINEER	B-20 1 OF 1						Ξ	C		
	ner E	Bay /	Apa	rtme	ents 2 GEO		Bryanstone Partnership										) ]_1v
	оо г	·	<b>^</b>									-O- 0	CALIBRATE	ED PEI	NETROME	TER TON	IS/FT ²
NORTHIN	<u>92, F</u> NG	our		EASTIN	ig IG	STATION	FL FATION ROCK QUALITY DESI RQD%						' DESI	GNATION REC%	& RECO\ 	'ERY	
			(IN) :	î	DESCRIPTION OF I	L MATERIAL		ENGLISH	UNITS	(L-		PLAS LIMIT	PLASTIC WATER LIQU LIMIT% CONTENT% LIMIT			QUID MIT%	
(FT)	ġ	: TYPE	DIST	ERY (II	BOTTOM OF CASIN	IG 📕	LOSS	OF CIRCULATIO	N 2002	LEVEI ION (F	.9,	× •					Δ
DEPTH	SAMPLE	SAMPLE	SAMPLE	RECOVI	SURFACE ELEVAT	ION 117.55				WATER ELEVAT	BLOWS		⊗ stan	NDARD BLO	) PENETR/ WS/FT	ATION	
0	S-1	SI	0	0	(SP) SAND, li	ght brown, dry											
-	S-2	ST	0	0						 							
=	S-3	SS	24	24	(SP) SAND, b	rown, dry to wet	, loose	;		 	2 2 4	6-🛞					
6	S-4	SS	24	24							5 2 3 3	6-🔗					
-	S-5	SS	24	24						 108	3 2 3 4	$\otimes$	22.1-	•			
-	-				END OF BOR	ING @ 10'					4						
12-																	
=										=							
-																	
=																	
18	-																
-										 =							
										 					:		
=										96 							
24																	
	-												: :		:		
										= 							
	-									90			:		:		
— —																	
30 -										<u> </u>			:		:		
=										=					:		
_										84			: :		:		
=										_							
36	-									=							
THE STRATIFICATION LINES REPRESENT THE APP							PROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES.					SITU THE	TRANSITI	ON MA	Y BE GRAD	UAL.	
₩         WL         7.0'         WS         WD         BORING							TED 03/29/17 CAV				CAVE	AVE IN DEPTH					
≝ WL(S	SHW) 3	8.0'	Ţ	WL(AC	R)	BORING COMPLE	TED	03/29/17			HAM	MER TYP	E Manua	l			
₩ ₩L RIG						RIG Track	CK FOREMAN K HICKS DRILLING METHOD										

CLIENT							JOB # BORING #					SHEET				
Bryan	Ston	e Pa	artn	ershi	ip		2 ARCHIT	4:6036 ECT-ENGINEER		<u>B-21</u>		1 OF 1		2	<u>Co</u>	
Summ	ner E	ay /	Apa	rtme	ents 2 GEO		Brya	nstone Pa	rtnersh	nip		ſ				
			~			-							- CALIBRATED PENETROMETER TONS/FT ²			
NORTHING	<u>Z, F</u> G	our		<u>ners</u> Eastin	ig IG	STATION	, FL STATION ROCK QUALITY DE RQD%						Y DES	REC%	& RECOVERY	
			(NI)	(1	DESCRIPTION OF	MATERIAL		ENGLISH	UNITS	n F		PLASTIC LIMIT%	W COI	/ATER NTENT%	LIQUID LIMIT%	
(L	ġ	ТҮРЕ	DIST.	RY (IN	BOTTOM OF CASIN		LOSS	OF CIRCULATIO		ON (F	<u>ه</u>	×	<u>\</u>			
DEPTH (	SAMPLE	SAMPLE	SAMPLE	RECOVE	SURFACE ELEVATI	ION 116.97				ELEVATI	BLOWS/(	⊗ sta	NDAR BL	ARD PENETRATION BLOWS/FT		
0	S-1	ST	0	0	(SP) SAND, g	ray to dark brow	/n, dry			-			:			
	S-2	ST	0	0						<u>-</u> 114						
	S-3	SS	24	24	(SP) SAND, li dense to loose	ght brown, dry to	o wet, n	nedium		_	3 5 6	11-⊗				
6	S-4	SS	24	24					-	7	10 5 5	10-⊗				
	S-5	SS	24	24					- - 108		5 6 3 4	⊗ 19.1-	•			
					END OF BOR	END OF BORING @ 10'										
12 —									_	_						
										_						
									_	- 102						
=										_		÷		:		
18 —										_						
										-			:	:		
									_	_						
									_	- 96 -		÷		:		
										_						
24 —									_	_		:	•			
=										_						
_									_	- 90			•			
										-		÷				
30										_						
										-		÷		:		
									_	_		÷		:		
									-	- 84						
									=	_				:		
36 —										_						
	THE	STR	ATIFI	CATION	I LINES REPRESEN	T THE APPROXIMAT	e Bouni	DARY LINES BET	WEEN SC	DIL TYP	ES. IN-	SITU THE TRANSI	TION M	AY BE GRAD	UAL.	
¥w∟7	7.0'		_	WS	WD	BORING STARTE	BORING STARTED 03/29/17 CAV					CAVE IN DEPTH				
₩ WL(SH	HW) 3	.0'	Ţ	WL(AC	R)		ETED	03/29/17			HAM	MER TYPE Manu	al			
₩ WL RIG						RIG Track		FOREMAN K	Hicks		DRIL	LING METHOD				

CLIENT						JOB # BORING #				SHEET					
Bryan PROJECT		e Pa	artn	ersh	ip		24 ARCHITE	:6036 CT-ENGINEER		B-22	2	1	OF 1	Ξ	<u>Co</u>
Sumn	ner E	Bay /	Ара	artme	ents 2 GEO		Bryar	istone Pai	rtner	ship					
			~			-						-O- CALIBRATED PENETROMETER TONS/FT ²			
US 19 NORTHIN	1 <u>2, F</u> IG	<u>our</u>		EASTIN	i, <u>Lake Coun</u> IG	STATION	<u>y, FL</u> station					ROCK QUALITY DESIGNATION & RECOVERY			
			(N)	7	DESCRIPTION OF	MATERIAL		ENGLISH	UNITS	s (F		PLAST LIMIT	-IC V % CO	VATER NTENT%	LIQUID LIMIT%
(FT)	Š	ТҮРЕ	DIST	ERY (II	BOTTOM OF CASIN	NG	LOSS O	F CIRCULATIO	N 2002	ION (F		$\times$		•	∆
DEPTH	SAMPLE	SAMPLE	SAMPLE	RECOVE	SURFACE ELEVAT	ION				WATER ELEVAT	BLOWS		⊗ STANDAF BL	RD PENETRATION OWS/FT	
⁰	S-1	ST	0	0	(SP) SAND, g	ray to light brow	n, dry								
	S-2	ST	0	0						<u> </u>					
=	S-3	SS	24	24	(SP) SAND, li	ght brown, dry to	o wet, loo	ose			1 2 2	≪-4			
6 <u> </u>	S-4	SS	24	24						<u>∑</u> =	3 3 4	7->>			
	S-5	SS	24	24							4 3 2	$\bigotimes_{4}$			
=					END OF BOR	RING @ 10'					3				
12-	-														
=	•												:		
_															
												÷			:
18	•														
	•														
=															
24												÷		÷	:
	-											i		÷	:
	•														
												:		: :	
30 —															
												:	:	: :	:
=															
36	-														
	ł				I						I				
	тн	E STR/	ATIFI	CATION	LINES REPRESEN	T THE APPROXIMAT		ARY LINES BET	WEEN	SOIL TYP	PES. IN-	SITU THE	TRANSITION M	AY BE GRAD	UAL.
Ţ WL	7.0'			WS	WD	BORING STARTE	D (	)3/29/17			CAVI	E IN DEPTH	H		
<u>₹</u> WL(S	HW) 3	8.0'	Ţ	WL(AC	R)	BORING COMPLE	eted (	)3/29/17			HAM	MER TYPE	Manual		
₩ WL						RIG Track		FOREMAN K	Hicks		DRIL	LING METH	HOD		

CLIENT							JOB # BORING #					SHEET				
Bryan		e Pa	artn	ersh	ip		24 ARCHITE	:6036 CT-ENGINEER	B-2	23	1	OF 1	Ξ	20		
Summ		Bay <i>i</i>	Apa	irtme	ents 2 GEO	Bryanstone Partnership										
			~			-					CALIBRATED PENETROMETER TONS/FT ²					
NORTHIN	9 <u>2, F</u> G	our		EASTIN	, Lake Count ^{IG}	<b>Y, FL</b> STATION					ROCK ( RQ	ROCK QUALITY DESIGNATION & RECOVERY RQD% REC%				
			Ű.	Î	DESCRIPTION OF M	IATERIAL		ENGLISH	UNITS	-	PLASTIC LIMIT%		/ATER NTENT%	LIQUID LIMIT%		
(FT)	Q	: TYPE	DIST	ERY (II	BOTTOM OF CASIN	G	LOSS O	F CIRCULATIO		10N (F			•	∆		
DEPTH	SAMPLE	SAMPLE	SAMPLE	RECOVE	SURFACE ELEVATI	on 117.63			WATER	BLOWS,	¢	ATION				
0	S-1	ST	0	0	(SP) SAND, b	rown to light bro	wn, dry						:			
	S-2	ST	0	0												
	S-3	SS	24	24	(SP) SAND, b	rown to gray, dr	y to wet,	loose		4 4 4 4	8-8					
6	S-4	SS	24	24						5 4 5 5	10->>	<b>0</b> 20.5				
	S-5	SS	24	24						5 4 3 8 4						
					END OF BOR	END OF BORING @ 10'										
12													:			
=									E E							
_										2						
=										2						
18 —									=				:			
													:			
=									96			:	:			
									=							
									_				:			
=																
									90			:	:			
									-							
30 —									=			:	:			
=									- 84				:			
									=							
30 -									F				:	:		
	<del></del>	- 07-	ATIC:	047101												
¥ wL 8	гні 8.0'	E STRA	ATIFI			BORING STARTE	THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. II BORING STARTED 03/29/17					3. IN-SITU THE TRANSITION MAY BE GRADUAL.				
₩_ WL(SP	HW) 3	.5'	Ţ	WL(AC	R)	BORING COMPLE	BORING COMPLETED 03/29/17 HAMMER TYPE Manual									
₩ WL						RIG Track	RIG Track FOREMAN K Hicks D					DRILLING METHOD				

# **APPENDIX** C – Laboratory Testing

Laboratory Test Results Summary



				Laboratory T	esting	g Sun	nmar	у				Page 1 of 1
		Sample Denth MC1 Soil				berg Li	mits3	Percent	Moisture - De	nsity (Corr.)5		
Sample Source	Sample Number	Depth (feet)	MC1 (%)	Soil Type ²	LL	PL	PI	Passing No. 200 Sieve ⁴	Maximum Density (pcf)	Maximum Optimum Density Moisture (pcf) (%)		Other
B-1	S-6	13.50 - 15.00	13.7					2.5				
B-2	S-5	8.00 - 10.00	0.9					1.4				
B-5	S-7	18.50 - 20.00	22.1					3.0				
B-7	S-4	6.00 - 8.00	17.9					1.6				
B-11	S-5	8.00 - 10.00	21.1					3.0				
B-13	S-7	18.50 - 20.00	24.3					2.1				
B-15	S-6	13.50 - 15.00	24.9					3.9				
B-16	S-7	18.50 - 20.00	24.2					2.9				
B-18	S-3	4.00 - 6.00	16.0					2.2				
B-20	S-5	8.00 - 10.00	22.1					1.2				
B-21	S-5	8.00 - 10.00	19.1					2.4				
B-23	S-4	6.00 - 8.00	20.5					2.5				
Notes: Definitions:	1. ASTM D 2216, 2 MC: Moisture Con	2. ASTM D 2487, 3. AST tent, Soil Type: USCS (L	M D 4318, 4. <i>I</i> Inified Soil Cla	STM D 1140, 5. See test repo ssification System), LL: Liquid	rts for test m Limit, PL: Pla	ethod, 6. S stic Limit,	ee test re PI: Plastic	ports for test m	ethod : California Bearin	g Ratio, OC: Orga	anic Content (A	STM D 2974)
Project No.	24:6036									ECS		
Project Name:	Summer E	Summer Bay Apartments 2 GEO 2815 Directors Row, Suite 500 2815 Directors Row, Suite 500										
PM:	MM									<b>G</b> Orlando	, FL 32809	,
PE:	AVR								The	Fax: (40	(407) 859-8378 )7) 859-9599	
Printed On:	Wednesday, April 12, 2017											

# SECTION 011000 - SUMMARY

# PART 1 - GENERAL

# 1.1 RELATED DOCUMENTS

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

# 1.2 SUMMARY

- A. Section includes:
  - 1. Project information.
  - 2. Work covered by Contract Documents.
  - 3. Purchase contracts.
  - 4. Owner-furnished products.
  - 5. Access to site.
  - 6. Coordination with occupants.
  - 7. Work restrictions.
  - 8. Specification and drawing conventions.
- B. Related Section:
  - 1. Division 01 Section "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

# 1.3 **PROJECT INFORMATION**

- A. Project Identification: Summer Bay II Apartments
  - 1. Project Location: US Highway 192 Lake County, Florida
    - Owner: Bryanstone Partnership 1065 Executive Parkway, Suite 300 St. Louis, Missouri 63141
- B. Architect: Fugleberg Koch, LLC 2555 Temple Trail Winter Park, FL 32789
  - 1. Architect's Representative: Michael Gove.

C. Architect's Consultants: The Architect has retained the following design professionals who have prepared designated portions of the Contract Documents: Other Owner Consultants: The

1.	Structural Engineers:	Gutherman Structural 130 Crown Oak Centre Drive Longwood, Florida 32750
	MEP Engineers:	Joseph, Lawrence, & Co. 1180 Harwood Avenue, Suite 300 Altamonte Springs, Florida 32714

- D. Owner Consultants: The Owner has retained the following design professionals who have prepared designated portions of the Contract Documents:
  - 1. Civil Engineers Bravo Engineering, LLC 407-252-1671 www.bravoengineering.com

# 1.4 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of the Project is defined by the Contract Documents and consists of the following:

The design and documentation of a new market rental apartment development to be located on a parcel that is part of the Summer Bay DRI on Highway 192 in Lake County, Florida. The Owner's residential building program includes approximately 270 dwelling units of 5 basic types distributed among 6 residential buildings of 2 types with associated amenities.

The dwelling units are distributed among 6 residential buildings of 2 separate building types. The residential buildings are designed to provide 4 floors of dwelling units. The buildings are classified as Type V(b) construction, and all are sprinklered to the requirements of NFPA 13R systems. The residential and amenity buildings are designed as wood frame structures that include engineered truss components for both framed floors and roofs. The buildings are placed on concrete slab on grade foundations with integral thickened edges and grade beams.

The Project program also includes a Clubhouse and pool with amenity buildings which include a Pool Pavilion, Mail Kiosk, Maintenance/Car Wash building & Trash enclosures, which are submitted under a separate Cover.

The Project scope includes site engineering and landscape improvements that are submitted under separate cover. In first paragraph below, include an abbreviated description of the Work for Project identified in "Project Information" Article. See Evaluations. For single prime contracts, this article may be eliminated.

- B. Type of Contract
  - 1. To be determined.

# 1.5 PURCHASE CONTRACTS

- A. General: Owner may negotiate purchase contracts with suppliers of material and equipment to be incorporated into the Work. Owner will assign these purchase contracts to Contractor. Include costs for purchasing, receiving, handling, storage if required, and installation of material and equipment in the Contract Sum, unless otherwise noted.
  - 1. Contractor's responsibilities are same as if Contractor had negotiated purchase contracts, including responsibility to renegotiate purchase and to execute final purchasing agreements.

# 1.6 OWNER-FURNISHED PRODUCTS

- A. Owner may furnish products required for the Project. The Work includes receiving, unloading, handling, storing, protecting, and installing Owner-furnished products and making building services connections.
- B. Owner-Furnished Products:
  - 1. Owner and Contractor will negotiate and provide an agreed list of products and related assigned responsibilities for Owner-Furnished products to be provided for the Project.

#### 1.7 ACCESS TO SITE

- A. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.
- B. Use of Site: Limit use of Project site to within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
  - 1. Limits: Confine construction operations to Contract limits defined by Owner.
- C. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.

# 1.8 COORDINATION WITH OCCUPANTS

A. Owner Limited Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed portions of the Work, prior to Substantial Completion of the Work, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and limited occupancy shall not constitute acceptance of the total Work.

- 1. Contractor will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied prior to Owner acceptance of the completed Work.
- 2. Obtain a Certificate of Occupancy from authorities having jurisdiction before limited Owner occupancy.
- 3. Before limited Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Owner will operate and maintain mechanical and electrical systems serving occupied portions of Work.
- 4. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions of Work.

#### 1.9 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.
  - 1. Comply with limitations on use of public streets and other requirements of authorities having jurisdiction.
- B. On-Site Work Hours: Limit work in the existing building to normal business working hours of 8:00 a.m. to 5:00 p.m., Monday through Friday, except as otherwise indicated by the regulations and criteria established by the authorities having jurisdiction, or to hours stipulated by Owner Contractor Agreement. The most restrictive limits on allowable work hours shall apply.
- C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
  - 1. Notify Owner not less than two (2) days in advance of proposed utility interruptions.
  - 2. Obtain Owner's written permission before proceeding with utility interruptions.
- D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.
  - 1. Notify Owner not less than two (2) days in advance of proposed disruptive operations.
  - 2. Obtain Owner's written permission before proceeding with disruptive operations.
- E. Nonsmoking Building: Smoking is not permitted within the building or within 25 feet (8 m) of entrances, operable windows, or outdoor air intakes without the written consent of the Owner.

# 1.10 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
  - 1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

- 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- C. Drawing Coordination: Requirements for materials and products identified on the Drawings are described in detail in the Specifications. One or more of the following are used on the Drawings to identify materials and products:
  - 1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
  - 2. Abbreviations: Materials and products are identified by abbreviations scheduled on Drawings.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

# SECTION 012100 - ALLOWANCES

# PART 1 - GENERAL

# 1.1 RELATED DOCUMENTS

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

# 1.2 SUMMARY

- A. Section includes administrative and procedural requirements governing allowances.
  - 1. Certain items are specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when direction will be provided to the Contractor. If necessary, additional requirements will be issued by Change Order.
- B. Types of allowances include the following:
  - 1. Lump-sum allowances.
  - 2. Unit-cost allowances.

#### 1.3 SELECTION AND PURCHASE

- A. At the earliest practical date after award of the Contract, advise Owner of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.
- B. At Owner's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.
- C. Purchase products and systems selected by Owner from the designated supplier.

# 1.4 SUBMITTALS

- A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.
- B. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.
- C. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.

D. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

# 1.5 COORDINATION

A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

# 1.6 LUMP-SUM ALLOWANCES

- A. Allowance shall include cost to Contractor of specific products and materials selected by Owner under allowance and shall include taxes, freight, and delivery to Project site.
- B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials selected by Owner under allowance shall be included as part of the Contract Sum and not part of the allowance.
- C. Unused Materials: Return unused materials purchased under an allowance to manufacturer or supplier for credit to Owner, after installation has been completed and accepted.
  - 1. If requested by Owner, retain and prepare unused material for storage by Owner. Deliver unused material to Owner's storage space as directed.

# 1.7 ADJUSTMENT OF ALLOWANCES

- A. Allowance Adjustment: To adjust allowance amounts, prepare a Change Order proposal based on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place where applicable. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.
  - 1. Include installation costs in purchase amount only where indicated as part of the allowance.
  - 2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other margins claimed.
- B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the purchase order amount or Contractor's handling, labor, installation, overhead, and profit.

# PART 2 - PRODUCTS (Not Used)

# PART 3 - EXECUTION

# 3.1 EXAMINATION

A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

#### 3.2 PREPARATION

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

# 3.3 SCHEDULE OF ALLOWANCES

A. Allowances are applicable as listed by a Schedule of Allowances provided within the Owner/Contractor Agreement in the absence of a Schedule of Allowances provided within the Project Manual, Division 01 of the Contract Documents.

# SECTION 012300 - ALTERNATES

# PART 1 - GENERAL

# 1.1 RELATED DOCUMENTS

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

# 1.2 SUMMARY

A. Section includes administrative and procedural requirements for alternates.

#### 1.3 DEFINITIONS

- A. Alternate: An amount proposed by Contractor and stated and defined within the Owner/Contractor Agreement for certain work that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
  - 1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
  - 2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

#### 1.4 PROCEDURES

- A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
  - 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
- B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.
- C. Execute accepted alternates under the same conditions as other work of the Contract.
- D. Schedule: Provide a schedule of alternates including references to Specification Sections and other Contract Documents to define requirements for materials necessary to achieve the work described under each alternate.

# SUMMER BAY II APARTMENTS – LAKE COUNTY, FL FK #5389

# 1.5 ADJUSTMENT OF ALTERNATES

A. Alternate Adjustment: For alternates accepted following the establishment of the Contract Sum and schedule criteria by the Owner/Contractor Agreement, prepare a Change Order Proposal detailing any differences between the established Contract Sum and schedule and the accepted alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

# SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

# PART 1 - GENERAL

# 1.1 SUMMARY

A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

#### 1.2 MINOR CHANGES IN THE WORK

A. Architect, with written authorization from the Owner, will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710, "Architect's Supplemental Instructions."

#### 1.3 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Upon written authorization from Owner, Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
  - 1. Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
  - 2. Within time specified in Proposal Request or fourteen (14) days, when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
    - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    - c. Include costs of labor and supervision directly attributable to the change.
    - d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
    - e. Quotation Form: Use form acceptable to Owner.
- B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to the Owner.
  - 1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.

- 2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
- 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
- 4. Include costs of labor and supervision directly attributable to the change.
- 5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time. Clearly indicate amount of available float used.
- 6. Comply with requirements in Division 01 Section "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
- 7. Proposal Request Form: Use form acceptable to Owner.

# 1.4 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Proposal Request, Contractor will issue a Change Order for review and signature by Owner and Architect on AIA Document G701.

# 1.5 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: Owner may issue a Construction Change Directive on AIA Document G714. Construction Change Directive instructs Contractor to proceed with a change in the Work.
  - 1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time and implementation prerequisite requirements as may be applicable.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
  - 1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract as directed by the Construction Change Directive requirements in the format of a Proposed Change Order.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

# SECTION 012900 - PAYMENT PROCEDURES

#### PART 1 - GENERAL

# 1.1 SUMMARY

A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.

#### 1.2 DEFINITIONS

A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

#### 1.3 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.
  - 1. Correlate line items in the schedule of values with other required administrative forms and schedules, including the following:
    - a. Application for Payment forms with continuation sheets.
    - b. Submittal schedule.
    - c. Contractor's Construction Schedule.
  - 2. Submit the schedule of values to Owner at earliest possible date but no later than thirty (30) days before the date scheduled for submittal of initial Applications for Payment.
  - 3. Subschedules for Phased Work: Where the Work is separated into phases requiring separately phased payments, provide subschedules showing values correlated with each phase of payment.
  - 4. Subschedules for Separate Elements of Work: Where the Contractor's construction schedule defines separate elements of the Work, provide subschedules showing values correlated with each element.
- B. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.
  - 1. Identification: Include the following Project identification on the schedule of values:
    - a. Project name and location.
    - b. Name of Architect.
    - c. Architect's project number.
    - d. Contractor's name and address.
    - e. Date of submittal.

# SUMMER BAY II APARTMENTS – LAKE COUNTY, FL FK #5389

- 2. Arrange schedule of values consistent with format of AIA Document G703.
- 3. Arrange the schedule of values in tabular form with separate columns to indicate the following for each item listed:
  - a. Related Specification Section or Division.
  - b. Description of the Work.
  - c. Name of subcontractor.
  - d. Name of manufacturer or fabricator.
  - e. Name of supplier.
  - f. Change Orders (numbers) that affect value.
  - g. Dollar value and Percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
- 4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide multiple line items for principal subcontract amounts as appropriate. For multiple building projects, provide breakdown by building and by floor.
- 5. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
- 6. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed and only in the event that stored materials are eligible for payment by the Owner/Contractor Agreement.
  - a. Differentiate between items stored on-site and items stored off-site. For items stored off-site, include evidence of insurance, bill of sale and contractor/supplier affidavit in form acceptable to Owner.
- 7. Provide separate line items in the schedule of values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
- 8. Allowances: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
- 9. Each item in the schedule of values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
  - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.
- 10. Schedule Updating: Update and resubmit the schedule of values before the next Application for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

# 1.4 APPLICATIONS FOR PAYMENT

A. Each Application for Payment shall be consistent with previous applications and payments as certified and paid for by Owner.

- 1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
- B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.
  - 1. Submit draft copy of Application for Payment seven (7) days prior to due date for review by Owner.
- C. Application for Payment Forms: Use form acceptable to the Owner.
- D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Owner will return incomplete applications without action.
  - 1. Entries shall match data on the schedule of values and Contractor's construction schedule. Provide updated schedules if revisions were made.
  - 2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
  - 3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
- E. Transmittal: Submit three (3) signed and notarized original copies of each Application for Payment to Owner by a method ensuring receipt. One copy shall include waivers of lien and similar attachments if required.
  - 1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- F. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.
  - 1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
  - 2. When an application shows completion of an item, submit conditional final or full and final waivers.
  - 3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
  - 4. Waiver Forms: Submit waivers of lien on forms, executed in a manner acceptable to Owner.
- G. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
  - 1. List of subcontractors.
  - 2. Schedule of values.
  - 3. Contractor's construction schedule (preliminary if not final).
  - 4. Products list (preliminary if not final).

- 5. Submittal schedule (preliminary if not final).
- 6. List of Contractor's staff assignments.
- 7. List of Contractor's principal consultants.
- 8. Copies of building permits.
- 9. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
- 10. Initial progress report.
- 11. Report of preconstruction conference.
- 12. Certificates of insurance and insurance policies.
- 13. Performance and payment bonds.
- 14. Data needed to acquire Owner's insurance.
- H. Application for Payment at Substantial Completion: After issuance of Certificate of Substantial Completion, submit a Contractor's Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
  - 1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
  - 2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
  - 3. Include documentation supporting Contractor's request for any reduction in retainage amounts.
- I. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
  - 1. Evidence of completion of Project closeout requirements.
  - 2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
  - 3. Updated final statement, accounting for final changes to the Contract Sum.
  - 4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
  - 5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
  - 6. AIA Document G707, "Consent of Surety to Final Payment."
  - 7. AIA Document G707A, "Consent of Surety to Reduction in or Partial Release of Retainage."
  - 8. Evidence that all claims have been settled.
  - 9. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
  - 10. Final liquidated damages settlement statement.

# PART 2 - PRODUCTS (Not Used)

#### PART 3 - EXECUTION (Not Used)

#### END OF SECTION 012900

PAYMENT PROCEDURES

# SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

# PART 1 - GENERAL

# 1.1 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
  - 1. General project coordination procedures.
  - 2. Administrative and supervisory personnel.
  - 3. Coordination drawings.
  - 4. Requests for Information (RFIs).
  - 5. Project Web site.
  - 6. Project meetings.

#### 1.2 DEFINITIONS

A. RFI: Request from Contractor seeking information from Architect during construction.

#### 1.3 COORDINATION

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections that depend on each other for proper installation, connection, and operation.
  - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
  - 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
  - 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
  - 1. Prepare similar memoranda for Owner and separate contractors as applicable, if coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors as applicable, to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

- 1. Preparation of Contractor's construction schedule.
- 2. Preparation of the Schedule of Values.
- 3. Installation and removal of temporary facilities and controls.
- 4. Delivery and processing of submittals.
- 5. Progress meetings.
- 6. Preinstallation conferences.
- 7. Startup and adjustment of systems.
- D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.
  - 1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. Refer to other Sections for disposition of salvaged materials that are designated as Owner's property.

# 1.4 SUBMITTALS

- A. Coordination Drawings, General: Prepare coordination drawings as required for efficient installation of different components, or systems, where installation is not completely shown on Contractor Shop Drawings, where limited space availability necessitates coordination, where required by specification sections, or if coordination is required to facilitate integration of products, **systems** and materials fabricated or installed by more than one entity.
  - 1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on reproductions of the Contract Documents or standard printed data. Include the following information, as applicable:
    - a. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
    - b. Coordinate the addition of trade-specific information to the coordination drawings by multiple contractors in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
    - c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
    - d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
    - e. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
    - f. Indicate required installation sequences.
    - g. Indicate dimensions shown on the Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.
    - h. Provide narrative explanations and notations on submitted drawings and related materials indicating deviations from the Contract Documents.
- B. Coordination Drawing Organization: Organize coordination drawings as follows:
  - 1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire protection, fire alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.
  - 2. Review: Architect as directed by the Owner, will review coordination drawings to confirm that the Work is being coordinated, but not for the details of the coordination, which are the Contractor's responsibility. If the Architect determines that the coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, the Architect will so inform the Contractor through the Owner, who shall make changes as directed and resubmit.
  - 3. Coordination Drawing Prints: Prepare coordination drawing prints in accordance with requirements of Division 01 Section "Submittal Procedures."
- C. Coordination Digital Data Files: Prepare coordination digital data files in accordance with the following requirements:
  - 1. File Preparation Format: Same digital data software program, version, and operating system as the original Drawings.
  - 2. File Submittal Format: Submit or post coordination drawing files using Portable Data File (PDF) format.
  - 3. Architect may furnish Contractor one set of digital data files of requested Drawings for use in preparing coordination digital data files.
    - a. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to the Drawings.
    - b. Contractor shall execute a data licensing and release agreement in the form of an Agreement acceptable to the Owner and Architect.

#### 1.5 KEY PERSONNEL

- A. Key Personnel Names: Within fifteen (15) days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers and email addresses. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.
  - 1. Post copies of list in project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.

#### 1.6 REQUESTS FOR INFORMATION (RFIs)

- A. General: Immediately on discovery of the need for interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
  - 1. All RFI's shall be submitted to Owner for initial review and for forwarding to the Architect.

- 2. Architect will return RFIs submitted to Architect directly by all entities that are not the Owner with no response.
- 3. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
  - 1. Project name.
  - 2. Project number.
  - 3. Date.
  - 4. Name of Contractor.
  - 5. Name of Architect.
  - 6. RFI number, numbered sequentially.
  - 7. RFI subject.
  - 8. Specification Section number and title and related paragraphs, as appropriate.
  - 9. Drawing number and detail references, as appropriate.
  - 10. Field dimensions and conditions, as appropriate.
  - 11. Contractor's suggested resolution. If Contractor's solution(s) impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
  - 12. Contractor's signature.
  - 13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
    - a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.
- C. RFI Forms: AIA Document G716 or a Software-generated form with substantially the same content as indicated above, acceptable to Owner .
  - 1. Identify each page of any attachments to an RFI with the RFI number and sequential page number.
  - 2. Attachments to electronic RFI files will be in a format acceptable to Architect and Owner.
- D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow seven (7) working days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.
  - 1. The following RFIs will be returned without action:
    - a. Requests for approval of submittals.
    - b. Requests for approval of substitutions.
    - c. Requests for coordination information already indicated in the Contract Documents.
    - d. Requests for adjustments in the Contract Time or the Contract Sum.
    - e. Requests for interpretation of Architect's actions on submittals.
    - f. Incomplete RFIs or inaccurately prepared RFIs.

- 2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information from Contractor.
- 3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Division 01 Section "Contract Modification Procedures."
  - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, Contractor will notify Architect and Owner in writing within ten (10) days of receipt of the RFI response.
- E. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect and Owner within seven (7) days if Contractor disagrees with response.
- F. Maintain accurate and complete copies of RFI log and RFI's, including response and attachments, at the Project Site.
- G. RFI Log: Prepare, maintain, and submit monthly, concurrent with Schedule and review of Contractor's Application for Payment, a tabular log of RFIs organized by the RFI number. Include the following:
  - 1. Project name.
  - 2. Name and address of Contractor.
  - 3. Name and address of Architect.
  - 4. RFI number including RFIs that were dropped and not submitted.
  - 5. RFI description.
  - 6. Date the RFI was submitted.
  - 7. Date Architect's response was received.
  - 8. Identification of related, or potential, Minor Change in the Work, Architect's Supplemental Instruction, Construction Change Directive, or Proposal Request, as appropriate.
  - 9. Identification of related Field Order, Work Change Directive, or Proposal Request, as appropriate.

## 1.7 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.
  - 1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and of scheduled meeting dates and times.
  - 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
  - 3. Minutes: Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner, within seven (7) days of the meeting.

- B. Preconstruction Conference: Schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner, but no later than 15 (fifteen) days after execution of the Agreement.
  - 1. Hold the conference at Project Site or another convenient location.
  - 2. Conduct the conference to review responsibilities and personnel assignments.
  - 3. Attendees: Authorized representatives of Owner and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
  - 4. Agenda: Discuss items of significance that could affect progress, including the following:
    - a. Tentative construction schedule.
    - b. Phasing.
    - c. Critical work sequencing and long-lead items.
    - d. Designation of key personnel and their duties.
    - e. Lines of communications.
    - f. Procedures for processing field decisions and Change Orders.
    - g. Procedures for RFIs.
    - h. Procedures for testing and inspecting.
    - i. Procedures for processing Applications for Payment.
    - j. Distribution of the Contract Documents.
    - k. Submittal procedures.
    - 1. Sustainable design requirements.
    - m. Preparation of record documents.
    - n. Use of the premises and existing building as applicable.
    - o. Work restrictions.
    - p. Working hours.
    - q. Owner's occupancy requirements.
    - r. Responsibility for temporary facilities and controls.
    - s. Procedures for moisture and mold control.
    - t. Procedures for disruptions and shutdowns.
    - u. Construction waste management and recycling.
    - v. Parking availability.
    - w. Office, work, and storage areas.
    - x. Equipment deliveries and priorities.
    - y. First aid.
    - z. Security.
    - aa. Progress cleaning.
    - bb. Work hours.
  - 5. Minutes: Contractor will record and distribute meeting minutes.
- C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.
  - 1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Owner of scheduled meeting dates.

- 2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
  - a. Contract Documents.
  - b. Options.
  - c. Related RFIs.
  - d. Related Change Orders.
  - e. Purchases.
  - f. Deliveries.
  - g. Submittals.
  - h. Review of mockups.
  - i. Possible conflicts.
  - j. Compatibility concerns.
  - k. Time schedules.
  - l. Weather limitations.
  - m. Manufacturer's written recommendations.
  - n. Warranty requirements.
  - o. Compatibility of materials.
  - p. Acceptability of substrates.
  - q. Temporary facilities and controls.
  - r. Space and access limitations.
  - s. Regulations of authorities having jurisdiction.
  - t. Testing and inspecting requirements.
  - u. Installation procedures.
  - v. Coordination with other work.
  - w. Required performance results.
  - x. Protection of adjacent work.
  - y. Protection of construction and personnel.
- 3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
- 4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
- 5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- D. Project Closeout Conference: Schedule and conduct a Project closeout conference, at a time convenient to Owner, but no later than sixty (60) days prior to the scheduled date of Substantial Completion.
  - 1. Conduct the conference to review requirements and responsibilities related to Project closeout.
  - 2. Attendees: Authorized representatives of Owner and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
  - 3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
    - a. Preparation of record documents.

- b. Procedures required prior to observation for Substantial Completion and for final observation for acceptance.
- c. Submittal of written warranties.
- d. Requirements for preparing operations and maintenance data.
- e. Requirements for demonstration and training.
- f. Preparation of Contractor's punch list.
- g. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
- h. Submittal procedures for closeout documentation.
- i. Owner's partial occupancy requirements.
- j. Installation of Owner's furniture, fixtures, and equipment.
- k. Responsibility for removing temporary facilities and controls.
- 4. Minutes: Contractor will record and distribute meeting minutes.
- E. Progress Meetings: Conduct progress meetings at a minimum of monthly intervals.
  - 1. Coordinate dates of meetings with preparation of payment requests.
  - 2. Attendees: In addition to representatives of Owner, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
  - 3. Agenda: Review and correct or accept minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
    - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
      - 1) Review schedule for next period.
    - b. Review present and future needs of each entity present, including the following:
      - 1) Interface requirements.
      - 2) Sequence of operations.
      - 3) Status of submittals.
      - 4) Deliveries.
      - 5) Off-site fabrication.
      - 6) Access.
      - 7) Site utilization.
      - 8) Temporary facilities and controls.
      - 9) Progress cleaning.
      - 10) Quality and work standards.
      - 11) Hazards and risks.
      - 12) Status of correction of deficient items.
      - 13) Field observations.

- 14) Status of RFIs.
- 15) Status of proposal requests.
- 16) Pending changes.
- 17) Status of Change Orders.
- 18) Pending claims and disputes.
- 19) Documentation of information for payment requests.
- 20) Work hours.
- 21) Contractor's action items.
- 4. Minutes: Contractor will record and distribute the meeting minutes to each party present and to parties requiring information.
  - a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.
- F. Coordination Meetings: Conduct Project coordination meetings at intervals appropriate to progress of work. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.
  - 1. Attendees: In addition to representatives of Owner, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meetings shall be familiar with Project and authorized to conclude matters relating to the Work.
  - 2. Agenda: Review and correct or accept minutes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
    - a. Combined Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to combined Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
    - b. Schedule Updating: Revise combined Contractor's construction schedule after each coordination meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.
    - c. Review present and future needs of each contractor present, including the following:
      - 1) Interface requirements.
      - 2) Sequence of operations.
      - 3) Status of submittals, including coordination drawings and related submittals.
      - 4) Status of RFIs.
      - 5) Deliveries.
      - 6) Off-site fabrication.
      - 7) Access.
      - 8) Site utilization.

- 9) Temporary facilities and controls.
- 10) Work hours.
- 11) Hazards and risks.
- 12) Progress cleaning.
- 13) Quality and work standards.
- 14) Change Orders.
- 3. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

# SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

#### PART 1 - GENERAL

# 1.1 SUMMARY

- A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
  - 1. Construction schedule.
  - 2. Daily construction reports.
  - 3. Material location reports.
  - 4. Field condition reports.
  - 5. Special reports.

#### 1.2 DEFINITIONS

- A. Define Bar Chart Construction Schedule.
- B. Major Area: A story of construction, a separate building, or a similar significant construction element.
- C. Milestone: A key or critical point of time for reference or measurement.

## 1.3 SUBMITTALS

- A. Format for Submittals: Submit required submittals in the following format:
  - 1. Digital copy of schedule delivered to Owner in pdf format.
- B. Daily Construction Reports: Submit two (2) copies at weekly intervals to Owner.
- C. Material Location Reports: Submit two (2) copies at weekly intervals if other than stored at project site to Owner.
- D. Field Condition Reports: Submit two (2) copies at time of discovery of differing conditions to Owner.
- E. Special Reports: Submit three (3) copies at time of unusual event to Owner.

### 1.4 COORDINATION

A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.

- B. Coordinate and update Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.
  - 1. Secure time commitments for performing critical elements of the Work from entities involved.
  - 2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

# PART 2 - PRODUCTS

# 2.1 CONSTRUCTION SCHEDULE, GENERAL

- A. Time Frame: Extend schedule from date established for commencement of the Work to date of final completion.
  - 1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- B. Activities: Treat each story or separate area as a separate numbered activity for each principal element of the Work. Comply with the following:
  - 1. Procurement Activities: Include procurement process activities for long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
  - 2. Submittal Review Time: Include review and resubmittal times indicated in Division 01 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's construction schedule with Contractor's submittal schedule.
  - 3. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Owner's administrative procedures necessary for acceptance of Substantial Completion.
  - 4. Punch List and Final Completion: Include not more than thirty (30) days for punch list and final completion following acceptance of Substantial Completion unless otherwise accepted by Owner.
- C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
  - 1. Phasing: Arrange list of activities on schedule by phase as applicable.
  - 2. Work by Owner: Include a separate activity for each portion of the Work performed by Owner as applicable.
  - 3. Owner-Furnished Products: Include a separate activity for each product as applicable. Include delivery date indicated in Division 01 Section "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
  - 4. Construction Areas: Identify each Building by level. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:

- a. Structural completion.
- b. Permanent space enclosure and dry-in.
- c. Completion of mechanical installation.
- d. Completion of electrical installation.
- e. Substantial Completion.
- D. Milestones: Include milestones indicated in the Contract Documents, or as applicable, in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and final completion.
- E. Recovery Schedule: When periodic update indicates the Work is fifteen (15) or more calendar days behind the current accepted schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, and equipment required to achieve compliance, and date by which recovery will be accomplished.

# 2.2 CONSTRUCTION SCHEDULE

- A. Bar-Chart Schedule: Submit start-up horizontal bar-chart-type construction schedule within seven (7) days of date established for commencement of the Work.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first sixty (60) days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

# 2.3 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site, keep reports at jobsite for review.
  - 1. List of subcontractors at Project site.
  - 2. List of separate contractors at Project site.
  - 3. Approximate count of personnel at Project site.
  - 4. Equipment at Project site.
  - 5. Material deliveries.
  - 6. High and low temperatures and general weather conditions, including occurrence of inclement events.
  - 7. Accidents.
  - 8. Meetings and significant decisions.
  - 9. Unusual events (refer to special reports).
  - 10. Stoppages, delays, shortages, and losses.
  - 11. Meter readings and similar recordings.
  - 12. Emergency procedures.
  - 13. Orders and requests of authorities having jurisdiction.
  - 14. Requests for inspections by the authorities having jurisdiction.
  - 15. Inspections provided by the authorities having jurisdiction.
  - 16. Change Orders received and implemented.
  - 17. Construction Change Directives received and implemented.

- 18. Architect's Supplemental Instructions received and implemented.
- 19. Services connected and disconnected.
- 20. Testing of materials or assemblies.
- 21. Equipment or system tests and startups.
- 22. Partial completions and occupancies.
- 23. Substantial Completions authorized.
- B. Material Location Reports: At monthly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site.
- C. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

#### 2.4 SPECIAL REPORTS

- A. General: Submit special reports directly to Owner within one (1) day of an occurrence. Distribute copies of report to parties affected by the occurrence.
- B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

# PART 3 - EXECUTION

#### 3.1 CONSTRUCTION SCHEDULE

- A. Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one (1) week before each regularly scheduled progress meeting.
  - 1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
  - 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
  - 3. As the Work progresses, indicate final completion percentage for each activity.
- B. Distribution: Distribute copies of accepted schedule to Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

# SUMMER BAY II APARTMENTS – LAKE COUNTY, FL FK #5389

- 1. Post copies in Project meeting rooms and temporary field offices.
- 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 013200

## SECTION 013300 - SUBMITTAL PROCEDURES

#### PART 1 - GENERAL

#### 1.1 SUMMARY

A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

#### 1.2 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Owner's responsive action. Action submittals are those submittals indicated in individual General Requirement and Specification Sections as action submittals.
- B. Informational Submittals: Written and graphic information and physical samples that do not require Owner's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual General Requirement and Specification Sections as informational submittals.
- C. File Transfer Protocol (FTP): Communications protocol that enables transfer of files to and from another computer over a network and that serves as the basis for standard Internet protocols. An FTP site is a portion of a network located outside of network firewalls within which internal and external users are able to access files.
- D. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

#### 1.3 ACTION SUBMITTALS

- A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or modifications to submittals noted by the Architect and additional time for handling and reviewing submittals required by those corrections.
  - 1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
  - 2. Initial Submittal: Submit concurrently with initial construction schedule. Include submittals required during the first thirty (30) days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
  - 3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule.

- a. Submit revised submittal schedule concurrently with revised updates to Contractor's construction schedule to reflect changes in current status and timing for submittals.
- 4. Format: Arrange the following information in a tabular format:
  - a. Scheduled date for first submittal.
  - b. Specification Section number and title.
  - c. Submittal category: Action, informational.
  - d. Name of subcontractor.
  - e. Description of the Work covered.
  - f. Scheduled date for Architect's final release or acceptance.

## 1.4 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. Architect's Digital Data Files: Electronic copies of Drawings of the Contract Drawings may be provided by Architect for Contractor's use in preparing submittals.
  - 1. In the event that Architect will provide electronic copies of Drawings, Architect will furnish Contractor one set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings and Project record drawings.
    - a. Architect makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.
    - b. Contractor shall execute a data licensing agreement in an Agreement form acceptable to Architect.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
  - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
  - 2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on accepted submittal schedule.
  - 3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals concurrently.
  - 4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
    - a. Owner reserves the right to withhold action, **or return without review**, on a submittal requiring coordination with other submittals until related submittals are received.
- C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Owner's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

- 1. Initial Review: Allow fifteen (15) days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Owner will advise Contractor when a submittal being processed must be delayed for coordination.
- 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
- 3. Resubmittal Review: Allow fifteen (15) days for review of each resubmittal.
- 4. Sequential Review: Where sequential review of submittals by Architect and/or Architect's consultants, or other parties is indicated by determination of Owner, allow twenty-one (21) days for initial review of each submittal.
- D. Identification and Information: Place a permanent label or title block on each paper copy submittal item for identification.
  - 1. Indicate name of firm or entity that prepared each submittal on label or title block.
  - 2. Provide a space approximately 6 by 8 inches (150 by 200 mm) on label or beside title block to record Contractor's review and approval markings and action taken by Owner.
  - 3. Include the following information for processing and recording action taken:
    - a. Project name.
    - b. Date.
    - c. Name of Architect.
    - d. Name of Contractor.
    - e. Name of subcontractor.
    - f. Name of supplier.
    - g. Name of manufacturer.
    - h. Submittal number or other unique identifier, including revision identifier.
      - 1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).
    - i. Number and title of appropriate Specification Section.
    - j. Drawing number and detail references, as appropriate.
    - k. Location(s) where product is to be installed, as appropriate.
    - 1. Other necessary identification.
- E. Identification and Information: Identify and incorporate information in each electronic submittal file as follows; providing electronic submittal and file format is acceptable to Owner.
  - 1. Assemble complete submittal package into a single indexed file with links enabling navigation to each item.
  - 2. Name file with submittal number or other unique identifier, including revision identifier.
    - a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).
  - 3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Owner.
  - 4. Include the following information on an inserted cover sheet:

- a. Project name.
- b. Date.
- c. Name and address of Architect.
- d. Name of Contractor.
- e. Name of firm or entity that prepared submittal.
- f. Name of subcontractor.
- g. Name of supplier.
- h. Name of manufacturer.
- i. Number and title of appropriate Specification Section.
- j. Drawing number and detail references, as appropriate.
- k. Location(s) where product is to be installed, as appropriate.
- 1. Related physical samples submitted directly.
- m. Other necessary identification.
- 5. Include the following information as keywords in the electronic file metadata:
  - a. Project name.
  - b. Number and title of appropriate Specification Section.
  - c. Manufacturer name.
  - d. Product name.
  - e. Submittal number.
- F. Options: Identify options requiring selection by the Owner.
- G. Deviations: Identify deviations from the Contract Documents on submittals.
- H. Additional Paper Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
- I. Transmittal: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will return submittals, without review, received from sources other than Contractor.
  - 1. Transmittal Form: Use transmittal form acceptable to Architect. Provide locations on form for the following information:
    - a. Project name.
    - b. Date.
    - c. Destination (To:).
    - d. Source (From:).
    - e. Names of subcontractor, manufacturer, and supplier.
    - f. Category and type of submittal.
    - g. Submittal purpose and description.
    - h. Specification Section number and title.
    - i. Indication of full or partial submittal.
    - j. Drawing number and detail references, as appropriate.
    - k. Transmittal number.
    - 1. Submittal and transmittal distribution record.
    - m. Remarks.
    - n. Signature of transmitter.

# SUMMER BAY II APARTMENTS – LAKE COUNTY, FL FK #5389

- 2. On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Owner on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.
- J. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
  - 1. Note date and content of previous submittal.
  - 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
  - 3. Resubmit submittals until they are marked with an accepted notation from Architect's action stamp.
- K. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance or observation of construction activities. Show distribution on transmittal forms.
- L. Use for Construction: Use only final submittals that are marked with an accepted notation from Architect's action stamp.
- M. Field Reference: Contractor will maintain one (1) complete set of submittals and updated submittal log at the Contractor's Project site office for reference.

# PART 2 - PRODUCTS

## 2.1 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
  - 1. Submit electronic submittals via email as PDF electronic files providing electronic format submittals are acceptable to Owner.
    - a. Owner will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
  - 2. Action Submittals: Submit four (4) paper copies of each submittal, plus additional copies that may be required by Contractor for distribution unless otherwise indicated. Owner will retain two (2) copies.
  - 3. Informational Submittals: Submit three (3) paper copies of each submittal, unless otherwise indicated. Owner will retain one (1) copy.
  - 4. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Division 01 Section "Closeout Procedures."
  - 5. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.

- a. Provide a digital signature with digital certificate on electronically-submitted certificates and certifications where indicated in the event that electronically submitted certificates and certifications are acceptable to Architect.
- b. Provide a notarized statement on original paper copy certificates and certifications where indicated.
- 6. Test and Inspection Reports Submittals: Comply with requirements specified in Division 01 Section "Quality Requirements."
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
  - 1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
  - 2. Mark each copy of each submittal to show which products and options are applicable.
  - 3. Include the following information, as applicable:
    - a. Manufacturer's catalog cuts.
    - b. Manufacturer's product specifications.
    - c. Standard color charts.
    - d. Statement of compliance with specified referenced standards.
    - e. Testing by recognized testing agency.
    - f. Application of testing agency labels and seals.
    - g. Notation of coordination requirements.
    - h. Notation of deviations from the Contract Documents.
    - i. Availability and delivery time information.
  - 4. For equipment, include the following in addition to the above, as applicable:
    - a. Wiring diagrams showing factory-installed wiring.
    - b. Printed performance curves.
    - c. Operational range diagrams.
    - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
  - 5. Submit Product Data before or concurrent with Samples.
  - 6. Submit Product Data in the following format:
    - a. PDF electronic file if format is acceptable to Owner.
    - b. Four (4) paper copies of Product Data, plus additional copies that may be required by Contractor for distribution unless otherwise indicated. Owner will retain two (2) copies, remainder will be returned.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data, unless submittal based upon Architect's digital data drawing files is otherwise permitted.
  - 1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
    - a. Identification of products.

- b. Schedules.
- c. Compliance with specified standards.
- d. Notation of coordination requirements.
- e. Notation of deviations from the Contract Documents.
- f. Notation of dimensions established by field measurement.
- g. Relationship and attachment to adjoining construction clearly indicated.
- h. Seal and signature of professional engineer if specified.
- 2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm) but no larger than 30 by 42 inches (750 by 1067 mm).
- 3. Submit Shop Drawings in the following format:
  - a. PDF electronic file if format is acceptable to Architect.
  - b. Four (4) opaque (bond) copies of each submittal, plus additional copies that may be required by Contractor for distribution. Architect will retain two (2) copies, remainder will be returned.
- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
  - 1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
  - 2. Identification: Attach label on unexposed side of Samples that includes the following:
    - a. Generic description of Sample.
    - b. Product name and name of manufacturer.
    - c. Sample source.
    - d. Number and title of applicable Specification Section.
    - e. Notation of deviations from the Contract Documents.
  - 3. Disposition: Maintain sets of accepted Samples at Project site, available for qualitycontrol comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
    - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
    - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
  - 4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
    - a. Number of Samples: Submit three (3) full set(s) plus additional full sets that may be required by Contractor for distribution of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Owner will retain one (1) set of submittal with options selected. Remainder will be returned.

- 5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
  - a. Number of Samples: Submit three (3) sets of Samples plus additional full sets that may be required by Contractor for distribution. Owner will retain one (1) set of sample sets, remainder will be returned. Mark up and retain one (1) returned Sample set as a Project record sample.
    - 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
    - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three (3) sets of paired units that show approximate limits of variations.
- E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
  - 1. Type of product. Include unique identifier for each product.
  - 2. Manufacturer and product name, and model number if applicable.
  - 3. Number and name of room or space.
  - 4. Location within room or space.
  - 5. Submit product schedule in the following format:
    - a. PDF electronic file if format is acceptable to Owner.
    - b. Four (4) paper copies of product schedule or list plus additional copies that may be required by Contractor for distribution, unless otherwise indicated. Architect will retain two (2) copies, remainder will be returned.
- F. Contractor's Construction Schedule: Comply with requirements specified in Division 01 Section "Construction Progress Documentation."
- G. Application for Payment: Comply with requirements specified in Division 01 Section "Payment Procedures."
- H. Schedule of Values: Comply with requirements specified in Division 01 Section "Payment Procedures."
- I. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
  - 1. Name, address, and telephone number of entity performing subcontract or supplying products.

- 2. Number and title of related Specification Section(s) covered by subcontract.
- 3. Drawing number and detail references, as appropriate, covered by subcontract.
- 4. Submit subcontract list in the following format:
  - a. PDF electronic file.
  - b. Number of Copies: Three (3) paper copies of subcontractor list, unless otherwise indicated. Architect, will return two (2) copies.
- J. Coordination Drawings: Comply with requirements specified in Division 01 Section "Project Management and Coordination."
- K. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.
- L. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on American Welding Society (AWS) forms. Include names of firms and personnel certified.
- M. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- N. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- O. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- P. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- Q. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- R. Product Test Reports: Submit written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- S. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building codes and regulations in effect for Project. Include the following information:
  - 1. Name of evaluation organization.
  - 2. Date of evaluation.
  - 3. Time period when report is in effect.
  - 4. Product and manufacturers' names.

- 5. Description of product.
- 6. Test procedures and results.
- 7. Limitations of use.
- T. Schedule of Tests and Inspections: Comply with requirements specified in Division 01 Section "Quality Requirements."
- U. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- V. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- W. Field Test Reports: Submit reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- X. Maintenance Data: Comply with requirements specified in Division 01 Section "Operation and Maintenance Data."
- Y. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

## 2.2 DELEGATED-DESIGN SERVICES

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
  - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for information (RFI) to Architect.
- B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally-signed PDF electronic file if format is acceptable to Owner. Submit four (4) paper copies of certificate, plus additional copies that may be required by Contractor for distribution, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional. Architect will retain two (2) copies, remainder will be returned.
  - 1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

## PART 3 - EXECUTION

#### 3.1 CONTRACTOR'S REVIEW

- A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Note deviations from the Contract Documents. Mark with approval stamp before submitting to Owner.
- B. Project Closeout and Maintenance/Material Submittals: Refer to requirements in Division 01 Section "Closeout Procedures."
- C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

## 3.2 OWNERS ACTION

- A. General: Owner will not review submittals that do not bear Contractor's approval stamp and will return them without action or rejected.
- B. Action Submittals: Owner will review each submittal, make marks to indicate corrections or modifications required, and return it. Submittals requiring review by Architect or their Consultants, Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.
- C. Informational Submittals: Owner will review each submittal and will return it as indicated.
- D. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior acceptance from Owner.
- E. Incomplete submittals are not acceptable, will be considered nonresponsive, and will be returned without review or rejected.
- F. Submittals that do not comply with the requirements of the Contract Documents and do not include acceptable identification of deviations may be returned without review by Owner.
- G. Architect's review of re-submittals required due to non-conformance with the requirements, layouts or design intent of the Contract Documents is stipulated as additional services by Architect. Owner is responsible for compensating Architect for such specific additional services unless indicated otherwise by the Owner / Architect Agreement.
- H. Partial Submittals: Partial submittals or incomplete submittals may be reviewed by the Architect providing such submittals are discussed with, and accepted by, the Owner in advance. The Architect's review of each subsequent submittal related to such partial or incomplete submittals will be considered as an additional service. The Owner is

# responsible for compensating the Architect for such specific additional services unless indicated otherwise in the Owner / Architect Agreement.

I. Submittals not required by the Contract Documents may not be reviewed and may be discarded or rejected.

END OF SECTION 013300

# SECTION 014000 - QUALITY REQUIREMENTS

#### PART 1 - GENERAL

# 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
  - 1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
  - 2. Specified tests, inspections, and related actions do not limit Contractor's other qualityassurance and -control procedures that facilitate compliance with the Contract Document requirements.
  - 3. Requirements for Contractor to provide quality-assurance and -control services required by Owner, or authorities having jurisdiction are not limited by provisions of this Section.
- C. Related Sections:
  - 1. Division 01 Section "Allowances" for testing and inspecting allowances.
  - 2. Division 01 Section "Construction Progress Documentation" for developing a schedule of required tests and inspections.
  - 3. Division 01 Section "Execution" for protection, repair and restoration of construction disturbed by testing and inspection activities.
  - 4. Divisions 02 through 49 Sections for specific test and inspection requirements.

#### 1.3 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract observation and related activities performed by Owner and/or Architect.

- C. Mockups: Full size physical assemblies that are constructed on-site. Mockups are constructed to verify selections made under sample submittals; to demonstrate aesthetic effects and, where indicated, qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, accepted mockups establish the standard by which the Work will be judged.
  - 1. Laboratory Mockups: Full-size, physical assemblies constructed at testing facility to verify performance characteristics.
  - 2. Integrated Exterior Mockups: Mockups of the exterior envelope erected separately from the building but on the project site, consisting of multiple products, assemblies and subassemblies.
  - 3. Room Mockups: Mockups of typical interior spaces complete with wall, floor, and ceiling finishes, doors, windows, millwork, casework, specialties, furnishings and equipment, and lighting.
- D. Preconstruction Testing: Tests and inspections performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.
- E. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements and industry standards.
- F. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.
- G. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- I. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
- J. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five (5) previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

# 1.4 CONFLICTING REQUIREMENTS

A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect through the Owner for review before proceeding.

# SUMMER BAY II APARTMENTS – LAKE COUNTY, FL FK #5389

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect through the Owner for review before proceeding.

## 1.5 ACTION SUBMITTALS

- A. Shop Drawings: For integrated exterior mockups, provide plans, sections, and elevations, indicating materials and size of mockup construction.
  - 1. Indicate manufacturer and model number of individual components.
  - 2. Provide axonometric drawings for conditions difficult to illustrate in two dimensions.

# 1.6 INFORMATIONAL SUBMITTALS

- A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.
- B. Contractor's Quality-Control Manager Qualifications: For supervisory personnel.
- C. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- D. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
  - 1. Specification Section number and title.
  - 2. Entity responsible for performing tests and inspections.
  - 3. Description of test and inspection.
  - 4. Identification of applicable standards.
  - 5. Identification of test and inspection methods.
  - 6. Number of tests and inspections required.
  - 7. Time schedule or time span for tests and inspections.
  - 8. Requirements for obtaining samples.
  - 9. Unique characteristics of each quality-control service.

# 1.7 CONTRACTOR'S QUALITY-CONTROL PLAN

A. Quality-Control Plan, General: Submit quality-control plan within ten (10) days of Notice to Proceed, and not less than five (5) days prior to preconstruction conference. Submit in format acceptable to Owner. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities. Coordinate with Contractor's construction schedule.

- B. Quality-Control Personnel Qualifications: Engage qualified full-time personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.
  - 1. Project quality-control manager may also serve as Project superintendent.
- C. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.
- D. Testing and Inspection: Include in quality-control plan a comprehensive schedule of Work requiring testing or inspection, including the following:
  - 1. Contractor-performed tests and inspections including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections.
  - 2. Special inspections required by authorities having jurisdiction and indicated on the "Statement of Special Inspections."
  - 3. Owner-performed tests and inspections indicated in the Contract Documents.
- E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements and accepted mockups.
- F. Monitoring and Documentation: Maintain testing and inspection reports including log of approved and rejected results. Include work Owner has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

#### 1.8 REPORTS AND DOCUMENTS

- A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
  - 1. Date of issue.
  - 2. Project title and number.
  - 3. Name, address, and telephone number of testing agency.
  - 4. Dates and locations of samples and tests or inspections.
  - 5. Names of individuals making tests and inspections.
  - 6. Description of the Work and test and inspection method.
  - 7. Identification of product and Specification Section.
  - 8. Complete test or inspection data.
  - 9. Test and inspection results and an interpretation of test results.
  - 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
  - 11. Comments or professional opinion from the testing agency on whether tested or inspected Work complies with the Contract Document requirements.
  - 12. Name and signature of laboratory inspector.

- 13. Recommendations from the testing agency on retesting and reinspecting.
- B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
  - 1. Name, address, and telephone number of technical representative making report.
  - 2. Statement on condition of substrates and their acceptability for installation of product.
  - 3. Statement that products at Project site comply with requirements.
  - 4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
  - 5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
  - 6. Statement whether conditions, products, and installation will affect warranty.
  - 7. Other required items indicated in individual Specification Sections.
- C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
  - 1. Name, address, and telephone number of factory-authorized service representative making report.
  - 2. Statement that equipment complies with requirements.
  - 3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
  - 4. Statement whether conditions, products, and installation will affect warranty.
  - 5. Other required items indicated in individual Specification Sections.
- D. Permits, Licenses, and Certificates: For Project records, submit one (1) copy each to Owner of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work. Maintain project record file copy for submittal with closeout documentation.

#### 1.9 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

### SUMMER BAY II APARTMENTS – LAKE COUNTY, FL FK #5389

- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or products that are similar to those indicated for this Project in material, design, and extent.
- F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
  - 1. Requirements of authorities having jurisdiction shall supersede requirements for specialists to the extent they are more stringent.
- G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
  - 1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
  - 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- J. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
  - 1. Contractor responsibilities include the following:
    - a. Provide test specimens representative of proposed products and construction.
    - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
    - c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
    - d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
    - e. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
    - f. When testing is complete, remove test specimens, assemblies, mockups, and laboratory mockups; do not reuse products on Project.

- 2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
- K. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
  - 1. Build mockups in location and of size indicated or, if not indicated, as acceptable to Owner.
  - 2. Notify Owner at least seven (7) days in advance of dates and times when mockups will be constructed.
  - 3. Notify Owner, at least seven (7) days in advance of anticipated or planned deviations in the mockup from the Contract Documents.
  - 4. Employ supervisory personnel who will oversee mockup construction. Employ workers that will be employed during the construction at the Project.
  - 5. Demonstrate the proposed range of aesthetic effects and workmanship.
  - 6. Obtain Owner's acceptance of mockups before starting work, fabrication, or construction.
    - a. Allow seven (7) days for initial review and each re-review of each mockup.
  - 7. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
  - 8. Demolish and remove mockups when acceptable to Owner, unless otherwise indicated.
- L. Integrated Exterior Mockups: Construct integrated exterior mockup in accordance with Shop Drawings. Coordinate installation of exterior envelope materials and products for which mockups are required in individual specification sections, along with supporting materials.
- M. Room Mockups: Construct room mockups incorporating required materials and assemblies, finished in accordance with requirements. Provide required lighting and additional lighting where required to enable Owner to evaluate quality of the Work.
- N. Laboratory Mockups: Comply with requirements of preconstruction testing and those specified in individual Specification Sections in Divisions 02 through 49.

# 1.10 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
  - 1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
  - 2. Payment for these services will be made from testing and inspecting allowances, as authorized by Change Orders, or separately by Owner.
  - 3. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.

- B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.
  - 1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
  - 2. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
    - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
  - 3. Notify testing agencies, and Architect if required or indicated, at least twenty-four (24) hours in advance of time when Work that requires testing or inspecting will be performed.
  - 4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
  - 5. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
  - 6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 01 Section "Submittal Procedures."
- D. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.
- E. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- F. Testing Agency Responsibilities: Cooperate with Owner and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
  - 1. Notify Owner and Contractor promptly of irregularities, deviations or deficiencies observed in the Work during performance of its services.
  - 2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
  - 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
  - 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
  - 5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.

- 6. Do not perform any duties of Contractor.
- G. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
  - 1. Access to the Work.
  - 2. Incidental labor and facilities necessary to facilitate tests and inspections.
  - 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
  - 4. Facilities for storage and field curing of test samples.
  - 5. Delivery of samples to testing agencies.
  - 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
  - 7. Security and protection for samples and for testing and inspecting equipment at Project site.
- H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
  - 1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar qualitycontrol services required by the Contract Documents within twenty (20) days of the commencement of the work. Coordinate and submit concurrently with Contractor's construction schedule. Update as the Work progresses.
  - 1. Distribution: Distribute schedule to Owner, Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

## 1.11 SPECIAL TESTS AND INSPECTIONS

- A. Special Tests and Inspections: Owner will engage a qualified testing agency or special inspector to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, and as follows:
  - 1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
  - 2. Notifying Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
  - 3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect with copy to Contractor and to authorities having jurisdiction.
  - 4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
  - 5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
  - 6. Retesting and reinspecting corrected work.

- B. Field Testing of Wall and Floor / Ceiling Separation Assemblies for Acoustical Performance: Owner may engage a qualified testing agency, or firm, to conduct field tests and evaluations of wall and floor / ceiling assemblies designated to comply with minimum acoustic performance levels stipulated by the building codes and regulations in effect and adopted by the authorities having jurisdiction. The field tests will be performed at the direction of Owner according to the following criteria;
  - 1. Acoustical field tests will be conducted for each wall and floor / ceiling assembly required to comply with designated minimum acoustic performance criteria including separation walls between dwelling units, separation walls between dwelling units and public spaces and floor / ceiling assemblies between dwelling units and between dwelling units and public spaces.
  - 2. Acoustical field testing shall include a determination of the apparent sound transmission class (ASTC) rating for each assembly tested. All ASTC testing shall be conducted in accordance with the latest edition and revisions to ASTM E336, "Standard Test Method for Measurement of Airborne Sound Attenuation between Rooms in Buildings."
  - 3. Acoustical field testing shall include a determination of the field impact insulation class (FIIC) rating for each floor / ceiling assembly tested. FIIC field testing shall be conducted for each applied floor finish material installed within the test area envelope. All FIIC field testing shall be conducted in accordance with the latest edition and revisions to ASTM E1007, "Standard Test Method for Field Measurement of Tapping Machine Impact Sound Transmission through Floor Ceiling Assemblies and Associated Support Structures."
  - 4. Acoustical field testing shall be conducted to fully constructed conditions, including the completion of all installed finishes to the acceptance of the selected acoustical testing agency or firm.

## PART 2 - PRODUCTS (Not Used)

## PART 3 - EXECUTION

## 3.1 TEST AND INSPECTION LOG

- A. Prepare a record of tests and inspections. Include the following:
  - 1. Date test or inspection was conducted.
  - 2. Description of the Work tested or inspected.
  - 3. Date test or inspection results were transmitted to Architect.
  - 4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and modifications as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.

#### 3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

# SUMMER BAY II APARTMENTS – LAKE COUNTY, FL FK #5389

- 1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Division 01 Section "Execution."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000
## SECTION 014200 - REFERENCES

## PART 1 - GENERAL

# 1.1 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. "Reviewed": When used to convey Owner's action on Contractor's submittals, applications, and requests, "reviewed" is limited to Owner's duties and responsibilities as stated in the Conditions of the Contract.
- C. "Directed": A command or instruction by Owner. Other terms including "requested," "authorized," "selected," "required," and "accepted" have the same meaning as "directed."
- D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
- E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- H. "Provide": Furnish and install, complete and ready for the intended use.
- I. Installer: An Installer is the Contractor or another entity engaged by the Contractor, either as an employee, subcontractor, or contractor of lower tier, to perform a particular construction activity, including installation, erection, application, and similar operations. Installers are required to be experienced in the operations they are engaged to perform.
  - 1. The term experienced, when used with the term Installer, means having a minimum of five previous projects similar in size and scope to this Project, being familiar with the special requirements indicated, and having complied with requirements of the authority having jurisdiction.
  - 2. Trades: Using terms such as carpentry is not intended to imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as carpenter. It also does not imply that requirements specified apply exclusively to tradespersons of the corresponding generic name.

- 3. Assigning Specialists: Certain Sections of the Specifications require that specific construction activities shall be performed by specialists who are recognized experts in those operations. The specialists must be engaged for those activities, and their assignments are requirements over which the Contractor has no choice or option. However, the ultimate responsibility for fulfilling Contract requirements remains with the Contractor.
  - a. This requirement shall not be interpreted to conflict with enforcing building codes and similar regulations governing the Work.
- J. "Project Site": Space available to the Contractor for performing construction activities either exclusively or in conjunction with others performing other work as part of the Project. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.
- K. Testing Agencies: A testing agency is an independent entity engaged to perform specific inspections or tests, either at the Project site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

## 1.2 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.
- C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
  - 1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.
  - D. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. Where such acronyms or abbreviations are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standards-generating organization, authority having jurisdiction, or other entity applicable to the context of the Text provision.
  - E. Conflicting Requirements: Where compliance with two or more standards is specified and where the standards may establish different or conflicting requirements for minimum quantities or quality levels, refer requirements that are different but apparently equal and other uncertainties to the Owner for a decision before proceeding.
    - 1. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum

within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of the requirements. Refer uncertainties to the Owner for a decision before proceeding.

## 1.3 SPECIFICATION FORMAT AND CONTENT EXPLANATION

- A. Specification Format: These Specifications are organized into Divisions and Sections based on the Construction Specifications Institute's 49-Division format and MASTERFORMAT numbering system.
- B. Specification Content: This Specification uses certain conventions regarding the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:
  - 1. Abbreviated Language: Language used in Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words that are implied, but not stated, shall be interpolated as the sense requires. Singular words will be interpreted as plural and plural words interpreted as singular where applicable as the context of the Contract Documents indicates.
  - 2. Imperative and streamlined language is used generally in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the Text, subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Contractor, or by others when so noted.
    - a. The words "shall be" are implied wherever a colon (:) is used within a sentence or phrase.

## 1.4 SUBMITTALS

A. Permits, Licenses, and Certificates: For the Project records, submit one (1) copy to Owner of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence, and records established in conjunction with compliance with standards and regulations bearing upon performance of the Work. Maintain project record file copy for submittal with closeout documentation.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

## END OF SECTION 014200

# SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

#### PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Sections:
  - 1. Division 01 Section "Summary" for work restrictions and limitations on utility interruptions.
- C. Temporary utilities include, but are not limited to, the following:
  - 1. Sewers and drainage.
  - 2. Water service and distribution.
  - 3. Sanitary facilities, including toilets, wash facilities, and drinking-water facilities.
  - 4. Heating and cooling facilities.
  - 5. Ventilation.
  - 6. Electric power service.
  - 7. Lighting.
  - 8. Telephone service.
- D. Support facilities include, but are not limited to, the following:
  - 1. Temporary roads and paving.
  - 2. Dewatering facilities and drains.
  - 3. Project identification and temporary signs.
  - 4. Waste disposal facilities.
  - 5. Field offices.
  - 6. Storage and fabrication sheds.
  - 7. Lifts and hoists.
  - 8. Temporary elevator usage.
  - 9. Temporary stairs.
  - 10. Construction aids and miscellaneous services and facilities.
- E. Security and protection facilities include, but are not limited to, the following:
  - 1. Environmental protection.
  - 2. Stormwater control.

- 3. Tree and plant protection.
- 4. Pest control.
- 5. Site enclosure fence.
- 6. Security enclosure and lockup.
- 7. Barricades, warning signs, and lights.
- 8. Temporary enclosures.
- 9. Temporary partitions.
- 10. Fire protection.

#### 1.3 USE CHARGES

- A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Architect, occupants of Project, testing agencies, and authorities having jurisdiction.
- B. Sewer Service: Pay sewer service use charges for sewer usage by all entities for construction operations at Project Site.
- C. Water Service: Pay water service use charges for water used by all entities for construction operations at Project Site.
- D. Electric Power Service: Pay electric power service use charges for electricity used by all entities for construction operations at Project site.

#### 1.4 QUALITY ASSURANCE

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

#### 1.5 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Engage installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

#### PART 2 - PRODUCTS

#### 2.1 MATERIALS

A. General: Provide new materials. Undamaged, previously used materials in serviceable condition may be used if acceptable to Owner. Provide materials suitable for use intended and as accepted by the authorities having jurisdiction.

- B. Link Fencing: Minimum 2-inch (50-mm), 0.148-inch- (3.8-mm-) thick, galvanized steel, chain-link fabric fencing; minimum 6 feet (1.8 m) high with galvanized steel pipe posts; minimum 2-3/8-inch- (60-mm-) OD line posts and 2-7/8-inch- (73-mm-) OD corner and pull posts, with 1-5/8-inch- (42-mm-) OD top rails.
- C. Portable Chain-Link Fencing: Minimum 2-inch (50-mm), 0.148-inch- (3.8-mm-) thick, galvanized steel, chain-link fabric fencing; minimum 6 feet (1.8 m) high with galvanized steel pipe posts; minimum 2-3/8-inch- (60-mm-) OD line posts and 2-7/8-inch- (73-mm-) OD corner and pull posts, with 1-5/8-inch- (42-mm-) OD top and bottom rails. Provide galvanized steel bases for supporting posts. Use for temporary fencing separation within Project site and perimeter fence.
- D. Lumber and Plywood: Comply with requirements in Division 6 Section "Rough Carpentry."
- E. Roofing: Standard-weight, mineral-surfaced, asphalt shingles or asphalt-impregnated and coated, mineral-surfaced, roll-roofing sheet.
- F. Gypsum Board: Minimum 1/2 inch thick by 48 inches wide by maximum available lengths; regular-type panels with tapered edges. Comply with ASTM C 36.
- G. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10 mils (0.25 mm) minimum thickness, with flame-spread rating of 15 or less per ASTM E 84.
- H. Dust Control Adhesive-Surface Walk-off Mats: Provide mats minimum 36 by 60 inches (914 by 1624 mm).
- I. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.
- J. Paint: Comply with requirements in Division 9 Section "Painting."
- K. Tarpaulins: Fire-resistive labeled with flame-spread rating of 15 or less.
- L. Water: Potable.

# 2.2 TEMPORARY FACILITIES

- A. Field Offices: Prefabricated Mobile units with lockable entrances, operable windows, and serviceable finishes; heated and air conditioned; on foundations adequate for normal loading.
  - 1. Comply with Local Codes and regulations for tie-down requirements.

## 2.3 EQUIPMENT

- A. Fire Extinguishers: Hand carried, portable, UL rated. Provide class and extinguishing agent as indicated or a combination of extinguishers of NFPA-recommended classes for exposures.
  - 1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.

- B. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
  - 1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
  - 2. Heating Units: Listed and labeled for type of fuel being consumed, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
  - 3. Permanent HVAC System: If Owner authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of eight (8) minimum at each return air grille in system and remove at end of construction and clean HVAC system as required in Division 01 Section "Closeout Procedures".
- C. Self-Contained Toilet Units: Single-occupant units of chemical type; vented; fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.
- D. Drinking-Water Fixtures: Containerized, tap-dispenser, bottled-water drinking-water units, including paper cup supply.
- E. Electrical Outlets: Properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120-V plugs into higher-voltage outlets; equipped with ground-fault circuit interrupters, reset button, and pilot light.
- F. Power Distribution System Circuits: Where permitted and overhead and exposed for surveillance, wiring circuits, not exceeding 125-V ac, 20-A rating, and lighting circuits may be nonmetallic sheathed cable.

## PART 3 - EXECUTION

## 3.1 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
- B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

# 3.2 TEMPORARY UTILITY INSTALLATION

- A. General: Engage appropriate local utility company to install temporary service or connect to existing service. Where utility company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with utility company recommendations.
  - 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

- 2. Provide adequate capacity at each stage of construction. Before temporary utility is available, provide trucked-in services.
- B. Sewers and Drainage: If sewers are available, provide temporary connections to remove effluent that can be discharged lawfully. If sewers are not available or cannot be used, provide drainage ditches, dry wells, stabilization ponds, and similar facilities. If neither sewers nor drainage facilities can be lawfully used for discharge of effluent, provide containers to remove and dispose of effluent off-site in a lawful manner.
  - 1. Filter out excessive soil, construction debris, chemicals, oils, and similar contaminants that might clog sewers or pollute waterways before discharge.
  - 2. Connect temporary sewers to municipal system as directed by sewer department officials.
  - 3. Maintain temporary sewers and drainage facilities in a clean, sanitary condition. After heavy use, restore normal conditions promptly.
  - 4. Provide temporary filter beds, settlement tanks, separators, and similar devices to purify effluent to levels acceptable to authorities having jurisdiction.
- C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction until permanent water service is in use. Sterilize temporary water piping before use.
  - 1. Provide rubber hoses as necessary to serve Project site.
  - 2. As soon as water is required at each level, extend service to form a temporary water- and fire-protection standpipe. Provide distribution piping. Space outlets so water can be reached with a 100-foot hose. Provide one hose at each outlet.
  - 3. Where installations below an outlet might be damaged by spillage or leakage, provide a drip pan of suitable size to minimize water damage. Drain accumulated water promptly from pans.
  - 4. Provide pumps to supply a minimum of 30-psi static pressure at highest point. Equip pumps with surge and storage tanks and automatic controls to supply water uniformly at reasonable pressures.
- D. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking-water fixtures. Comply with regulations and health codes for type, number, location, operation, and maintenance of fixtures and facilities.
  - 1. Disposable Supplies: Provide toilet tissue, paper towels, paper cups, and similar disposable materials for each facility. Maintain adequate supply. Provide covered waste containers for disposal of used material.
  - 2. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy. Provide separate facilities for male and female personnel.
  - 3. Wash Facilities: Install wash facilities supplied with potable water at convenient locations for personnel who handle materials that require wash up. Dispose of drainage properly. Supply cleaning compounds appropriate for each type of material handled.
    - a. Provide safety showers, eyewash fountains, and similar facilities for convenience, safety, and sanitation of personnel.
  - 4. Drinking-Water Facilities: Provide bottled-water, drinking-water units.

- a. Where power is accessible, provide electric water coolers to maintain dispensed water temperature at 45 to 55 deg F.
- 5. Locate toilets and drinking-water fixtures so personnel need not walk more than two stories vertically or 200 feet (60 m) horizontally to facilities.
- E. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.
  - 1. Maintain a minimum temperature of 50 deg F in permanently enclosed portions of building for normal construction activities, and 65 deg F for finishing activities and areas where finished Work has been installed.
- F. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.
  - 1. Provide dehumidification systems when required to reduce substrate moisture levels to level required to allow installation or application of finishes and adjacent products.
- G. Electric Power Service: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. Include meters, transformers, overload-protected disconnecting means, automatic ground-fault interrupters, and main distribution switchgear.
  - 1. Install electric power service underground, unless overhead service must be used.
  - 2. Install power distribution wiring overhead and rise vertically where least exposed to damage.
- H. Electric Distribution: Provide receptacle outlets adequate for connection of power tools and equipment.
  - 1. Provide waterproof connectors to connect separate lengths of electrical power cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.
  - 2. Provide warning signs at power outlets other than 110 to 120 V.
  - 3. Provide metal conduit, tubing, or metallic cable for wiring exposed to possible damage. Provide rigid steel conduits for wiring exposed on grades, floors, decks, or other traffic areas.
  - 4. Provide metal conduit enclosures or boxes for wiring devices.
  - 5. Provide 4-gang outlets, spaced so 100-foot extension cord can reach each area for power hand tools and task lighting. Provide a separate 125-V ac, 20-A circuit for each outlet.
- I. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

- 1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
- 2. Provide one 100-W incandescent lamp per 500 sq. ft., uniformly distributed, for general lighting, or equivalent illumination.
- 3. Provide one 100-W incandescent lamp every 50 feet in traffic areas.
- 4. Provide one 100-W incandescent lamp per story in stairways and ladder runs, located to illuminate each landing and flight.
- 5. Install exterior-yard site lighting that will provide adequate illumination for construction operations, traffic conditions, and signage visibility when the Work is being performed.
- J. Telephone Service: Provide temporary telephone service in common-use facilities for use by all construction personnel. Install (1) one telephone line(s) for each field office and first aid station.
  - 1. Provide additional telephone lines for the following:
    - a. Provide a dedicated telephone line for each facsimile machine and data outlet in each field office.
    - b. In field office with more than two occupants, install a telephone for each additional occupant or pair of occupants.
  - 2. At each telephone, post a list of important telephone numbers.
    - a. Police and fire departments.
    - b. Ambulance service.
    - c. Contractor's home office.
    - d. Architect's office.
    - e. Owner's office.
    - f. Principal subcontractors' field and home offices.
  - 3. Provide superintendent with cellular telephone or portable two-way radio for use when away from field office.
- K. Electronic Communication Service: Provide a desktop computer in the primary field office adequate for use by Owner to access project electronic documents and maintain electronic communications.

## 3.3 SUPPORT FACILITIES INSTALLATION

- A. General: Comply with the following:
  - 1. Locate field offices, storage sheds, sanitary facilities, and other temporary construction and support facilities for easy access.
  - 2. Provide construction for temporary offices, shops, and sheds located within construction area or within 30 feet (9 m) of building lines that is noncombustible according to ASTM E 136. Comply with NFPA 241.
  - 3. Maintain support facilities until Owner schedules Substantial Completion site observation. Remove before Substantial Completion with acceptance of Owner.

Personnel remaining after Substantial Completion may be permitted to use permanent facilities, under conditions acceptable to Owner.

- B. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations. Locate temporary roads and paved areas within construction limits indicated on Drawings.
  - 1. Provide a reasonably level, graded, well-drained subgrade of satisfactory soil material, compacted to not less than 95 percent of maximum dry density in the top 6 inches or as required by authorities having jurisdiction.
  - 2. Provide gravel paving course of subbase material not less than 3 inches thick; roller compacted to a level, smooth, dense surface.
  - 3. Provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust.
- C. Temporary Use of Permanent Roads and Paved Areas: To the extent that temporary roads and paved areas are in same location as permanent roads and paved areas, construct and maintain temporary roads and paved areas adequate for construction operations. Extend temporary roads and paved areas, within construction limits indicated, as necessary for construction operations.
  - 1. Coordinate elevations of temporary roads and paved areas with permanent roads and paved areas.
  - 2. Prepare subgrade and install subbase and base for temporary roads and paved areas according to Division 31 Section "Earth Moving" or as indicated on Site Engineering Contract Documents.
  - 3. Recondition base after temporary use, including but not limited to, removing contaminated material, regrading, proofrolling, compacting, and testing.
  - 4. Delay installation of final course of permanent hot-mix asphalt pavement until immediately before Substantial Completion. Repair hot-mix asphalt base-course pavement before installation of final course according to Division 32 Section "Asphalt Paving" or as indicated on Site Engineering Contract Documents.
- D. Traffic Controls: Provide temporary traffic controls at junction of temporary roads with public roads. Include warning signs for public traffic and "STOP" signs for entrance onto public roads. Comply with requirements of authorities having jurisdiction.
  - 1. Protect existing site improvements to remain including curbs, pavement, and utilities.
  - 2. Maintain access for fire-fighting equipment and access to fire hydrants.
- E. Parking: Provide temporary parking areas for construction personnel.
- F. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
  - 1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties nor endanger permanent Work or temporary facilities.
  - 2. Before connection and operation of permanent drainage piping system, provide temporary drainage where roofing or similar waterproof deck construction is completed.
- G. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.

- 1. Identification Signs: Provide Project identification signs as indicated on Drawings.
- 2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.
  - a. Provide temporary, directional signs for construction personnel and visitors.
- 3. Maintain and touchup signs so they are legible at all times.
- H. Waste Disposal Facilities: Comply with requirements specified in Division 01 Section "Construction Waste Management and Disposal."
- I. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with Division 01 Section "Execution" for progress cleaning requirements.
  - 1. If required by authorities having jurisdiction, provide separate containers, clearly labeled, for each type of waste material to be deposited.
  - 2. Develop a waste management plan for Work performed on Project. Indicate types of waste materials Project will produce and estimate quantities of each type. Provide detailed information for on-site waste storage and separation of recyclable materials. Provide information on destination of each type of waste material and means to be used to dispose of all waste materials.
- J. Janitorial Services: Provide janitorial services on a daily basis for temporary offices, first-aid stations, toilets, wash facilities, lunchrooms, and similar areas.
- K. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.
  - 1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.
- L. Common-Use Field Office: Provide an insulated, weathertight, air-conditioned field office for use as a common facility by all personnel engaged in construction activities; of sufficient size to accommodate required office personnel and meetings of 10 persons at Project site. Keep office clean and orderly.
  - 1. Furnish and equip offices as follows:
    - a. Desks (2) and four chairs, four-drawer file cabinet, (2) plan tables, a plan rack, and bookcase.
    - b. Water cooler and private toilet complete with water closet, lavatory, and medicine cabinet with mirror.
    - c. Coffee machine and supplies, including regular and decaffeinated coffee, filters, cups, stirring sticks, creamer, sugar, and sugar substitute.
    - d. Provide a room of not less than 240 sq. ft. for Project meetings. Furnish room with conference table, 12 folding chairs, and 4-foot- square tack board.
  - 2. Provide resilient floor covering and painted gypsum wallboard walls and acoustical ceiling. Provide operable windows with adjustable blinds and insect screens.

- 3. Provide an electric heater with thermostat capable of maintaining a uniform indoor temperature of 68 deg F. Provide an air-conditioning unit capable of maintaining an indoor temperature of 72 deg F.
- 4. Provide fluorescent light fixtures capable of maintaining average illumination of 20 fc at desk height. Provide 110- to 120-V duplex outlets spaced at not more than 12-foot intervals, with a minimum of 1 per wall in each room.
- M. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment involved, including temporary utility services. Sheds may be open shelters or fully enclosed spaces within building or elsewhere on-site.
  - 1. Construct framing, sheathing, and siding using fire-retardant-treated lumber and plywood.
  - 2. Paint exposed lumber and plywood with exterior-grade acrylic-latex emulsion over exterior primer.
- N. Temporary Elevator Use: Refer to Division 14 Sections for temporary use of new elevators.
- O. Temporary Stairs: Until permanent stairs are available, provide temporary stairs where ladders are not adequate.
- P. Temporary Use of Permanent Stairs: Use of new stairs for construction traffic will be permitted, provided stairs are protected and finishes restored to new condition at time of Substantial Completion.

# 3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects. Avoid using tools and equipment that produce harmful noise. Restrict use of noisemaking tools and equipment to hours that will minimize complaints from persons or firms near Project site.
- B. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to requirements of 2003 EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.
  - 1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant- protection zones.
  - 2. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
  - 3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from the project site during the course of the project.
  - 4. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

- C. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.
- D. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.
- E. Pest Control: Before deep foundation work has been completed, retain a local exterminator or pest-control company to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests. Engage this pest-control service to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Obtain extended warranty for Owner. Perform control operations lawfully, using environmentally safe materials.
- F. Site Enclosure Fence: Before construction operations begin, install chain-link enclosure fence with lockable entrance gates. Locate where indicated, or enclose entire Project site or portion determined sufficient to accommodate construction operations. Install in a manner that will prevent people, dogs, and other animals from easily entering site except by entrance gates.
  - 1. Set fence posts in compacted mixture of gravel and earth.
  - 2. Provide gates in sizes and at locations necessary to accommodate delivery vehicles and other construction operations.
  - 3. Provide fence and gates accepted by the authorities having jurisdiction.
  - 4. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish one set of keys to Owner.
- G. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each work day.
- H. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including painting in appropriate colors and graphics, warning signs and lighting.
- I. Temporary Egress: Maintain unobstructed temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.
- J. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
  - 1. Where heating or cooling is needed and permanent enclosure is not complete, provide insulated temporary enclosures. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
  - 2. Vertical Openings: Close openings of 25 sq. ft. or less with plywood or similar materials.
  - 3. Horizontal Openings: Close openings in floor or roof decks and horizontal surfaces with load-bearing, wood-framed construction.
  - 4. Install tarpaulins securely using fire-retardant-treated wood framing and other materials.
  - 5. Where temporary wood or plywood enclosure exceeds 100 sq. ft. in area, use fire-retardant-treated material for framing and main sheathing.

- K. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas from fumes and noise.
  - 1. Construct dustproof partitions to separate areas occupied by Owner of not less than nominal 4-inch studs, 5/8-inch gypsum wallboard with joints taped on occupied side, and 1/2-inch fire-retardant plywood on construction side.
  - Construct dustproof, floor-to-ceiling partitions of not less than nominal 4-inch studs, 2 layers of 3-mil polyethylene sheets, inside and outside temporary enclosure. Cover floor with 2 layers of 3-mil polyethylene sheets, extending sheets 18 inches up the side walls. Overlap and tape full length of joints. Cover floor with 3/4-inch fire-retardant plywood.
    - a. Construct a vestibule and airlock at each entrance to temporary enclosure with not less than 48 inches between doors. Maintain water-dampened foot mats in vestibule.
  - 3. Where fire-resistance-rated temporary partitions are indicated or are required by authorities having jurisdiction, construct partitions according to the rated assemblies.
  - 4. Insulate partitions to control noise transmission to occupied areas.
  - 5. Seal joints and perimeter. Equip partitions with gasketed dustproof doors and security locks where openings are required.
  - 6. Protect air-handling equipment.
  - 7. Provide walk-off mats at each entrance through temporary partition.
- L. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.
  - 1. Prohibit smoking in construction areas.
  - 2. Provide fire extinguishers, installed on walls on mounting brackets, visible and accessible from space being served, with sign mounted above.
    - a. Field Offices: Class A stored-pressure water-type extinguishers.
    - b. Other Locations: Class ABC dry-chemical extinguishers or a combination of extinguishers of NFPA-recommended classes for exposures.
    - c. Locate fire extinguishers where convenient and effective for their intended purpose; provide not less than one extinguisher on each floor at or near each usable stairwell.
  - 3. Store combustible materials in containers in fire-safe locations.
  - 4. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fireprotection facilities, stairways, and other access routes for firefighting. Prohibit smoking in hazardous fire-exposure areas.
  - 5. Permanent Fire Protection: At earliest feasible date in each area of Project, complete installation of permanent fire-protection facility, including connected services, and place into operation and use. Instruct key personnel on use of facilities.
  - 6. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.
  - 7. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.

8. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

## 3.5 MOISTURE AND MOLD CONTROL

- A. Contractor's Moisture-Protection Plan: Avoid trapping water in finished work. Document visible signs of mold that may appear during construction.
- B. Exposed Construction Phase: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect as follows:
  - 1. Protect porous materials from water damage.
  - 2. Protect stored and installed material from flowing or standing water.
  - 3. Keep porous and organic materials from coming into prolonged contact with concrete.
  - 4. Remove standing water from decks.
  - 5. Keep deck openings covered or dammed.
- C. Partially Enclosed Construction Phase: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:
  - 1. Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.
  - 2. Keep interior spaces reasonably clean and protected from water damage.
  - 3. Periodically collect and remove waste containing cellulose or other organic matter.
  - 4. Discard or replace water-damaged material.
  - 5. Do not install material that is wet.
  - 6. Discard, replace or clean stored or installed material that begins to grow mold.
  - 7. Perform work in a sequence that allows any wet materials adequate time to dry before enclosing the material in drywall or other interior finishes.
- D. Controlled Construction Phase of Construction: After completing and sealing of the building enclosure but prior to the full operation of permanent HVAC systems, maintain as follows:
  - 1. Comply with manufacturer's written instructions for temperature, relative humidity, and exposure to water limits.
    - a. Hygroscopic materials that may support mold growth, including wood and gypsum-based products, that become wet during the course of construction and remain wet for forty-eight (48) hours are considered defective.
    - b. Measure moisture content of materials that have been exposed to moisture during construction operations or after installation. Record daily readings over a forty-eight hour period. Identify materials containing moisture levels higher than allowed. Report findings in writing to Owner.
    - c. Remove materials that can not be completely restored to their manufactured moisture level within seventy-two (72) hours.

#### 3.6 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.
  - 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
  - 2. Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.
- C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
  - 1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
  - 2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
  - 3. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 01 Section "Closeout Procedures."

END OF SECTION 015000

## SECTION 016000 - PRODUCT REQUIREMENTS

# PART 1 - GENERAL

#### 1.1 SUMMARY

A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

#### 1.2 DEFINITIONS

- A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
  - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
  - 2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
  - 3. Comparable Product: Product that is demonstrated and accepted through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.
- C. Substitutions: Changes in products, materials, equipment and methods of construction from those required by the Contract Documents and accepted through the submittal process.

## 1.3 ACTION SUBMITTALS

- A. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
  - 1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.

- 2. Owner's Action: If necessary, Owner will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Owner may notify Contractor of acceptance or rejection of proposed comparable product request within fifteen (15) days of receipt of request, or seven (7) days of receipt of additional information or documentation, whichever is later providing conclusive review can be achieved.
  - a. Form of Acceptance: As specified in Division 01 Section "Submittal Procedures."
  - b. Use product specified if Owner does not issue a decision on use of a comparable product request within time allocated.
- B. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 01 Section "Submittal Procedures." Show compliance with requirements.

## 1.4 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.
  - 1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
  - 2. If a dispute arises between contractors over concurrently selectable but incompatible products, Owner will determine acceptability of products to be used.

## 1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
  - 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
  - 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
  - 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
  - 4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.
- C. Storage:
  - 1. Store products to allow for observation and measurement of quantity or counting of units.
  - 2. Store materials in a manner that will not endanger Project structure.

- 3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
- 4. Store cementitious products and materials on elevated platforms.
- 5. Store foam plastic protected from exposure to sunlight, except to extent necessary for period of installation and concealment.
- 6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
- 7. Protect stored products from damage and liquids from freezing.
- 8. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

# 1.6 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
  - 1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
  - 2. Special Warranty: Written warranty required by the Contract Documents to provide stipulated specific rights for Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
  - 1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
  - 2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
  - 3. Refer to Divisions 02 through 49. Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Division 01 Section "Closeout Procedures."

## PART 2 - PRODUCTS

## 2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
  - 1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
  - 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.

- 3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
- 4. Where products are accompanied by the term "as selected," Owner will make selection.
- 5. Where products are accompanied by the term "match sample", sample to be matched is determined by Owner.
- 6. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
- 7. Or Equal: For products specified by name and accompanied by the term "or equal," or "or accepted equal," or "or accepted," comply with requirements in "Comparable Products" Article to obtain acceptance for use of an unnamed product.
- B. Product Selection Procedures:
  - 1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
  - 2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
  - 3. Products:
    - a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
    - b. Nonrestricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.
  - 4. Manufacturers:
    - a. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
    - b. Nonrestricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.
  - 5. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

- C. Visual Matching Specification: Where Specifications require "match sample", provide a product that complies with requirements and matches Owner's designated sample. Owner's decision will be final on whether a proposed product matches.
  - 1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Division 01 Section "Substitution Procedures" for proposal of product.
- D. Visual Selection Specification: Where Specifications include the phrase "as selected by Owner from manufacturer's full range" or similar phrase, select a product that complies with requirements. Owner will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

# 2.2 COMPARABLE PRODUCTS

- A. Conditions for Consideration: Owner will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Owner may return requests without action, except to record noncompliance with these requirements:
  - 1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
  - 2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
  - 3. Evidence that proposed product provides specified warranty.
  - 4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
  - 5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 016000

## SECTION 017300 - EXECUTION

#### PART 1 - GENERAL

## 1.1 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
  - 1. Construction layout.
  - 2. Field engineering and surveying.
  - 3. Installation of the Work.
  - 4. Cutting and patching.
  - 5. Coordination of Owner-installed products.
  - 6. Progress cleaning.
  - 7. Starting and adjusting.
  - 8. Protection of installed construction.
  - 9. Correction of the Work.

# 1.2 DEFINITIONS

- A. Cutting: Removal of in-place construction necessary to permit installation or performance of other work.
- B. Patching: Fitting and repair work required to restore construction to original conditions after installation of other work.

#### 1.3 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For land surveyor.
- B. Certificates: Submit certificate signed by land surveyor certifying that location and elevation of improvements comply with requirements.
- C. Cutting and Patching Plan: Submit plan describing procedures at least ten (10) days prior to the time cutting and patching will be performed. Include the following information:
  - 1. Extent: Describe reason for and extent of each occurrence of cutting and patching.
  - 2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building appearance and other significant visual elements.
  - 3. Products: List products to be used for patching and firms or entities that will perform patching work.
  - 4. Dates: Indicate when cutting and patching will be performed.
  - 5. Utilities and Mechanical and Electrical Systems: List services and systems that cutting and patching procedures will disturb or affect. List services and systems that will be

relocated and those that will be temporarily out of service. Indicate how long services and systems will be disrupted.

- D. Certified Surveys: Submit five (5) copies signed by land surveyor.
- E. Final Property Survey: Submit five (5) copies showing the Work performed and record survey data.

#### 1.4 QUALITY ASSURANCE

- A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.
- B. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
  - 1. Structural Elements: When cutting and patching structural elements, notify Architect through Owner of locations and details of cutting and await directions from the Architect before proceeding. Shore, brace, and support structural element during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection. Structural elements include, but are not limited to the following:
    - a. Foundation construction.
    - b. Bearing and retaining walls.
    - c. Structural concrete.
    - d. Structural steel.
    - e. Lintels.
    - f. Structural decking.
    - g. Stair systems.
    - h. Miscellaneous structural metals.
    - i. Exterior curtain wall construction.
    - j. Equipment supports.
    - k. Piping, ductwork, vessels and equipment.
    - 1. Structural systems of special construction in Division-13.
  - 2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or those results in increased maintenance or decreased operational life or safety. Operational elements include, but are not limited to the following:
    - a. Primary operational systems and equipment.
    - b. Fire separation assemblies.
    - c. Air or smoke barriers.
    - d. Fire-suppression systems.
    - e. Mechanical systems piping and ducts.
    - f. Control systems.
    - g. Communication systems.
    - h. Conveying systems.
    - i. Electrical wiring systems.

- j. Operating systems of special construction.
- 3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Other construction elements include but are not limited to the following:
  - a. Water, moisture, or vapor barriers.
  - b. Membranes and flashings.
  - c. Exterior curtain-wall construction.
  - d. Equipment supports.
  - e. Piping, ductwork, vessels, and equipment.
  - f. Noise- and vibration-control elements and systems.
- 4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Owner's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- C. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.
- D. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

## 1.5 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.

#### PART 2 - PRODUCTS

#### 2.1 MATERIALS

- A. General: Comply with requirements specified in other Sections.
- B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
  - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Owner for the visual and functional performance of inplace materials.

## PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.
  - 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services, and other utilities.
  - 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
  - 1. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
    - a. Description of the Work.
    - b. List of detrimental conditions, including substrates.
    - c. List of unacceptable installation tolerances.
    - d. Recommended corrections.
  - 2. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
  - 3. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
  - 4. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
  - 5. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

#### 3.2 PREPARATION

- A. Existing Utility Information: Furnish information to local utility that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of the Contractor, submit a request for information to Architect through the Owner according to requirements in Division 01 Section "Project Management and Coordination."

## 3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Owner promptly.
- B. General: Engage a land surveyor to lay out the Work using accepted surveying practices.
  - 1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
  - 2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
  - 3. Inform installers of lines and levels to which they must comply.
  - 4. Check the location, level and plumb, of every major element as the Work progresses.
  - 5. Notify Owner when deviations from required lines and levels exceed allowable tolerances.
  - 6. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.
- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.
- D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Owner.

## 3.4 FIELD ENGINEERING

- A. Identification: Owner will identify existing benchmarks, control points, and property corners.
- B. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

- 1. Do not change or relocate existing benchmarks or control points without prior written acceptance of Owner. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Owner before proceeding.
- 2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.
- C. Benchmarks: Establish and maintain a minimum of two (2) permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.
  - 1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
  - 2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
  - 3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.
- D. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.
- E. Final Property Survey: Engage a land surveyor to prepare a final property survey showing significant features (real property) for Project. Include on the survey a certification, signed by land surveyor, that principal metes, bounds, lines, and levels of Project are accurately positioned as shown on the survey.
  - 1. Show boundary lines, monuments, streets, site improvements and utilities, existing improvements and significant vegetation, adjoining properties, acreage, grade contours, and the distance and bearing from a site corner to a legal point.
  - 2. Recording: At Substantial Completion, have the final property survey recorded by or with authorities having jurisdiction as the official "property survey."

# 3.5 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
  - 1. Make vertical work plumb and make horizontal work level.
  - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
  - 3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
  - 4. Maintain minimum headroom clearance of 96 inches (2440 mm) in occupied spaces and 90 inches (2300 mm) in unoccupied spaces, or as indicated, except attic spaces within sloped roof assemblies, maintain maximum possible headroom clearance within structural envelope.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- G. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.
  - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights acceptable to Owner.
  - 2. Allow for building movement, including thermal expansion and contraction.
  - 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

#### 3.6 CUTTING AND PATCHING

- A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
  - 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Temporary Support: Provide temporary support of work to be cut.
- C. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- D. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching in accordance with requirements of Division 01 Section "Summary."

- E. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.
- F. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
  - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
  - 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
  - 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill. Minimize dust generated by cutting and drilling operations.
  - 4. Excavating and Backfilling: Comply with requirements in applicable Division 31 Sections where required by cutting and patching operations.
  - 5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
  - 6. Proceed with patching after construction operations requiring cutting are complete.
- G. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
  - 1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
  - 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
    - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
    - b. Restore damaged pipe covering to its original condition.
  - 3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
    - a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
  - 4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.

- 5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.
- H. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

## 3.7 OWNER-INSTALLED PRODUCTS

- A. Site Access: Provide access to Project site for Owner's construction personnel.
- B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction personnel.
  - 1. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.
  - 2. Preinstallation Conferences: Include Owner's construction personnel at preinstallation conferences covering portions of the Work that are to receive Owner's work. Attend preinstallation conferences conducted by Owner's construction personnel if portions of the Work depend on Owner's construction.

#### 3.8 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
  - 1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
  - 2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F (27 deg C).
  - 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
    - a. Utilize containers intended for holding waste materials of type to be stored.
  - 4. Coordinate progress cleaning for joint-use areas where more than one installer has worked.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
  - 1. Remove liquid spills promptly.
  - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

# SUMMER BAY II APARTMENTS – LAKE COUNTY, FL FK #5389

- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Division 01 Section "Temporary Facilities and Controls."
- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

# 3.9 STARTING AND ADJUSTING

- A. Coordinate startup and adjusting of equipment and operating components with requirements in other Division 01 Sections and other Specification Sections.
- B. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- C. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
- D. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- E. Manufacturer's Field Service: Comply with qualification requirements in Division 01 Section "Quality Requirements."

## 3.10 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.

#### 3.11 CORRECTION OF THE WORK

- A. Repair or remove and replace defective construction. Restore damaged substrates and finishes.
  - 1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
- B. Restore permanent facilities used during construction to their specified condition.
- C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
- D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
- E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 017300

## SECTION 017700 - CLOSEOUT PROCEDURES

#### PART 1 - GENERAL

## 1.1 SUMMARY

- A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
  - 1. Substantial Completion procedures.
  - 2. Final completion procedures.
  - 3. Warranties.
  - 4. Final cleaning.

#### 1.2 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting site observation for determining date of Substantial Completion, complete the following. List items below that are incomplete with request.
  - 1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
  - 2. Advise Owner of pending insurance changeover requirements.
  - 3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
  - 4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
  - 5. Prepare and submit Project Record Documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
  - 6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
  - 7. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
  - 8. Complete startup testing of systems.
  - 9. Submit test/adjust/balance records.
  - 10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
  - 11. Advise Owner of changeover in heat and other utilities.
  - 12. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
  - 13. Complete final cleaning requirements, including touchup painting.
  - 14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
  - 15. Provide summary report of commissioning procedures employed for project.

- B. Observation: Submit a written request for site observation for Substantial Completion. On receipt of request, Owner will either proceed with site observation or notify Contractor of unfulfilled requirements. Owner will prepare the Certificate of Substantial Completion after site observation or will notify Contractor of items, either on Contractor's list or additional items identified by Owner, that must be completed or corrected before certificate will be issued.
  - 1. Repeat Observation: Request site observation when the Work identified in previous site observation reports as incomplete is completed or corrected.
  - 2. Results of completed site observation findings and report will form the basis of requirements for final completion.

## 1.3 FINAL COMPLETION

- A. Preliminary Procedures: Before requesting final observation for determining final completion, complete the following:
  - 1. Submit a final Application for Payment according to Division 01 Section "Payment Procedures."
  - 2. Submit certified copy of Owner's Substantial Completion site observation findings and reported list of items to be completed or corrected (punch list), as issued and dated by Owner. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
  - 3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
  - 4. Submit pest-control final inspection report and warranty.
  - 5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit report of Owner's personnel training sessions.
- B. Observation: Submit a written request for final site observation for acceptance. On receipt of request, Owner will either proceed with site observation or notify Contractor of unfulfilled requirements. Owner will review Contractor's final Application for Payment after site observation or will notify Contractor of construction that must be completed or corrected before Contractor's final Application will be reviewed.
  - 1. Repeat Observation: Request site observation when the Work identified in previous site observation reports as incomplete is completed or corrected.

#### 1.4 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
  - 1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
  - 2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
  - 3. Submit list of incomplete items in the following formats:

- a. PDF electronic file as acceptable to Owner.
- b. Four (4) paper copies of product schedule or list, unless otherwise indicated. Owner will retain two (2) copies and return two (2) copies that include Owner comments and/or additional observed punch list items.

# 1.5 WARRANTIES

- A. Submittal Time: Submit written warranties on request of Owner for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.
- B. Partial Occupancy: Submit properly executed warranties within ten (10) days of completion of designated portions of the Work that are completed, accepted for occupancy by issuance of a Certificate of Occupancy form by the authorities having jurisdiction, and occupied or used by Owner during construction period by separate agreement with Contractor.
- C. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
  - 1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (215-by-280-mm) paper.
  - 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
  - 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
  - 4. Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file as acceptable to Owner with links enabling navigation to each item. Provide table of contents at beginning of document.
- D. Provide additional copies of each warranty to include in operation and maintenance manuals.

## PART 2 - PRODUCTS

## 2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.
## PART 3 - EXECUTION

#### 3.1 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
  - 1. Complete the following cleaning operations before requesting site observation for acceptance of Substantial Completion for entire Project or for a portion of Project:
    - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
    - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
    - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
    - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
    - e. Remove obstructions to provide safe access to, and egress from, building.
    - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
    - g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
    - h. Sweep concrete floors broom clean in unoccupied spaces.
    - i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
    - j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
    - k. Remove labels that are not permanent.
    - 1. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
      - 1) Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates.
    - m. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

- n. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
- o. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
- p. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
- q. Clean ducts, blowers, and coils if units were operated with dirty filters or without filters during construction or that display contamination with particulate matter upon inspection.
- r. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
- s. Leave Project clean and ready for occupancy.
- C. Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid Project of rodents, insects, and other pests. Prepare a final certification report.
- D. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

# SECTION 017823 - OPERATION AND MAINTENANCE DATA

## PART 1 - GENERAL

# 1.1 SUMMARY

- A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
  - 1. Operation and maintenance documentation directory.
  - 2. Emergency manuals.
  - 3. Operation manuals for systems, subsystems, and equipment.
  - 4. Product, material, and finishes care and maintenance manuals.
  - 5. Systems and equipment care and maintenance manuals.

#### 1.2 DEFINITIONS

- A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.
- B. Subsystem: A portion of a system with characteristics similar to a system.
- 1.3 QUALITY ASSURANCE
  - A. Maintenance Manual Preparation: In preparation of manuals, use personnel thoroughly trained and experienced in the maintenance of the material or finish involved, or in the maintenance of the equipment or system involved.
    - 1. Where manuals require written instructions, use personnel skilled in technical writing where necessary for communication of essential data.
    - 2. Where manuals require drawings or diagrams, use draftspersons capable of preparing drawings clearly in an understandable format.

#### 1.4 CLOSEOUT SUBMITTALS

- A. Manual Content: Operations and maintenance manual content is specified in individual specification sections to be reviewed at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
  - 1. Where applicable, clarify and update reviewed manual content to correspond to modifications and field conditions.
- B. Format: Submit operations and maintenance manuals in the following format:
  - 1. Three (3) paper copies. Include a complete operation and maintenance directory. Enclose title pages and directories in clear plastic sleeves. Owner will retain one (1) copy

and return two (2) reviewed copies. Contractor will deliver one (1) reviewed copy to Owner.

- C. Initial Manual Submittal: Submit draft copy of each manual at least thirty (30) days before commencing demonstration and training. Owner and Commissioning Agent will comment on whether general scope and content of manual are acceptable.
- D. Final Manual Submittal: Submit each manual in final draft form prior to requesting site observation for Substantial Completion and at least fifteen (15) days before commencing demonstration and training. Owner will return one draft copy with comments.
  - 1. Correct or modify each manual to comply with Owner's comments. Submit three (3) copies of each corrected manual within ten (10) days of receipt of Owner's comments and prior to commencing demonstration and training. Owner will retain one (1) copy.

# PART 2 - PRODUCTS

# 2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

- A. Organization: Include a section in the directory for each of the following:
  - 1. List of Table of contents.
  - 2. List of documents.
  - 3. List of systems.
  - 4. List of equipment.
  - 5. List of building interior products, materials and finishes.
  - 6. List of building exterior products, materials and finishes.
  - 7. List of warranties and guarantees with guide reference to Warranties and Bonds Manual.
- B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.
- C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.
- D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.
- E. List of Interior Products, Materials and Finishes: List exposed products, materials and finishes organized alphabetically.
- F. List Exterior Products, Materials and Finishes: List exposed products, materials and finishes organized alphabetically.
- G. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

#### 2.2 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

- A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
  - 1. Title page.
  - 2. Table of contents.
  - 3. Manual contents.
- B. Title Page: Include the following information:
  - 1. Subject matter included in manual.
  - 2. Name and address of Project.
  - 3. Name and address of Owner.
  - 4. Date of submittal.
  - 5. Name and contact information for Contractor.
  - 6. Name and contact information for Architect.
  - 7. Cross-reference to related systems in other operation and maintenance manuals.
- C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
  - 1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.
- D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
- E. Manuals, Paper Copy: Submit manuals in the form of hard copy, bound and labeled volumes.
  - 1. Binders: Heavy-duty, three-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch (215-by-280-mm) paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
    - a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
    - b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.
  - 2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.

- 3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment.
- 4. Supplementary Text: Prepared on 8-1/2-by-11-inch (215-by-280-mm) white bond paper.
- 5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
  - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
  - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

# 2.3 MANUAL CONTENT, GENERAL

- A. In each manual, include information specified in the individual Specification section and the following information where applicable for each major component:
  - 1. General material, finish, system or equipment description.
  - 2. Copies of applicable Shop Drawings and Product Data.
  - 3. Material, finish, system or equipment identification, including:
    - a. Name of manufacturer.
    - b. Model number.
    - c. Serial number of each component.
  - 4. Maintenance procedures and schedules.
  - 5. Precautions against improper use and maintenance.
  - 6. Copies of warranties and service contracts.
  - 7. Sources of required maintenance materials and related services.
  - 8. Table of Contents: After title page, include a typewritten table of contents for each volume, arranged systematically according to the Specifications format. Include a list of each product included, identified by product name or other appropriate identifying symbol and indexed to the content of the volume. Where more than one volume is required to accommodate the data, provide a comprehensive table of contents for all volumes in each volume of the set.
  - 9. General Information: Provide a general information section immediately following table of contents, listing each product included in the manual, identified by product name. Under each product, list the name, address, and telephone number of the subcontractor or installer and the maintenance contractor. Clearly delineate the extent of responsibility for each of these entities. Include a local source for replacement parts for equipment.
  - 10. Product Data: Where the manuals include manufacturer's standard printed data, include only those sheets that are pertinent to the part or product installed. Mark each sheet to identify each part or product included in the installation. Where the Project includes more than one item contained in the product data, identify each item, using appropriate references from the Contract Documents. Identify data that is applicable to the installation, and delete references to information that is not applicable.
  - 11. Written Text: Prepare written test to provide necessary information where manufacturer's standard printed data is not available, and the information is necessary for proper maintenance of materials or finishes, or for proper operation and maintenance of equipment or systems. Prepare written text where it is necessary to provide additional information or to supplement data included elsewhere in the manual. Organize text in a

consistent format under separate headings for different procedures. Where necessary, provide a logical sequence of instruction for each operation or maintenance procedure.

- 12. Drawings: Provide specially prepared drawings where necessary to supplement manufacturer's printed data to illustrate the relationship of component parts of equipment or systems or to provide control or flow diagrams. Coordinate these drawings with information contained in Project Record Drawings to assure correct illustration of the completed installation.
- 13. Warranties, and Service Contracts: Provide a copy of each warranty or service contract in the appropriate manual for the information of the Government's operating personnel. Provide written data outlining procedures to follow in the event of product failure. List circumstances and conditions that would affect the validity of warranty.
- B. Where required for full understanding, include a copy of applicable Project Record Drawings. Do not use original Project Record Documents as part of operation and maintenance manuals.

# 2.4 EMERGENCY MANUALS

- A. Content: Organize manual into a separate section for each of the following:
  - 1. Type of emergency.
  - 2. Emergency instructions.
  - 3. Emergency procedures.
- B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
  - 1. Fire.
  - 2. Flood.
  - 3. Gas leak.
  - 4. Water leak.
  - 5. Power failure.
  - 6. Water outage.
  - 7. System, subsystem, or equipment failure.
  - 8. Chemical release or spill.
- C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.
- D. Emergency Procedures: Include the following, as applicable:
  - 1. Instructions on stopping.
  - 2. Shutdown instructions for each type of emergency.
  - 3. Operating instructions for conditions outside normal operating limits.
  - 4. Required sequences for electric or electronic systems.
  - 5. Special operating instructions and procedures.

## 2.5 OPERATION MANUALS

- A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
  - 1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
  - 2. Performance and design criteria if Contractor is delegated design responsibility.
  - 3. Operating standards.
  - 4. Operating procedures.
  - 5. Operating logs.
  - 6. Wiring diagrams.
  - 7. Control diagrams.
  - 8. Piped system diagrams.
  - 9. Precautions against improper use.
  - 10. License requirements including inspection and renewal dates.
- B. Descriptions: Include the following:
  - 1. Product name and model number. Use designations for products indicated on Contract Documents.
  - 2. Manufacturer's name.
  - 3. Equipment identification with serial number of each component.
  - 4. Equipment function.
  - 5. Operating characteristics.
  - 6. Limiting conditions.
  - 7. Performance curves.
  - 8. Engineering data and tests.
  - 9. Complete nomenclature and number of replacement parts.
- C. Operating Procedures: Include the following, as applicable:
  - 1. Startup procedures.
  - 2. Equipment or system break-in procedures.
  - 3. Routine and normal operating instructions.
  - 4. Regulation and control procedures.
  - 5. Instructions on stopping.
  - 6. Normal shutdown instructions.
  - 7. Seasonal and weekend operating instructions.
  - 8. Required sequences for electric or electronic systems.
  - 9. Special operating instructions and procedures.
- D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
- E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

#### 2.6 PRODUCT MAINTENANCE MANUALS

- A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
- B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- C. Product Information: Include the following, as applicable:
  - 1. Product name and model number.
  - 2. Manufacturer's name.
  - 3. Color, pattern, and texture.
  - 4. Material and chemical composition.
  - 5. Reordering information for specially manufactured products.
- D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
  - 1. Inspection procedures.
  - 2. Types of cleaning agents to be used and methods of cleaning.
  - 3. List of cleaning agents and methods of cleaning detrimental to product.
  - 4. Schedule for routine cleaning and maintenance.
  - 5. Repair instructions.
- E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds. Owner review and acceptance of warranties and bonds is required.
  - 1. Include procedures to follow and required notifications for warranty claims.

## 2.7 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

- A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.
- B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

- C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
  - 1. Standard maintenance instructions and bulletins.
  - 2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
  - 3. Identification and nomenclature of parts and components.
  - 4. List of items recommended to be stocked as spare parts.
- D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
  - 1. Test and inspection instructions.
  - 2. Troubleshooting guide.
  - 3. Precautions against improper maintenance.
  - 4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
  - 5. Aligning, adjusting, and checking instructions.
  - 6. Demonstration and training video recording, if available.
- E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
  - 1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
  - 2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.
- F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
- H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds. Owner review and acceptance of warranties and bonds is required.
  - 1. Include procedures to follow and required notifications for warranty claims.

## PART 3 - EXECUTION

## 3.1 MANUAL PREPARATION

A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.

- B. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
- C. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- D. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
  - 1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
  - 2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
- E. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
  - 1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
- F. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
  - 1. Do not use original project record documents as part of operation and maintenance manuals.
  - 2. Comply with requirements of newly prepared record Drawings in Division 01 Section "Project Record Documents."
- G. Comply with Division 01 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

# SECTION 017839 - PROJECT RECORD DOCUMENTS

#### PART 1 - GENERAL

## 1.1 SUMMARY

- A. Section includes administrative and procedural requirements for project record documents, including the following:
  - 1. Record Drawings.
  - 2. Record Specifications.
  - 3. Record Product Data.
  - 4. Miscellaneous record submittals.

## 1.2 CLOSEOUT SUBMITTALS

- A. Record Drawings: Comply with the following:
  - 1. Number of Copies: Submit two (2) sets of marked-up record prints.
  - 2. Number of Copies: Submit copies of record Drawings as follows:
    - a. Initial Submittal: Submit two (2) paper copy sets or PDF electronic files as acceptable to Owner or of marked-up record prints. Owner will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
    - b. Final Submittal: Submit two (2) paper copy sets or PDF electronic files as acceptable to Owner or of marked-up record prints. Include each Drawing, whether or not changes and additional information were recorded.
- B. Record Specifications: Submit two (2) paper copies of Project's Specifications, including addenda and contract modifications.
- C. Record Product Data: Submit one (1) paper copy of each submittal.
  - 1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.
- D. Miscellaneous Record Submittals: Refer to other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit two (2) paper copies of each submittal.
- E. Reports: Submit one (1) paper copy of weekly field activity summary reports indicating items incorporated in Project record documents concurrent with progress of the Work, including modifications, concealed conditions, field changes, product selections, and other notations incorporated.

# PART 2 - PRODUCTS

#### 2.1 RECORD DRAWINGS

- A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings.
  - 1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
    - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
    - b. Accurately record information in an acceptable drawing technique.
    - c. Record data as soon as possible after obtaining it.
    - d. Record and check the markup before enclosing concealed installations.
    - e. Cross-reference record prints to corresponding archive photographic documentation as available.
  - 2. Content: Types of items requiring marking include, but are not limited to, the following:
    - a. Dimensional changes to Drawings.
    - b. Revisions to details shown on Drawings.
    - c. Depths of foundations below first floor.
    - d. Locations and depths of underground utilities.
    - e. Revisions to routing of piping and conduits.
    - f. Revisions to electrical circuitry.
    - g. Actual equipment locations.
    - h. Duct size and routing.
    - i. Locations of concealed internal utilities.
    - j. Changes made by Change Order or Construction Change Directive.
    - k. Changes made following Architect's written comments.
    - 1. Details not on the original Contract Drawings.
    - m. Field records for variable and concealed conditions.
    - n. Record information on the Work that is shown only schematically.
  - 3. Mark the Contract Drawings and Shop Drawings completely and accurately. Utilize personnel proficient at recording graphic information in production of marked-up record prints.
  - 4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
  - 5. Mark important additional information that was either shown schematically or omitted from original Drawings.
  - 6. Note Construction Change Directive numbers, RFI numbers, alternate numbers, Change Order numbers, ASI numbers, and similar identification, where applicable.
- B. Record Transparencies: Immediately before site observation for Certificate of Substantial Completion, review marked-up record prints with Architect. When authorized, prepare a full set of corrected transparencies of the Contract Drawings, as follows:

- 1. Format: Paper copy or annotated PDF electronic file as acceptable to Architect.
- 2. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
- 3. Refer instances of uncertainty to Architect for resolution.
- 4. Architect may furnish Contractor one set of digital data files of the Contract Drawings for use in recording information.
  - a. Refer to Division 01 Section "Submittal Procedures" for requirements related to availability, format and use of Architect's digital data files.
  - b. If digital files are provided, Architect will provide data file layer information. Record markups in separate layers.
- C. Newly Prepared Record Drawings: Prepare new Drawings instead of preparing record Drawings where Owner determines that neither the original Contract Drawings nor Shop Drawings are suitable to show actual installation.
  - 1. New Drawings may be required when a Change Order is issued as a result of accepting an alternate, substitution, or other modification.
  - 2. Consult Architect at Owner's direction for proper scale and scope of detailing and notations required to record the actual physical installation and its relation to other construction. Integrate newly prepared record Drawings into record Drawing sets; comply with procedures for formatting, organizing, copying, binding, and submitting.
- D. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
  - 1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
  - 2. Format: Annotated PDF electronic file as acceptable to Owner with comment function enabled.
  - 3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
  - 4. Identification: As follows:
    - a. Project name.
    - b. Date.
    - c. Designation "PROJECT RECORD DRAWINGS."
    - d. Name of Architect.
    - e. Name of Contractor.

## 2.2 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
  - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.

- 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
- 3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
- 4. For each principal product, indicate whether record Product Data has been submitted in operation and maintenance manuals instead of submitted as record Product Data.
- 5. Note related Change Orders, record Product Data, and record Drawings where applicable.
- B. Format: Submit record Specifications as paper copy or scanned PDF electronic file(s) of marked up paper copy of Specifications as acceptable to Owner.

### 2.3 RECORD PRODUCT DATA

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
  - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
  - 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
  - 3. Note related Change Orders, record Specifications, and record Drawings where applicable.
- B. Format: Submit record Product Data as paper copy or scanned PDF electronic file(s) of marked up paper copy of Product Data as acceptable to Owner.
  - 1. Include record Product Data directory organized by specification section number and title, electronically linked to each item of record Product Data.

## 2.4 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.
- B. Format: Submit miscellaneous record submittals as paper copy or scanned PDF electronic file(s) of marked up miscellaneous record submittals as acceptable to Owner.
  - 1. Include miscellaneous record submittals directory organized by specification section number and title, electronically linked to each item of miscellaneous record submittals.

## PART 3 - EXECUTION

#### 3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and modifications to project record documents as they occur; do not wait until the end of Project.
- B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect's and Owner's reference during normal working hours.

# SECTION 017900 - DEMONSTRATION AND TRAINING

## PART 1 - GENERAL

## 1.1 SUMMARY

- A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
  - 1. Demonstration of operation of systems, subsystems, and equipment.
  - 2. Training in operation and maintenance of systems, subsystems, and equipment.

# 1.2 INFORMATIONAL SUBMITTALS

- A. Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.
  - 1. Indicate proposed training modules utilizing manufacturer-produced demonstration and training video recordings for systems, equipment, and products as available.
- B. Qualification Data: For instructor.
- C. Attendance Record: For each training module, submit list of participants and length of instruction time.
- D. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

## 1.3 CLOSEOUT SUBMITTALS

A. At completion of training, submit complete training manual(s) for Owner's use.

# 1.4 QUALITY ASSURANCE

- A. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Division 01 Section "Quality Requirements," experienced in operation and maintenance procedures and training.
- B. Preinstruction Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to demonstration and training including, but not limited to, the following:
  - 1. Review and discuss locations and other facilities required for instruction.

- 2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
- 3. Review required content of instruction.
- 4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

# 1.5 COORDINATION

- A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations.
- B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
- C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and accepted by Owner.

#### PART 2 - PRODUCTS

## 2.1 INSTRUCTION PROGRAM

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.
- B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:
  - 1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
    - a. System, subsystem, and equipment descriptions.
    - b. Performance and design criteria.
    - c. Operating standards.
    - d. Regulatory requirements.
    - e. Equipment function.
    - f. Operating characteristics.
    - g. Limiting conditions.
    - h. Performance curves.
  - 2. Documentation: Review the following items in detail:
    - a. Emergency manuals.
    - b. Operations manuals.
    - c. Maintenance manuals.
    - d. Project record documents.

- e. Identification systems.
- f. Warranties and bonds.
- g. Maintenance service agreements and similar continuing commitments.
- 3. Emergencies: Include the following, as applicable:
  - a. Instructions on meaning of warnings, trouble indications, and error messages.
  - b. Instructions on stopping.
  - c. Shutdown instructions for each type of emergency.
  - d. Operating instructions for conditions outside of normal operating limits.
  - e. Sequences for electric or electronic systems.
  - f. Special operating instructions and procedures.
- 4. Operations: Include the following, as applicable:
  - a. Startup procedures.
  - b. Equipment or system break-in procedures.
  - c. Routine and normal operating instructions.
  - d. Regulation and control procedures.
  - e. Control sequences.
  - f. Safety procedures.
  - g. Instructions on stopping.
  - h. Normal shutdown instructions.
  - i. Operating procedures for emergencies.
  - j. Operating procedures for system, subsystem, or equipment failure.
  - k. Seasonal and weekend operating instructions.
  - 1. Required sequences for electric or electronic systems.
  - m. Special operating instructions and procedures.
- 5. Adjustments: Include the following:
  - a. Alignments.
  - b. Checking adjustments.
  - c. Noise and vibration adjustments.
  - d. Economy and efficiency adjustments.
- 6. Troubleshooting: Include the following:
  - a. Diagnostic instructions.
  - b. Test and inspection procedures.
- 7. Maintenance: Include the following:
  - a. Inspection procedures.
  - b. Types of cleaning agents to be used and methods of cleaning.
  - c. List of cleaning agents and methods of cleaning detrimental to product.
  - d. Procedures for routine cleaning
  - e. Procedures for preventive maintenance.
  - f. Procedures for routine maintenance.
  - g. Instruction on use of special tools.

- 8. Repairs: Include the following:
  - a. Diagnosis instructions.
  - b. Repair instructions.
  - c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
  - d. Instructions for identifying parts and components.
  - e. Review of spare parts needed for operation and maintenance.

## PART 3 - EXECUTION

#### 3.1 PREPARATION

- A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual organized in coordination with requirements in Division 01 Section "Operations and Maintenance Data."
- B. Set up instructional equipment at instruction location.

## 3.2 INSTRUCTION

- A. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
  - 1. Owner will furnish Contractor with names and positions of participants.
- B. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
  - 1. Schedule training with Owner with at least seven (7) days' advance notice.
- C. Cleanup: Collect used and leftover educational materials and give to Owner. Remove instructional equipment. Restore training area, systems and equipment to condition existing before initial training use.

# SECTION 035413 - GYPSUM CEMENT UNDERLAYMENT

# PART 1 - GENERAL

## 1.1 SUMMARY

A. Section includes gypsum-cement-based, self-leveling underlayment and sound control mat for application below interior floor coverings.

## 1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

## 1.3 QUALITY ASSURANCE

- A. Installer Qualifications: Installer who is approved by manufacturer for application of underlayment products required for this Project.
- B. Product Compatibility: Manufacturers of underlayment and floor-covering systems certify in writing that products are compatible.
- C. Fire-Resistance Ratings: Where indicated, provide gypsum-cement underlayment systems identical to those of assemblies tested for fire resistance per ASTM E 119 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
  - 1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.
- D. Sound Transmission Characteristics: Where indicated, provide gypsum-cement underlayment systems identical to those of assemblies tested for STC and IIC ratings per ASTM E 90 and ASTM E 492 by a qualified testing agency.
- E. Maintain minimum ambient temperatures of 50 degrees F for 72 hours before, during and after installation of underlayment.

## PART 2 - PRODUCTS

## 2.1 GYPSUM-CEMENT-BASED UNDERLAYMENTS

- A. Underlayment: Gypsum-cement-based, self-leveling product compliant with ASTM C 317 that can be applied in minimum uniform thickness of 3/4 inch (18 mm) where 6mm sound insulation is used or 1 inch (24 mm) at all other locations or as indicated on the drawings and that can be feathered at edges to match adjacent floor elevations.
- B. Products: Subject to compliance with requirements, provide one of the following:

#### GYPSUM CEMENT UNDERLAYMENT

- a. Hacker Industries, Inc.; Firm-Fill 2010 Floor Underlayment.
- b. USG Corporation; Levelrock 2500, Type LRK.
- c. Maxxon Corp.: Gyp Crete 2000.
- d. Allied Custom Gypsum; AccuCrete.
- 2. Cement Binder: Gypsum or blended gypsum cement as defined by ASTM C 219.
- 3. Compressive Strength: Not less than 2500 psi (17.25 MPa) at 28 days when tested according to ASTM C 109/C 109M.
- 4. Underlayment Additive: Resilient-emulsion product of underlayment manufacturer, formulated for use with underlayment when applied to substrate and conditions indicated.
- C. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3 to 6 mm); or coarse sand as recommended by underlayment manufacturer. Provide aggregate when recommended in writing by underlayment manufacturer for underlayment thickness required.
- D. Water: Potable and at a temperature of not more than 70 deg F (21 deg C).
- E. Reinforcement: For underlayment applied to wood substrates, provide galvanized metal lath or other corrosion-resistant reinforcement recommended in writing by underlayment manufacturer.
- F. Primer: Product of underlayment manufacturer recommended in writing for substrate, conditions, and application indicated.
- 2.2 Sound Mat: Sound mat products accepted as components on UL listed assemblies indicated. Provide at all locations within the unit subject to hard flooring (i.e. ceramic or porcelain tile, wood flooring, engineered wood flooring, vinyl flooring, etc...) Subject to compliance with requirements, provide one of the following:
  - 1. QT Sound Insulation, 6 mm QT4006 (Basis of Design)
  - 2. Hacker Industries, Inc.; Sound Mat II.
  - 3. USG Corporation; Levelrock Brand Sounds Reduction Mat.
  - 4. Maxxon Corp, Acousti-mat I, Acousti-matt II

## PART 3 - EXECUTION

#### 3.1 PREPARATION

- A. General: Prepare and clean substrate according to manufacturer's written instructions.
  - 1. Treat nonmoving substrate cracks to prevent cracks from telegraphing (reflecting) through underlayment.
  - 2. Fill substrate voids to prevent underlayment from leaking.
- B. Concrete Substrates: Mechanically remove laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants that might impair underlayment bond.
- C. Wood Substrates: Mechanically fasten loose boards and panels to eliminate substrate movement and squeaks. Sand to remove coatings that might impair underlayment bond and

remove sanding dust. Install underlayment reinforcement recommended in writing by manufacturer.

- D. Nonporous Substrates: For ceramic tile, quarry tile, and terrazzo substrates, remove waxes, sealants, and other contaminants that might impair underlayment bond, and prepare surfaces.
- E. Sound Control Mat: Install sound control materials where indicated according to manufacturer's written instructions. Do not install mechanical fasteners that penetrate through the sound control materials. Provide perimeter isolation strip as indicated per the manufacturer's installation instructions and per the construction documents.

## 3.2 APPLICATION

- A. General: Mix and apply underlayment components according to manufacturer's written instructions.
  - 1. Close areas to traffic during underlayment application and for time period after application recommended in writing by manufacturer.
  - 2. Coordinate application of components to provide optimum underlayment-to-substrate and intercoat adhesion.
  - 3. At substrate expansion, isolation, and other moving joints, allow joint of same width to continue through underlayment.
- B. Apply primer over prepared substrate at manufacturer's recommended spreading rate.
- C. Apply underlayment to produce uniform, level surface. Feather edges to match adjacent floor elevations.
- D. Cure underlayment. Prevent contamination during application and curing processes.
- E. Do not install floor coverings over underlayment until after time period recommended in writing by underlayment manufacturer.
- F. Remove and replace underlayment areas that evidence lack of bond with substrate, including areas that emit a "hollow" sound when tapped.
- G. Protection From Heavy Loads: During construction, place temporary wood planking over gypsum cement underlayment wherever it will be subject to heavy wheeled or concentrated loads.

## SECTION 047200 - CAST STONE MASONRY

#### PART 1 - GENERAL

#### 1.1 SUMMARY

# A. Section Includes:

- 1. Keystones.
- 2. Lintel stones.
- 3. Light fixture stones.
- 4. Receptacle stones.
- 5. Piping penetration stones.

# 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include dimensions and finishes.
- B. Samples:
  - 1. For each color and texture of cast stone required.
  - 2. For colored mortar.

## PART 2 - PRODUCTS

#### 2.1 CAST STONE UNITS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - Eldorado Stone. Boral Stone Products, LLC Cultured Stone: (Basis of Design) Pattern (dry-stack) - "Mountain Ledge", color: Sierra Provide "Tuscan" lintel, watertable, sill, capstone and trim stone accessory shapes indicated
  - 2. Centurion Stone.
  - 3. Tejas Textured Stone
  - 4. United Stone.
- B. Provide cast stone units complying with ASTM C 1364 using either the vibrant dry tamp or wet-cast method.
- C. Acid etch units after curing to remove cement film from surfaces to be exposed to view.

D. Colors and Textures: As selected by Owner from manufacturer's full range.

## 2.2 MORTAR MATERIALS

- A. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
- B. Hydrated Lime: ASTM C 207, Type S.
- C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.
- D. Mortar Cement: ASTM C 1329.
- E. Aggregate for Mortar: ASTM C 144.
  - 1. For joints less than 1/4 inch (6 mm) thick, use aggregate graded with 100 percent passing the No. 16 (1.18-mm) sieve.
- F. Water: Potable.

## 2.3 ACCESSORIES AND RELATED MATERIALS

- A. Anchors and fasteners: Type and size required, fabricated from Type 304 stainless steel complying with ASTM A 240/A 240M, ASTM A 276, or ASTM A 666.
- B. Building wrap: As specified in Section 072500 "Water Resistive Barriers".
- C. Water Resistant Barrier: Asphalt saturated felt, nonperforated, No. 15, Type I, complying with ASTM D 226.
- D. Metal Lath: Fabricate expanded metal lath from sheet metal complying with ASTM C 847
  - 1. Galvanized Steel: Structural quality, zinc coated (galvanized) steel sheet complying with ASTM A 653, G90 minimum coating designation.
  - 2. Diamond Mesh Lath; Self furring, weight of 3.4lb./sq. yd. minimum.
- E. Metal weep or drip screed and related accessory corner, edge, control and expansion joint bead profiles.
  - 1. Galvanized Steel: Structural quality, zinc coated (galvanized) steel sheet complying with ASTM A 653, G90 minimum coating designation.
- F. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by

cast stone manufacturer and expressly approved by cleaner manufacturer for use on cast stone and adjacent masonry materials.

## 2.4 MORTAR MIXES

- A. Do not use admixtures including pigments, air-entraining agents, accelerators, retarders, waterrepellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.
  - 1. Do not use calcium chloride in mortar or grout.
  - 2. Use portland cement-lime or mortar cement mortar unless otherwise indicated.
- B. Comply with ASTM C 270, Proportion Specification.
  - 1. For setting mortar, use Type N.

#### 2.5 SOURCE QUALITY CONTROL

- A. Engage a qualified independent testing agency to sample and test cast stone units according to ASTM C 1364.
  - 1. Include one test for resistance to freezing and thawing.

## PART 3 - EXECUTION

#### 3.1 SETTING CAST STONE IN MORTAR

- A. Install cast stone units to comply with requirements in Section 042000 "Unit Masonry."
- B. Set units in full bed of mortar with full head joints unless otherwise indicated.
  - 1. Fill dowel holes and anchor slots with mortar.
  - 2. Fill collar joints solid as units are set.
  - 3. Build concealed flashing into mortar joints as units are set.
  - 4. Keep head joints in coping and other units with exposed horizontal surfaces open to receive sealant.
  - 5. Keep joints at shelf angles open to receive sealant.
- C. Rake out joints for pointing with mortar to depths of not less than 3/4 inch (19 mm). Rake joints to uniform depths with square bottoms and clean sides. Scrub faces of units to remove excess mortar as joints are raked.
- D. Point mortar joints by placing and compacting mortar in layers not greater than 3/8 inch (10 mm). Compact each layer thoroughly and allow it to become thumbprint hard before applying next layer.

- E. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.
- F. Provide sealant joints at copings and other horizontal surfaces, at expansion, control, and pressure-relieving joints, and at locations indicated.
  - 1. Keep joints free of mortar and other rigid materials.
  - 2. Prepare and apply sealant of type and at locations indicated to comply with applicable requirements in Section 079200 "Joint Sealants."

#### 3.2 INSTALLATION TOLERANCES

- A. Variation from Plumb: Do not exceed 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 1/2 inch (12 mm) maximum.
- B. Variation from Level: Do not exceed 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 1/2 inch (12 mm) maximum.
- C. Variation in Joint Width: Do not vary joint thickness more than 1/8 inch in 36 inches (3 mm in 900 mm) or one-fourth of nominal joint width, whichever is less.
- D. Variation in Plane between Adjacent Surfaces (Lipping): Do not vary from flush alignment with adjacent units or adjacent surfaces indicated to be flush with units by more than 1/16 inch (1.5 mm), except where variation is due to warpage of units within tolerances specified.

### 3.3 ADJUSTING AND CLEANING

- A. Remove and replace stained and otherwise damaged units and units not matching approved Samples. Cast stone may be repaired if methods and results are approved by Owner.
- B. Replace units in a manner that results in cast stone matching approved Samples, complying with other requirements, and showing no evidence of replacement.
- C. In-Progress Cleaning: Clean cast stone as work progresses.
  - 1. Remove mortar fins and smears before tooling joints.
  - 2. Remove excess sealant immediately, including spills, smears, and spatter.
- D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed cast stone to comply with requirements in Section 042000 "Unit Masonry."

# SECTION 055000 - METAL FABRICATIONS

## PART 1 - GENERAL

## 1.1 SUMMARY

- A. Section Includes:
  - 1. Miscellaneous steel framing and supports.
  - 2. Miscellaneous steel trim.
  - 3. Loose bearing and leveling plates.
- B. Products furnished, but not installed, under this Section include the following:
  - 1. Loose steel lintels.
  - 2. Anchor bolts, steel pipe sleeves, slotted-channel inserts, and wedge-type inserts indicated to be cast into concrete or built into unit masonry.
  - 3. Steel weld plates and angles for casting into concrete for applications where they are not specified in other Sections.

## 1.2 ACTION SUBMITTALS

A. Shop Drawings: Show fabrication and installation details. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.

## PART 2 - PRODUCTS

#### 2.1 PERFORMANCE REQUIREMENTS

- A. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.
  - 1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces

#### 2.2 METALS

- A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.
- B. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

- C. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- D. Stainless-Steel Bars and Shapes: ASTM A 276, Type 304.
- E. Steel Tubing: ASTM A 500/A 500M, cold-formed steel tubing.
- F. Steel Pipe: ASTM A 53/A 53M, Standard Weight (Schedule 40) unless otherwise indicated.
- G. Cast Iron: Either gray iron, ASTM A 48/A 48M, or malleable iron, ASTM A 47/A 47M, unless otherwise indicated.
- H. Aluminum Extrusions: ASTM B 221 (ASTM B 221M), Alloy 6063-T6.

## 2.3 FASTENERS

- A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633 or ASTM F 1941 (ASTM F 1941M), Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.
  - 1. Provide stainless-steel fasteners for fastening aluminum.
  - 2. Provide stainless-steel fasteners for fastening stainless steel.
  - 3. Provide stainless-steel fasteners for fastening nickel silver.
- B. Cast-in-Place Anchors in Concrete: Either threaded type or wedge type unless otherwise indicated; galvanized ferrous castings, either ASTM A 47/A 47M malleable iron or ASTM A 27/A 27M cast steel. Provide bolts, washers, and shims as needed, all hot-dip galvanized per ASTM F 2329.
- C. Post-Installed Anchors: Torque-controlled expansion anchors.
  - 1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B 633 or ASTM F 1941 (ASTM F 1941M), Class Fe/Zn 5, unless otherwise indicated.
  - 2. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 (A1) stainless-steel bolts, ASTM F 593 (ASTM F 738M), and nuts, ASTM F 594 (ASTM F 836M).

# 2.4 MISCELLANEOUS MATERIALS

- A. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.
  - 1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.
- B. Water-Based Primer: Emulsion type, anticorrosive primer for mildly corrosive environments that is resistant to flash rusting when applied to cleaned steel, complying with MPI#107 and compatible with topcoat.

- C. Epoxy Zinc-Rich Primer: Complying with MPI#20 and compatible with topcoat.
- D. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.
- E. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M.
- F. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.

## 2.5 FABRICATION, GENERAL

- A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Use connections that maintain structural value of joined pieces.
- B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges. Remove sharp or rough areas on exposed surfaces.
- C. Weld corners and seams continuously to comply with the following:
  - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  - 2. Obtain fusion without undercut or overlap.
  - 3. Remove welding flux immediately.
  - 4. At exposed connections, finish exposed welds and surfaces smooth and blended.
- D. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Locate joints where least conspicuous.
- E. Fabricate seams and other connections that are exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.
- F. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors not less than 8 inches (200 mm) from ends and corners of units and 24 inches (600 mm) o.c.

#### 2.6 MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.
- B. Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.
- C. Fabricate steel girders for wood frame construction from continuous steel shapes of sizes indicated.

1. Where wood nailers are attached to girders with bolts or lag screws, drill or punch holes at 24 inches (600 mm) o.c.

## 2.7 MISCELLANEOUS STEEL TRIM

- A. Unless otherwise indicated, fabricate units from steel shapes, plates, and bars of profiles shown with continuously welded joints and smooth exposed edges. Miter corners and use concealed field splices where possible.
- B. Provide cutouts, fittings, and anchorages as needed to coordinate assembly and installation with other work.
- C. Galvanize exterior miscellaneous steel trim.
- D. Prime exterior miscellaneous steel trim with zinc-rich primer.

# 2.8 METAL BOLLARDS

- A. Fabricate metal bollards from Schedule 40 steel pipe.
  - 1. Cap bollards with 1/4-inch- (6.4-mm-) thick steel plate or round off concrete fill.
- B. Fabricate bollards with 3/8-inch- (9.5-mm-) thick steel baseplates for bolting to concrete slab. Drill baseplates at all four corners for 3/4-inch (19-mm) anchor bolts.
- C. Prime bollards with zinc-rich primer.

## 2.9 FINISHES, GENERAL

A. Finish metal fabrications after assembly.

## 2.10 STEEL AND IRON FINISHES

- A. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A 153/A 153M for steel and iron hardware and with ASTM A 123/A 123M for other steel and iron products.
- B. Shop prime iron and steel items not indicated to be galvanized unless they are to be embedded in concrete, sprayed-on fireproofing, or masonry, or unless otherwise indicated.
  - 1. Shop prime with universal shop primer unless zinc-rich primer is indicated.
- C. Preparation for Shop Priming: requirements indicated below:
  - 1. Exterior Items: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
  - 2. Items Indicated to Receive Zinc-Rich Primer: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
  - 3. Items Indicated to Receive Primers Specified in Section 099600 "High-Performance Coatings": SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."

# SUMMER BAY II APARTMENTS – LAKE COUNTY, FL FK #5389

- 4. Other Items: SSPC-SP 3, "Power Tool Cleaning."
- D. Shop Priming: Apply shop primer to comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

## PART 3 - EXECUTION

#### 3.1 INSTALLATION, GENERAL

- A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
- B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
- C. Field Welding: Comply with the following requirements:
  - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  - 2. Obtain fusion without undercut or overlap.
  - 3. Remove welding flux immediately.
  - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction.
- E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

## 3.2 INSTALLING METAL BOLLARDS

- A. Fill bollards solidly with concrete and allow concrete to cure seven days before installing.
- B. Anchor bollards in concrete with pipe sleeves preset and anchored into concrete. Fill annular space around bollard solidly with nonshrink grout.
- C. Anchor bollards in place with concrete footings. Place concrete and vibrate or tamp for consolidation. Support and brace bollards in position until concrete has cured.
- D. Fill bollards solidly with concrete, mounding top surface to shed water if cap is not used.

## 3.3 ADJUSTING AND CLEANING

- A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
- B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780/A 780M.

# SECTION 055100 - METAL STAIRS

## PART 1 - GENERAL

## 1.1 SUMMARY

- A. Section Includes:
  - 1. Preassembled steel stairs with precast treads.
  - 2. Steel tube railings attached to metal stairs.
  - 3. Steel tube handrails attached to walls adjacent to metal stairs.

## 1.2 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design metal stairs, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Structural Performance of Stairs: Metal stairs shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated.
  - 1. Uniform Load: 100 lbf/sq. ft. (4.79 kN/sq. m).
  - 2. Concentrated Load: 300 lbf (1.33 kN) applied on an area of 4 sq. in. (2580 sq. mm).
  - 3. Uniform and concentrated loads need not be assumed to act concurrently.
  - 4. Stair Framing: Capable of withstanding stresses resulting from railing loads in addition to loads specified above.
  - 5. Limit deflection of treads, platforms, and framing members to L/240 or 1/4 inch (6.4 mm), whichever is less.
- C. Structural Performance of Railings: Railings shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated.
  - 1. Handrails and Top Rails of Guards:
    - a. Uniform load of 50 lbf/ ft. (0.73 kN/m) applied in any direction.
    - b. Concentrated load of 200 lbf (0.89 kN) applied in any direction.
    - c. Uniform and concentrated loads need not be assumed to act concurrently.
  - 2. Infill of Guards:
    - a. Concentrated load of 50 lbf (0.22 kN) applied horizontally on an area of 1 sq. ft. (0.093 sq. m).
    - b. Infill load and other loads need not be assumed to act concurrently.

## 1.3 ACTION SUBMITTALS

A. Product Data: For metal stairs.

# SUMMER BAY II APARTMENTS – LAKE COUNTY, FL FK #5389

- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
- C. Delegated-Design Submittal: For installed products indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

# PART 2 - PRODUCTS

## 2.1 METALS

- A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For components exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.
- B. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- C. Steel Tubing: ASTM A 500 (cold formed).
- D. Rolled-Steel Floor Plate: ASTM A 786/A 786M, rolled from plate complying with ASTM A 36/A 36M or ASTM A 283/A 283M, Grade C or D.
- E. Uncoated, Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, structural steel, Grade 25 (Grade 170), unless another grade is required by design loads; exposed.
- F. Uncoated, Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, structural steel, Grade 30 (Grade 205), unless another grade is required by design loads.

## 2.2 MISCELLANEOUS MATERIALS

- A. Provide anchors for embedding units in concrete, either integral or applied to units, as standard with manufacturer.
- B. Apply bituminous paint to concealed surfaces of cast-metal units set into concrete.
- C. Apply clear lacquer to concealed surfaces of extruded units set into concrete.
- D. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.
- E. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.
- F. Welded Wire Fabric: ASTM A 185/A 185M, 6 by 6 inches (152 by 152 mm), W1.4 by W1.4, unless otherwise indicated.
- G. Precast Concrete Treads: Comply with requirements in Section 033000 "Cast-in-Place Concrete" for normal-weight, ready-mixed concrete with a minimum 28-day compressive strength of 5000 psi (35 MPa) and a total air content of not less than 4 percent or more than 6 percent.

## 2.3 FABRICATION, GENERAL

- A. Provide complete stair assemblies, including metal framing, hangers, struts, railings, clips, brackets, bearing plates, and other components necessary to support and anchor stairs and platforms on supporting structure.
  - 1. Join components by welding unless otherwise indicated.
  - 2. Use connections that maintain structural value of joined pieces.
  - 3. Fabricate treads and platforms of exterior stairs so finished walking surfaces slope to drain.
- B. Preassembled Stairs: Assemble stairs in shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations.
- C. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges. Remove sharp or rough areas on exposed surfaces.
- D. Form bent-metal corners to smallest radius possible without impairing work.
- E. Weld connections to comply with the following:
  - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  - 2. Obtain fusion without undercut or overlap.
  - 3. Remove welding flux immediately.
  - 4. Weld exposed corners and seams continuously unless otherwise indicated.
  - 5. At exposed connections, finish exposed welds to comply with NOMMA's "Voluntary Joint Finish Standards" for Type 1 welds: no evidence of a welded joint.
- F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Locate joints where least conspicuous.
- G. Fabricate joints that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

## 2.4 STEEL-FRAMED STAIRS

- A. Stair Framing:
  - 1. Fabricate stringers of steel tubes or channels.
    - a. Provide closures for exposed ends of channel and tube stringers.
    - b. Provide cross brace strapping field welded to underside of stringers to minimize lateral movement of installed assembly.
  - 2. Weld stringers to steel headers; weld or bolt framing members to stringers and headers. If using bolts, fabricate and join so bolts are not exposed on finished surfaces.

#### 2.5 PRECAST CONCRETE TREADS

#### METAL STAIRS
- A. Concrete Materials and Properties: Comply with requirements in Division 03 Section "Cast-in-Place Concrete" for normal-weight, ready-mixed concrete with a minimum 28-day compressive strength of 5000 psi and a total air content of not less than 4 percent or more than 6 percent.
- B. Reinforcing Wire Fabric: Galvanized, welded wire fabric, 2 by 2 inches by 0.062-inchdiameter wire; comply with ASTM A 185 and ASTM A 82, except for minimum wire size.

## 2.6 STAIR RAILINGS

- A. Comply with applicable requirements in Division 05 Section "Pipe and Tube Railings"
  1. Connect posts to stair framing by direct welding unless otherwise indicated.
- B. Steel Tube Railings: Fabricate railings to comply with requirements indicated for design, dimensions, details, finish, and member sizes, including wall thickness of tube, post spacings, and anchorage, but not less than that needed to withstand indicated loads.
  - 1. Rails and Posts: 1-1/2-inch- (41-mm-) diameter top and bottom rails and 1-1/2-inch- (41-mm-) diameter posts.
  - 2. Picket Infill: 1/2-inch- (13-mm-) square pickets spaced less than 4 inches (100 mm) o.c..
  - 3. Intermediate Rails Infill: 1-5/8-inch- (41-mm-) diameter.
- C. Welded Connections: Fabricate railings with welded connections. Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.
  - 1. Finish welds to comply with NOMMA's "Voluntary Joint Finish Standards" for Type 1 welds: no evidence of a welded joint.
- D. Form changes in direction of railings by bending or by inserting prefabricated elbow fittings.
- E. Form curves by bending members in jigs to produce uniform curvature without buckling.
- F. Close exposed ends of railing members with prefabricated end fittings.
- G. Provide wall returns at ends of wall-mounted handrails.
- H. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, end closures, flanges, miscellaneous fittings, and anchors for interconnecting components and for attaching to other work.
  - 1. Connect posts to stair framing by direct welding.
- I. Fillers: Provide fillers made from steel plate, or other suitably crush-resistant material, to transfer wall bracket loads through wall finishes. Size fillers to suit wall finish thicknesses.

## 2.7 FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

- B. Finish metal stairs after assembly.
- C. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A 153/A 153M for steel and iron hardware and with ASTM A 123/A 123M for other steel and iron products.
- D. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
- E. Apply shop primer to uncoated surfaces of metal stair components. Comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

# PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal stairs. Set units accurately in location, alignment, and elevation, measured from established lines and levels and free of rack.
- B. Install metal stairs by welding stair framing to steel structure or to weld plates cast into concrete unless otherwise indicated.
- C. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication.
- D. Field Welding: Comply with requirements for welding in "Fabrication, General" Article.
- E. Install precast concrete treads with attachments supplied by manufacturer.
- F. Attach handrails to wall with wall brackets. Use type of bracket with predrilled hole for exposed bolt anchorage.

#### 3.2 ADJUSTING AND CLEANING

- A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
- B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

# SECTION 055213 - PIPE AND TUBE RAILINGS

#### PART 1 - GENERAL

# 1.1 SUMMARY

- A. Section Includes:
  - 1. Steel pipe and tube railings.
  - 2. Aluminum pipe and tube railings.

# 1.2 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design railings, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Structural Performance: Railings shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
  - 1. Handrails and Top Rails of Guards:
    - a. Uniform load of 50 lbf/ ft. (0.73 kN/m) applied in any direction.
    - b. Concentrated load of 200 lbf (0.89 kN) applied in any direction.
    - c. Uniform and concentrated loads need not be assumed to act concurrently.
  - 2. Infill of Guards:
    - a. Concentrated load of 200 lbs applied horizontally on an area of 1 sq. ft..
- C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.
  - 1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.
- D. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.
- E. Handrails and Guardrails shall comply with the 2010 Florida Building Code for Accessibility.

# 1.3 SUBMITTALS

- A. Product Data: For the following:
  - 1. Manufacturer's product lines of mechanically connected railings.
  - 2. Railing brackets.

- 3. Grout, anchoring cement, and paint products.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
- C. Delegated-Design Submittal: For installed products indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- D. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, according to ASTM E 894 and ASTM E 935.

## 1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of railing from single source from single manufacturer.
- B. Welding Qualifications: Qualify procedures and personnel according to the following:
  - 1. AWS D1.1/D1.1M, "Structural Welding Code Steel".
  - 2. AWS D1.2/D1.2M, "Structural Welding Code Aluminum".
- C. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturer's written recommendations to ensure that shop primers and topcoats are compatible with one another.

## PART 2 - PRODUCTS

#### 2.1 METALS, GENERAL

- A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.
- B. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails unless otherwise indicated.

## 2.2 STEEL AND IRON

- A. Tubing: ASTM A 500 (cold formed)] or ASTM A 513.
- B. Pipe: ASTM A 53/A 53M, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.
  - 1. Provide galvanized shop primed finish for exterior installations and where indicated.
- C. Plates, Shapes, and Bars: ASTM A 36/A 36M.

#### 2.3 ALUMINUM

- A. Aluminum, General: Provide alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with not less than the strength and durability properties of alloy and temper designated below for each aluminum form required.
- B. Extruded Bars and Tubing ASTM B 221 (ASTM B 221M), Alloy 6063-T5/T52.
- C. Extruded Structural Pipe and Round Tubing ASTM B 429/B 429M, Alloy 6063-T6. Provide Standard Weight (Schedule 40) pipe, unless otherwise indicated.
- D. Plate and Sheet: ASTM B 209 (ASTM B 209M), Alloy 6061-T6.
- E. Die and Hand Forgings: ASTM B 247 (ASTM B 247M), Alloy 6061-T6.
- F. Castings: ASTM B 26/B 26M, Alloy A356.0-T6.

# 2.4 FASTENERS:

- A. General: Provide the following:
  - 1. Steel Railings: Type 304 stainless-steel or hot-dip zinc-coated steel fasteners complying with ASTM A 153/A 153M or ASTM F 2329 for zinc coating.
  - 2. Aluminum Railings: Type 304 stainless-steel fasteners.
- B. Fasteners for Anchoring Railings to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction indicated and capable of withstanding design loads.
- C. Fasteners for Interconnecting Railing Components:
  - 1. Provide concealed fasteners for interconnecting railing components and for attaching them to other work, unless exposed fasteners are unavoidable or are the standard fastening method for railings indicated.
  - 2. Provide square or hex socket flat-head machine screws for exposed fasteners unless otherwise indicated.
- D. Post-Installed Anchors: Chemical anchors capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.
  - 1. Material for Exterior Locations and where stainless steel is indicated: Alloy Group 1 (A1) stainless-steel bolts, ASTM F 593 (ASTM F 738M), and nuts, ASTM F 594 (ASTM F 836M).

## 2.5 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded. For aluminum railings, provide type and alloy as recommended by producer of metal to be welded and as required for color match, strength, and compatibility in fabricated items.
- B. Shop Primers: Provide primers that comply with Division 09 painting Sections.
- C. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.
- D. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

#### 2.6 FABRICATION

- A. Assemble railings in the shop to greatest extent possible to minimize field splicing and assembly. Use connections that maintain structural value of joined pieces.
- B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm). Remove sharp or rough areas on exposed surfaces.
- C. Form work true to line and level with accurate angles and surfaces.
- D. Fabricate connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.
- E. Connections: Fabricate railings with either welded or nonwelded connections according to accepted shop drawings unless otherwise indicated.
- F. Welded Connections for Aluminum Pipe: Fabricate railings to interconnect members with concealed internal welds that eliminate surface grinding, using manufacturer's standard system of sleeve and socket fittings.
- G. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings. Remove flux immediately.
  - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  - 2. At exposed connections, finish exposed surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces.
- H. Nonwelded Connections: Connect members with concealed mechanical fasteners and fittings. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.
- I. Form changes in direction by radius bends of radius indicated or by inserting prefabricated elbow fittings of radius indicated.

- J. Bend members in jigs to produce uniform curvature for each configuration required; maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.
- K. Close exposed ends of railing members with prefabricated end fittings.
- L. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated.
- M. Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated. At brackets and fittings fastened to plaster or gypsum board partitions, provide crush-resistant fillers, or other means to transfer loads through wall finishes to structural supports and prevent bracket or fitting rotation and crushing of substrate.
- N. Provide inserts and other anchorage devices for connecting railings to concrete or masonry work. Fabricate anchorage devices capable of withstanding loads imposed by railings. Coordinate anchorage devices with supporting structure.

# 2.7 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designing finishes.
- B. Provide exposed fasteners with finish matching appearance, including color and texture, of railings.

## 2.8 STEEL AND IRON FINISHES

- A. For nongalvanized steel railings, provide nongalvanized ferrous-metal fittings, brackets, fasteners, and sleeves, except galvanize anchors to be embedded in exterior concrete or masonry.
- B. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with requirements indicated below:
  - 1. Exterior Railings: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
  - 2. Railings Indicated to Receive Primers: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
  - 3. Other Railings: SSPC-SP 3, "Power Tool Cleaning."
- C. Primer Application: Apply shop primer to prepared surfaces of railings unless otherwise indicated. Comply with requirements in SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

#### 2.9 ALUMINUM FINISHES

A. Mechanical Finish: AA-M12 (Mechanical Finish: nonspecular as fabricated).

#### SUMMER BAY II APARTMENTS – LAKE COUNTY, FL FK #5389

- B. High-Performance Organic Finish: Three-coat fluoropolymer finish complying with AAMA 2605 and containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
  - 1. Color and Gloss: As selected by Owner from manufacturer's full range.

## PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. Set railings accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.
  - 1. Do not weld, cut, or abrade surfaces of railing components that have been coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
  - 2. Set posts plumb within a tolerance of 1/16 inch in 3 feet (2 mm in 1 m).
  - 3. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet (5 mm in 3 m).
- B. Corrosion Protection: Coat concealed surfaces of aluminum that will be in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.
- C. Adjust railings before anchoring to ensure matching alignment at abutting joints.
- D. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction. Bed fasteners penetrating building envelope in sealant.
- E. Secure wall brackets and railing end flanges to building construction as follows:
  - 1. For concrete and solid masonry anchorage, use drilled-in expansion shields and hanger or lag bolts.
  - 2. For wood stud partitions, use stainless steel hanger or lag bolts set into studs or wood backing between studs. Coordinate with carpentry work to locate backing members.

# 3.2 ADJUSTING, CLEANING AND PROTECTION

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces. Repair galvanized surfaces to comply with ASTM A 780.

END OF SECTION 055213

PIPE AND TUBE RAILINGS

# SECTION 062023 - INTERIOR FINISH CARPENTRY

#### PART 1 - GENERAL

# 1.1 SUMMARY

- A. Section Includes:
  - 1. Interior trim, including non-fire rated interior door frames.
  - 2. Closet Shelves and Rods

## 1.2 SUBMITTALS

- A. Product Data: For each species and cut of lumber, trim and panel products with non-factoryapplied finish.
- B. Research/Evaluation Reports: Showing that fire-retardant-treated wood complies with building code in effect for Project.

#### PART 2 - PRODUCTS

#### 2.1 INTERIOR TRIM

- A. Moldings for Opaque Finish (Painted Finish):
  - 1. Softwood Moldings:
    - a. Species and Grade: Pre-primed Paint Grade wood or MDF.
    - b. Maximum Moisture Content: 15 percent with at least 85 percent of shipment at 12 percent or less.
  - 2. Finger Jointing: Allowed.
  - 3. Profiles in Units:
    - a. Base Trim  $-3\frac{1}{4}$ " Colonial mold
    - b. Door trim to be  $2\frac{1}{4}$  Colonial mold
    - c. Window sills to be ³/₄" solid finish lumber with eased edges. Provide inverted base trim on underside, mitered back to wall on ends. Match width of window.
- B. Closet Specialties:
  - 1. Bedroom closets shelving shall be constructed of paint grade wood. Provide 12" deep wood shelf and perimeter wood cleat at 3 sides. Provide 1-1/2" wood rod with each shelf. Provide intermediate support brackets, minimum 2 per rod. Refer to drawings for layouts.

#### 2.2 MISCELLANEOUS MATERIALS

- A. Glue: Aliphatic-resin, polyurethane, or resorcinol wood glue recommended by manufacturer for general carpentry use.
- B. Multipurpose Construction Adhesive: Formulation complying with ASTM D 3498 that is recommended for indicated use by adhesive manufacturer.

#### PART 3 - EXECUTION

#### 3.1 PREPARATION

A. Before installing interior finish carpentry, condition materials to average prevailing humidity in installation areas for a minimum of 24 hours unless longer conditioning is recommended by manufacturer.

## 3.2 INSTALLATION

- A. Install interior finish carpentry level, plumb, true, and aligned with adjacent materials. Use concealed shims where necessary for alignment.
  - 1. Scribe and cut interior finish carpentry to fit adjoining work. Refinish and seal cuts as recommended by manufacturer.
  - 2. Countersink fasteners, fill surface flush, and sand unless otherwise indicated.
  - 3. Install to tolerance of 1/8 inch in 96 inches (3 mm in 2438 mm) for level and plumb. Install adjoining interior finish carpentry with 1/32-inch (0.8-mm) maximum offset for flush installation and 1/16-inch (1.5-mm) maximum offset for reveal installation.
- B. Install standing and running trim with minimum number of joints practical, using full-length pieces from maximum lengths of lumber available. Do not use pieces less than 24 inches (610 mm) long except where necessary. Miter at returns, miter at outside corners, and cope at inside corners to produce tight-fitting joints with full-surface contact throughout length of joint. Use scarf joints for end-to-end joints.
- C. Replace finish carpentry that is damaged or does not comply with requirements. Finish carpentry may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing. Adjust joinery for uniform appearance.
- D. Clean finish carpentry on exposed and semiexposed surfaces. Touch up finishes to restore damaged or soiled areas.

# SECTION 071326 - SELF-ADHERING SHEET WATERPROOFING

#### PART 1 - GENERAL

## 1.1 SUMMARY

A. Section includes self-adhering modified bituminous sheet waterproofing for basic use (above grade) vertical and horizontal applications.

## 1.2 SUBMITTALS

- A. Product Data: For each type of product.
  - 1. Include construction details, material description, and tested physical and performance properties of waterproofing.
  - 2. Include manufacturer's written instructions for evaluating, preparing, and treating substrate.
- B. Shop Drawings: Show locations and extent of waterproofing and details of substrate joints and cracks, sheet flashings, penetrations, inside and outside corners, tie-ins with adjoining waterproofing, and other termination conditions.

#### 1.3 QUALITY ASSURANCE

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

#### 1.4 FIELD CONDITIONS

A. Environmental Limitations: Apply waterproofing within the range of ambient and substrate temperatures recommended by waterproofing manufacturer. Do not apply waterproofing to a damp or wet substrate.

#### 1.5 WARRANTY

- A. Manufacturer's Warranty: Manufacturer's standard materials-only warranty in which manufacturer agrees to furnish replacement waterproofing material for waterproofing that does not comply with requirements or that fails to remain watertight within specified warranty period.
  - 1. Warranty Period: Ten years from date of Substantial Completion.

# PART 2 - PRODUCTS

#### 2.1 MATERIALS, GENERAL

A. Source Limitations for Waterproofing System: Obtain waterproofing materials from single source from single manufacturer.

#### 2.2 MODIFIED BITUMINOUS SHEET WATERPROOFING

- A. Modified Bituminous Sheet: Minimum 25-mil (0.678-mm) nominal thickness, self-adhering sheet, polyethylene-film reinforcement, and with release liner on adhesive side; formulated for application with primer or surface conditioner.
  - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the work include, but are not limited to, the following:
    - a. CETCO Building Materials Group, a subsidiary of AMCOL International Corp.; Envirosheet.
    - b. Grace, W.R., & Co. Conn.; Bituthene 3000/Low Temperature (for vertical and horizontal sheet waterproofing) or Select, Ultra or Ice and Water Shield for self-adhered sheet roofing underlayment waterproofing.
    - c. Henry Company; Blueskin WP 100/200.
    - d. Meadows, W.R. Inc.; SealTight Mel-Rol.
    - e. Polyguard Products, Inc.; Polyguard 650.
    - f. Protecto Wrap Company; PW 100/60.
    - g. Tamko Building Products, Inc.; TW-60.
  - 2. Sheet Strips: Self-adhering, rubberized-asphalt strips of same material and thickness as sheet waterproofing.

## 2.3 AUXILIARY MATERIALS

- A. General: Furnish auxiliary materials recommended by waterproofing manufacturer for intended use and compatible with sheet waterproofing.
- B. Primer: Liquid primer recommended for substrate by sheet-waterproofing material manufacturer.
- C. Surface Conditioner: Liquid, waterborne surface conditioner recommended for substrate by sheet-waterproofing material manufacturer.
- D. Liquid Membrane: Elastomeric, two-component liquid, cold fluid applied, of trowel grade or low viscosity.
- E. Substrate Patching Membrane: Low-viscosity, two-component, modified asphalt coating.

# PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the waterproofing.
  - 1. Verify that substrate is visibly dry and within the moisture limits recommended in writing by manufacturer.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

#### 3.2 SURFACE PREPARATION

- A. Clean, prepare, and treat substrates according to manufacturer's written instructions. Provide clean, dust-free, and dry substrates for waterproofing application.
- B. Mask off adjoining surface not receiving waterproofing to prevent spillage and overspray affecting other construction.
- C. Prepare, fill, prime and treat joints and cracks in substrates. Remove dust and dirt from joints and cracks according to ASTM D 4258.
- D. Prepare, treat, and seal vertical and horizontal surfaces at terminations and penetrations through waterproofing and at drains and protrusions according to ASTM D 6135.

#### 3.3 MODIFIED BITUMINOUS SHEET-WATERPROOFING APPLICATION

- A. Prepare surfaces and install modified bituminous sheets according to waterproofing manufacturer's written instructions and recommendations in ASTM D 6135.
- B. Apply primer to substrates at required rate and allow it to dry. Limit priming to areas that will be covered by sheet waterproofing in same day. Reprime areas exposed for more than 24 hours.
- C. Apply and firmly adhere sheets over area to receive waterproofing. Accurately align sheets and maintain uniform 2-1/2-inch- (64-mm-) minimum lap widths and end laps. Overlap and seal seams, and stagger end laps to ensure watertight installation.
  - 1. When ambient and substrate temperatures range between 25 and 40 deg F (minus 4 and plus 5 deg C), install self-adhering, modified bituminous sheets produced for low-temperature application. Do not use low-temperature sheets if ambient or substrate temperature is higher than 60 deg F (16 deg C).
- D. Horizontal Application: Apply sheets from low to high points of decks to ensure that laps shed water.
- E. Apply continuous sheets over already-installed sheet strips, bridging substrate cracks, construction, and contraction joints.

- F. Seal edges of sheet-waterproofing terminations with mastic.
- G. Install sheet-waterproofing and auxiliary materials to tie into adjacent waterproofing and prior to installation of adjacent/overlapping barriers or underlayments.
- H. Repair tears, voids, and lapped seams in waterproofing not complying with requirements. Slit and flatten fishmouths and blisters. Patch with sheet waterproofing extending 6 inches (150 mm) beyond repaired areas in all directions.

## 3.4 FIELD QUALITY CONTROL

A. Engage a site representative qualified by waterproofing membrane manufacturer to inspect substrate conditions, surface preparation, membrane application, flashings, protection, and drainage components, and to furnish daily reports to Owner.

# 3.5 PROTECTION, REPAIR, AND CLEANING

- A. Protect waterproofing from damage and wear during remainder of construction period.
- B. Correct deficiencies in or remove waterproofing that does not comply with requirements; repair substrates, reapply waterproofing, and repair sheet flashings.
- C. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

# SECTION 072100 - THERMAL INSULATION

#### PART 1 - GENERAL

## 1.1 SUMMARY

- A. Section Includes:
  - 1. Glass-fiber blanket insulation.
  - 2. Mineral-wool blanket insulation.
  - 3. Glass-fiber loose-fill insulation.

# 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each product.

# 1.3 QUALITY ASSURANCE

- A. Surface-Burning Characteristics: As determined by testing identical products according to ASTM E 84 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
- B. Installer Qualifications: For spray applied glass-fiber insulation system, an authorized representative who is trained and certified by manufacturer.
- C. Protect insulation materials from physical damage and from deterioration due to moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

#### PART 2 - PRODUCTS

## 2.1 GLASS-FIBER BLANKET INSULATION

- A. <u>Manufacturers</u>: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - 1. CertainTeed Corporation.
  - 2. Guardian Building Products, Inc.
  - 3. Johns Manville.
  - 4. Knauf Insulation.
  - 5. Owens Corning.

- B. Unfaced, Glass-Fiber Blanket Insulation (Exterior Walls & Floor Assemblies): ASTM C 665, Type I; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84; passing ASTM E 136 for combustion characteristics.
  - 1. Free of Formaldehyde: Provide glass-fiber blanket insulation.

# 2.2 MINERAL-WOOL BLANKET INSULATION

- A. Manufacturers: Subject to compliance with requirements, available manufactures offering products that may be incorporated into the Work include, but are not limited to, the following:
  - 1. Fibrex Insulation, Inc.
  - 2. Owen's Corning.
  - 3. Rock Wool Manufacturing, Co.
  - 4. Thermafiber, Inc.
- B. Unfaced, Mineral-Wool Blanket Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84; passing ASTM E 136 for combustion characteristics.

## 2.3 LOOSE-FILL INSULATION

- A. Glass-Fiber Loose-Fill Insulation: ASTM C 764, Type I for spray-in application; with maximum flame-spread and smoke-developed indexes of 5, per ASTM E 84.
  - 1. Products: Subject to compliance with requirements, provide the following:
    - a. Johns-Manville: JM Spider custom spray-in fiber glass insulation.
- B. Eave Ventilation Troughs (if any): Where vented eaves are indicated, provide preformed, rigid fiberboard or plastic sheets designed and sized to fit between roof framing members and to provide cross ventilation between insulated attic spaces and vented eaves.

## PART 3 - EXECUTION

## 3.1 INSTALLATION, GENERAL

- A. Comply with insulation manufacturer's written instructions applicable to products and applications indicated.
- B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.
- C. Extend insulation to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

D. Provide sizes to fit applications indicated and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units to produce thickness indicated unless multiple layers are otherwise shown or required to make up total thickness.

# 3.2 INSTALLATION OF INSULATION FOR FRAMED CONSTRUCTION

- A. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.
- B. Glass-Fiber or Mineral-Wool Blanket Insulation: Install in cavities formed by framing members according to the following requirements:
  - 1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends.
  - 2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
  - 3. Maintain 3-inch (76-mm) clearance of insulation around recessed lighting fixtures not rated for or protected from contact with insulation.
  - 4. Install eave ventilation troughs between roof framing members in insulated attic spaces at vented eaves.
  - 5. For wood-framed construction, install blankets according to ASTM C 1320.
  - 6. Where multiple layers of insulation blankets are indicated and required to fill interstitial space, retain each layer with accepted spring wire straps, wire mesh fabric or other accepted method to ensure full and comprehensive placement without separation or settlement.
- C. Glass-Fiber Loose-Fill Insulation for spray application: Install according to manufacturer's written instructions. Installation to be performed by a qualified installer, trained and certified by the insulation system manufacturer.
  - 1. Spray apply glass-fiber insulation at roof areas to a minimum cured thickness that maintains the minimum required 'R' value throughout.
- D. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials:
  - 1. Loose-Fill Insulation: Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5 lb/cu. ft. (40 kg/cu. m).
- E. Insulation Schedule:
  - 1. A vapor barrier is not required.
  - 2. Thermal insulation at exterior walls shall be R-13 unfaced batts.
  - 3. Thermal insulation at tenant separation walls shall be R-11 (min.) unfaced batts and installed per the U.L. rated assembly.
  - 4. Thermal insulation at floor/ceiling assemblies shall be R-19 (min.) unfaced batts and installed in the location as indicated in the U.L. rated assembly.
  - 5. Thermal insulation at floor/ceiling rim band locations shall be R-19 (min.) unfaced batts and installed in the location as indicated in the U.L. rated assembly.

- 6. Thermal insulation at the roof/ceiling assembly shall be R-30 (min.) unfaced batts or R-30 (min.) blown insulation. Provide baffles to keep roof/ceiling insulation from clogging soffit ventilation.
- 7. Sound isolation shall be 3-1/2" thick unfaced fiberglass batts and installed as indicated within the drawings.
- 8. Provide caulking, gasketing, sealants, and other materials as required to prevent water vapor from passing through the exterior wall assembly at outlets, switches, light fixtures, and other wall penetrations.

## 3.3 **PROTECTION**

A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent immediately after installation.

# SECTION 072500 - WATER RESISTIVE BARRIERS/AIR BARRIER

# PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Building wrap.
  - 2. Flexible flashing.
  - 3. Sill Sealer

#### 1.2 ACTION SUBMITTALS

1. Product Data: For each type of product. Submit installation instructions, shop drawings, and certificate letter(s) for compatibility with adjacent materials (including specified sealant products). Include all related products to be used or attached to the Water Resistive Barrier/Air Barrier.

#### PART 2 - PRODUCTS

## 2.1 WATER-RESISTIVE BARRIER

- A. Building Wrap: ASTM E 1677, Type I air barrier; with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, when tested according to ASTM E 84; UV stabilized; and acceptable to authorities having jurisdiction.
  - 1. <u>Products</u>: Subject to compliance with requirements, provide one of the following available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. <u>DuPont (E. I. du Pont de Nemours and Company)</u>; DuPont (E. I. du Pont de Nemours and Company); Tyvek Drainwrap (BASIS OF DESIGN)
    - b. Pactiv Building Products: Green Guard RainDrop
    - c. Reemay, Inc.; Typar MetroWrap.
  - 2. Water-Vapor Permeance: Not less than 11.7g through 1 sq. m of surface in 24 hours per ASTM E 96/E 96M, Desiccant Method (Procedure A).
  - 3. Air Permeance: Not more than 0.004 cfm/sq. ft. at 0.3-inch wg (0.02 L/s x sq. m at 75 Pa) when tested according to ASTM E 2178.
  - 4. Building-Wrap Tape: Pressure-sensitive plastic tape recommended by building-wrap manufacturer for sealing joints and penetrations in building wrap.
  - 5. Sill Sealer Protecto Triple Guard Energy Sill Sealer installed per manufacturer's written instructions.
- B. The water resistive barrier shall be system based. All products shall be compatible.

#### 2.2 MISCELLANEOUS MATERIALS

A. Flexible Flashing: Composite, self-adhesive, flashing product manufactured by, or approved by Water Resistive Barrier / Air Barrier manufacturer as chemically compatible with wrap and

wrap accessories and complying with manufacturer's warranty requirements, and consisting of a pliable, butyl rubber or rubberized-asphalt compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.025 inch (0.6 mm).

## PART 3 - EXECUTION

#### 3.1 WATER-RESISTIVE BARRIER INSTALLATION

- A. Cover exposed exterior surface of sheathing with water-resistive barrier securely fastened to framing immediately after sheathing is installed.
- B. Water Resistive Barrier / Air Barrier: Comply with manufacturer's written instructions as minimum requirements.
  - 1. Prior to installation of an exterior finish system, the water resistive barrier shall be completely sealed to prevent the intrusion of any air or water.
  - 2. Inside and Outside corners shall be wrapped with flexible flashing a minimum of 12" horizontally each direction from corner.
  - 3. Seal seams, edges, fasteners, and penetrations with tape.
  - 4. Extend into jambs of openings and seal corners with tape.
  - 5. Repair any damage or tears as approved by manufacturer
  - 6. Flash dissimilar material joints as required and detailed with Self Adhered Sheet Waterproofing, manufacturer must be approved by Water Resistive Barrier / Air Barrier manufacturer.
  - 7. Repair any damage prior to proceeding as recommended and approved by manufacturer
  - 8. If a fastener is removed, the resultant fastener hole must be repaired prior to proceeding.

# 3.2 FLEXIBLE FLASHING INSTALLATION

- A. Apply flexible flashing where indicated to comply with manufacturer's written instructions.
  - 1. Prime substrates as recommended by flashing manufacturer.
  - 2. Lap seams and junctures with other materials at least 4 inches (100 mm) except that at flashing flanges of other construction, laps need not exceed flange width.
  - 3. Lap flashing over water-resistive barrier at bottom and sides of openings.
  - 4. Lap water-resistive barrier over flashing at heads of openings.
  - 5. After flashing has been applied, roll surfaces with a hard rubber or metal roller to ensure that flashing is completely adhered to substrates.
  - 6. Flash all intersections or joints within the system, at joints, at flashing or at changes of materials to provide a shingled weathertight seal. Roll tape to substrate(s) with hard faced roller.
  - 7. The building is to be considered water and air tight after the installation of the water resistive barrier / air barrier before the installation of the final building such as stucco, siding, brick or other exterior skin material.

# SECTION 073113 - ASPHALT SHINGLES

## PART 1 - GENERAL

## 1.1 SUMMARY

A. Section includes granular surfaced asphalt shingle roofing, underlayment, eave, valley, and ridge protection, and metal flashings.

## 1.2 SUBMITTALS

A. Product data and test Reports: submit data indicating material characteristics, limitations and ICC-ES evaluation reports.

#### 1.3 QUALITY ASSURANCE

A. Fire-Resistance Characteristics: ASTM E 108 or UL 790, Class A. Identify products with appropriate markings of testing and inspecting agency acceptable to authorities having jurisdiction.

#### 1.4 WARRANTY

- A. Special Warranty: Standard form in which manufacturer agrees to repair or replace asphalt shingles that fail in materials or workmanship within specified warranty period.
  - 1. Material Warranty Period: 30 years from date of Substantial Completion, prorated, with first ten years nonprorated.
  - 2. Wind-Speed Warranty Period: Asphalt shingles will resist blow-off or damage caused by wind speeds up to 130 mph for 10 years from date of Substantial Completion.
  - 3. Algae-Discoloration Warranty Period: Asphalt shingles will not discolor 10 years from date of Substantial Completion.
  - 4. Workmanship Warranty Period: 10 years from date of Substantial Completion.

## PART 2 - PRODUCTS

## 2.1 GLASS-FIBER-REINFORCED ASPHALT SHINGLES

- A. Laminated-Strip Asphalt Shingles: ASTM D 3462, laminated, multi-ply overlay construction, glass-fiber reinforced, mineral-granule surfaced, and self-sealing.
  - 1. Manufacturers: Subject to compliance with requirements, provide one of the following:
    - a. <u>Owens Corning (True Definition Duration, Basis of Design)</u>

- b. Atlas Roofing Corporation.
- c. CertainTeed Corporation.
- d. GAF Materials Corporation.
- e. TAMKO Roofing Products, Inc.
- 2. Tab Arrangement: Manufacturer's standard Architectural Shingle profiles.
- 3. Cutout Shape: Manufacturer's standard.
- 4. Butt Edge: Manufacturer's standard cut.
- 5. Strip Size: Manufacturer's standard.
- 6. Algae Resistance: Granules treated to resist algae discoloration.
- 7. Color and Blends: As selected by Owner from manufacturer's full range.
- B. Hip and Ridge Shingles: Manufacturer's standard units to match asphalt shingles.

## 2.2 UNDERLAYMENT MATERIALS

A. Felt: ASTM D 226 or ASTM D 4869, Type II (No. 30), asphalt-saturated organic felt, nonperforated.

## 2.3 ACCESSORIES

- A. Ridge Vent: Rigid UV-stabilized plastic ridge vent with nonwoven geotextile filter strips and with external deflector baffles; for use under ridge shingles.
  - 1. Manufacturers: One of the following:
    - a. <u>Owens Corning (Vent-Sure, Basis of Design)</u>
    - b. <u>Air Vent, Inc.; a Gibraltar Industries company.</u>
    - c. <u>Cor-A-Vent, Inc.</u>
    - d. <u>GAF Materials Corporation.</u>
    - e. Lomanco, Inc.
    - f. <u>Mid-America Building Products.</u>
    - g. <u>Or approved equal</u>
- B. Off Ridge Vents Thompson Architectural Metals Co. or Equal.
- C. Asphalt Roofing Cement: ASTM D 4586, Type II, asbestos free.
- D. Roofing Nails: Aluminum, stainless-steel, or hot-dip galvanized-steel shingle nails, minimum 0.120-inch (3-mm) diameter, of sufficient length to penetrate 3/4 inch (19 mm) into solid wood decking or extend at least 1/8 inch (3 mm) through OSB or plywood sheathing.
  - 1. Where nails are in contact with metal flashing, use nails made from same metal as flashing.
- E. Felt Underlayment Nails: Aluminum, stainless-steel, or hot-dip galvanized-steel wire with lowprofile capped heads or disc caps, 1-inch (25-mm) minimum diameter.

- F. Sheet Metal Flashing and Trim: Comply with requirements in Section 076200 "Sheet Metal Flashing and Trim."
  - 1. Sheet Metal: Aluminum.
  - 2. Fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual."
  - 3. Step Flashings: Fabricate with a headlap of 2 inches (50 mm) and a minimum extension of 4 inches (100 mm) over the underlaying asphalt shingle and up the vertical surface.
  - 4. Drip Edge: Formed sheet metal with at least a 2-inch (50-mm) roof deck flange and a 1-1/2-inch (38-mm) fascia flange with a 3/8-inch (9.6-mm) drip at lower edge.
  - 5. Vent Pipe Flashings: ASTM B 749, Type L51121, at least 1/16 inch (1.6 mm) thick. Provide lead sleeve sized to slip over and turn down into pipe, soldered to skirt at slope of roof, and extending at least 4 inches (100 mm) from pipe onto roof.
- G. Plastic Preformed Flashings:
  - 1. Dryflekt Kick-out diverters, right and left hand models, color to be chosen.
    - a. www.dryflekt.com

## PART 3 - EXECUTION

#### 3.1 UNDERLAYMENT INSTALLATION

- A. General: Comply with underlayment manufacturer's written installation instructions applicable to products and applications indicated unless more stringent requirements apply.
- B. Single-Layer Felt Underlayment: Install on roof deck parallel with and starting at the eaves. Lap sides a minimum of 2 inches (50 mm) over underlying course. Lap ends a minimum of 4 inches (100 mm). Stagger end laps between succeeding courses at least 72 inches (1830 mm). Fasten with felt underlayment nails.
  - 1. Install felt underlayment on roof deck not covered by self-adhering sheet underlayment. Lap sides of felt over self-adhering sheet underlayment not less than 3 inches (75 mm) in direction to shed water. Lap ends of felt not less than 6 inches (150 mm) over self-adhering sheet underlayment.
  - 2. Install fasteners at no more than 36 inch (900 mm) o.c.

# 3.2 METAL FLASHING INSTALLATION

A. Install metal flashings to comply with requirements in Section 076200 "Sheet Metal Flashing and Trim" and according to recommendations in ARMA's "Residential Asphalt Roofing Manual" and asphalt shingle recommendations in NRCA's "The NRCA Roofing and Waterproofing Manual".

# SUMMER BAY II APARTMENTS – LAKE COUNTY, FL FK #5389

## 3.3 ASHPALT SHINGLE INSTALLATION

- A. General: Install asphalt shingles according to manufacturer's written instructions, recommendations in ARMA's, "Residential Asphalt Roofing Manual", asphalt shingle recommendations in NRCA's "The NRCA Roofing and Waterproofing Manual", requirements of governing codes and regulations and related tested assembly criteria and requirements for the design wind speed criteria applicable to the Project site.
- B. Install starter strip along lowest roof edge, consisting of an asphalt shingle strip with selfsealing strip face up at roof edge.
  - 1. Extend asphalt shingles  $\frac{1}{2}$  inches (13 mm) over fascia at eaves and rakes.
  - 2. Install starter strip along rake edge.
- C. Install first and remaining courses of asphalt shingles stair-stepping diagonally across roof deck with manufacturer's recommended offset pattern at succeeding courses, maintaining uniform exposure.
- D. Fasten asphalt shingle strips with a minimum number of roofing nails located according to manufacturer's written instructions and applicable requirements of the authorities having jurisdiction as minimum requirements.
  - 1. Where roof slope is less than 4:12, seal asphalt shingles with asphalt roofing cement spots.
  - 2. When ambient temperature during installation is below 50 deg F (10 deg C), seal asphalt shingles with asphalt roofing cement spots.
- E. Woven valleys: Extend succeeding asphalt shingle courses from both sides of valley 12 inches (300 mm) beyond center of valley, weaving intersecting shingle-strip courses over each other. Use one-piece shingle strips without joints in valley.
- F. Ridge Vents: Install continuous ridge vents over asphalt shingles according to manufacturer's written instructions. Fasten with roofing nails of sufficient length to penetrate sheathing.
- G. Ridge and Hip Cap Shingles: Maintain same exposure of cap shingles as roofing shingle exposure. Lap cap shingles at ridges to shed water away from direction of prevailing winds. Fasten with roofing nails of sufficient length to penetrate sheathing.
  - 1. Fasten ridge cap asphalt shingles to cover ridge vent without obstructing airflow.

# SECTION 074600 - FIBER CEMENT SIDING, TRIM AND SOFFIT

#### PART 1 - GENERAL

# 1.1 SUMMARY

- A. Section Includes:
  - 1. Fiber-cement siding.
  - 2. Fiber-cement soffit.

#### 1.2 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Qualification Data: For qualified siding Installer.
- C. Product Certificates: For each type of siding and soffit, from manufacturer.
- D. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for fiber-cement siding.
- E. Research/Evaluation Reports: For each type of siding required, indicating compliance with requirements of the authorities having jurisdiction.
- F. Maintenance Data: For each type of siding and soffit and related accessories to include in maintenance manuals.
- G. Warranty: Sample of special warranty.

#### 1.3 QUALITY ASSURANCE

- A. Labeling: Provide fiber-cement siding that is tested and labeled according to ASTM C 1186 by a qualified testing agency acceptable to authorities having jurisdiction.
- B. Source Limitations: Obtain siding and soffit, including related accessories, from single source from single manufacturer.
- C. Preinstallation Conference: Conduct conference at Project site.
- D. Store materials in a dry, well-ventilated, weathertight place.
- E. Coordinate installation with flashings and other adjoining construction to ensure proper sequencing.

# SUMMER BAY II APARTMENTS – LAKE COUNTY, FL FK #5389

## 1.4 WARRANTY

- A. Special Warranty: Standard form in which manufacturer agrees to repair or replace siding and soffit that fail(s) in materials or workmanship within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Structural failures including cracking, deforming.
  - 2. Warranty Period: 10 years from date of Substantial Completion.
  - 3. Labor Warranty: 1 year from date of Substantial Completion.

#### 1.5 EXTRA MATERIALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Furnish full lengths of siding and soffit including related accessories, in a quantity equal to 1/2 percent of amount installed.

#### PART 2 - PRODUCTS

#### 2.1 FIBER-CEMENT SIDING

- A. General: ASTM C 1186, Type A, Grade II, fiber-cement board, noncombustible when tested according to ASTM E 136; with a flame-spread index of 25 or less when tested according to ASTM E 84.
  - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. James Hardie (Basis of Design)
    - b. Prevail Multifamily Siding Products
    - c. CertainTeed Corp.
    - d. GAF Materials Corporation.
  - 2. Horizontal Pattern: Lap siding boards with weather exposure dimension indicated.
    - a. Texture: Smooth.
  - 3. Flat Panel Siding: Maximize panel size to minimize panel joints.
    - a. Texture: To Be Determined
    - b. Provide 3/8" minimum furring strips as required by the panel manufacturer
      - 1) Product: Quarrix Furring strips or equal.
  - 4. Trim:
    - a. 5/4 min. thickness, width as indicated within the documents.

- b. Tamlyn XTREME Trim, locate per elevation/details.
- 5. Factory Priming: Manufacturer's standard acrylic primer.
- 6. If prefinished siding us used, in order to decrease the possibility of uneven fading due to different fading rates, only siding from a single batch or lot shall be used on any single building.

#### 2.2 FIBER-CEMENT SOFFIT

- A. General: ASTM C 1186, Type A, Grade II, fiber-cement board, noncombustible when tested according to ASTM E 136; with a flame-spread index of 25 or less when tested according to ASTM E 84.
  - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. James Hardie (Basis of Design)
    - b. Prevail Multifamily Siding Products
    - c. CertainTeed Corp.
    - d. GAF Materials Corporation.
- B. Size and Pattern: as required to match overhang depth, provide smooth texture.
- C. Ventilation: Provide perforated soffit and additional soffit ventilation as indicated on the drawings.
  - 1. Tamlyn Vented EZ-Vent Soffit 2" (NFA 9 sq.in./lf)
- D. Factory Priming: Manufacturer's standard acrylic primer.

## 2.3 ACCESSORIES

- A. Siding Accessories, General: Provide starter strips, edge trim, outside and inside corner caps, and other items as recommended by siding manufacturer for building configuration.
  - 1. Provide accessories made from same material as adjacent siding unless otherwise indicated.
- B. Decorative Accessories: Provide the following fiber-cement decorative accessories as indicated:
  - 1. Corner posts and trim boards.
  - 2. Door and window casings.
  - 3. Moldings and trim.
- C. Flashing: Provide flashing complying with Division 07 Section "Sheet Metal Flashing and Trim" at window and door heads and where indicated.

- D. Fasteners:
  - 1. For fastening fiber cement, use hot-dip galvanized fasteners complying with manufacturer's directions.
- E. Decorative Trim and Accessories: Pediments, ball type post caps, decorative column enclosures, decorative window trim, and other decorative trim features shown on the drawings that are not available as standard items from James Hardie (or and equal manufacturer) shall be as manufactured by Fypon Molded Millwork, HB & G Column wraps, or equal. Decorative trim as installed shall meet the wind resistance requirements as indicated within the documents.

# PART 3 - EXECUTION

# 3.1 EXAMINATION

- A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting performance of siding and soffit and related accessories.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

#### 3.2 PREPARATION

A. Clean substrates of projections and substances detrimental to application.

#### 3.3 INSTALLATION

- A. General: Comply with siding and soffit manufacturer's written installation instructions applicable to products and applications indicated unless more stringent requirements apply.
  - 1. Do not install damaged components.
  - 2. Center nails in elongated nailing slots without binding siding to allow for thermal movement.
- B. Install fiber-cement siding and soffit and related accessories.
  - 1. Install fasteners according to manufacturer's directions and applicable requirements of the authorities having jurisdiction.
- C. Install joint sealants as specified in Division 07 Section "Joint Sealants" and to produce a weathertight installation.

#### 3.4 ADJUSTING AND CLEANING

- A. Remove damaged, improperly installed, or otherwise defective materials and replace with new materials complying with specified requirements.
- B. Clean finished surfaces according to manufacturer's written instructions and maintain in a clean condition during construction.

## SECTION 076100 - SHEET METAL ROOFING

# PART 1 - GENERAL

# 1.1 SUMMARY

A. Section includes custom-fabricated, sheet metal roofing.

#### 1.2 PERFORMANCE REQUIREMENTS

- A. General Performance: Sheet metal roofing system including, but not limited to, metal roof panels, cleats, chips, anchors and fasteners, sheet metal flashing integral with sheet metal roofing, fascia panels, trim, underlayment, and accessories shall comply with requirements indicated without failure due to defective manufacture, fabrication, installation, or other defects in construction. Sheet metal roofing shall remain watertight.
- B. Thermal Movements: Provide sheet metal roofing that allows for thermal movements from ambient and surface temperature changes.
  - 1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C) material surfaces.
- C. Solar Reflectance Index: Not less than 29 when calculated according to ASTM E 1980 based on testing identical products by a qualified testing agency.

#### 1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each manufactured product and accessory.
- B. Shop Drawings: For sheet metal roofing.
  - 1. Show installation layouts, expansion joint locations, fixed points, and keyed details. Distinguish between shop- and field-assembled work.
  - 2. Include pattern of seams and details of termination points, expansion joints, direction of expansion, roof penetrations, edge conditions, special conditions, and connections to adjoining work, flashing, trim and gutters and down spouts as they relate to adjacent sheet metal roofing.
- C. Delegated Design: Design roofing installation, including comprehensive engineering analysis using the following design criteria:
  - 1. Design Wind Pressures: Determine design wind pressures applicable to Project according to ASCE 7, and requirements of the authorities having jurisdiction.
  - 2. Provide signed and sealed shop drawings indicating compliances with design and regulatory requirements.

- D. Samples for Initial Selection: For each type of sheet metal roofing indicated, with factoryapplied color finishes. Include similar Samples of trim and accessories involving color selection.
- E. Coordinate Drawings: Roof plans drawn to scale with coordinated details for penetrations and roof-mounted items. Show the following:
  - 1. Sheet metal roofing and attachments.
  - 2. Roof-mounted items including roof hatches, equipment supports, pipe supports and penetrations.
- F. Qualification Data: For qualified Installer.
- G. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each product.
- H. Maintenance Data: For roofing sheet metals and accessories to include in maintenance manuals.
- I. Warranties: Sample of special warranties and installer warranty.

#### 1.4 QUALITY ASSURANCE

A. Sheet Metal Roofing Standard: Comply with SMACNA's "Architectural Sheet Metal Manual" unless more stringent requirements are specified or shown on Drawings.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Do not store sheet metal roofing materials in contact with other materials that might cause staining, denting, or other surface damage.
- B. Protect strippable protective covering on sheet metal roofing from exposure to sunlight and high humidity, except to the extent necessary for the period of sheet metal roofing installation.

## 1.6 WARRANTY

- A. Special Warranty: Warranty in which Installer agrees to repair or replace components of sheet metal roofing that fail in materials or workmanship within specified warranty period.
  - 1. Warranty Period: Two years from date of Substantial Completion.
- B. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal roofing that shows evidence of deterioration of factory-applied finishes within specified warranty period.
  - 1. Finish Warranty Period: 20 years from date of Substantial Completion.

# PART 2 - PRODUCTS

## 2.1 ROOFING SHEET METALS

- A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.
  - 1. Manufacturer and Product: Basis of Design Manufacturer and Product: Subject to compliance with requirements, provide product indicated as Basis of Design or comparable product, but are not limited to, the following:
    - a. Berridge Metal Roof, "Cee-Lock" Panels w/ vinyl weather seal (Basis of Design)
    - b. Metal Sales Manufacturing Corp.
    - c. Firestone Metal Products
    - d. Berridge Metal Roof
    - e. MBCI
- B. Metallic-Coated Steel Sheet: Restricted flatness steel sheet, metallic coated by the hot-dip process and prepainted by the coil-coating process to comply with ASTM A 755/A 755M.
  - 1. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A 792/A 792M, Class AZ50 coating designation, Grade 40 (Class AZM150 coating designation, Grade 275); structural quality.
  - 2. Thickness: Nominal 0.022 inch (0.56 mm) unless otherwise indicated.
  - 3. Surface: Smooth, flat.
  - 4. Exposed Coated Finish.
  - 5. Color: Galvalume.
  - 6. Concealed Finish: Pretreat with manufacturer's standard clear acrylic coating.

## 2.2 UNDERLAYMENT MATERIALS

- A. Self-Adhering, High-Temperature Sheet: Minimum 40 mils (0.76 to 1.0 mm) thick, consisting of slip-resisting polyethylene-film top surface laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer.
  - 1. Thermal Stability: ASTM D 1970; stable after testing at 240 deg F (116 deg C).
  - 2. Low-Temperature Flexibility: ASTM D 1970; passes after testing at minus 20 deg F (29 deg C).
  - 3. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Grace Construction Products, a unit of W.R. Grace & Co.; Ice & Water Shield HT (BASIS OF DESIGN)
    - b. Carlisle Coatings & Waterproofing Inc.; CCW WIP 300HT.
    - c. Owens Corning; WeatherLock Metal High-Temperature Underlayment.
    - d. Protecto Wrap Company: Protecto Jiffy Seal Ice & Water Guard HT.
- B. Slip Sheet: Building paper, 2-lb/100 sq. ft. (0.16-kg/sq. m) minimum, rosin sized, if required by metal roofing manufacturer's installation instructions.

#### 2.3 MISCELLANEOUS MATERIALS

- A. General: Provide materials and types of fasteners, solder, protective coatings, sealants, and other miscellaneous items as required for complete roofing system and as recommended by primary sheet metal manufacturer unless otherwise indicated.
- B. Fasteners: Wood screws, annular-threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads.
  - 1. General:
    - a. Fasteners: Galvanized steel with washers as required to meet the uplift requirements.
    - b. Fasteners for Flashing and Trim: Blind fasteners or self-drilling screws, gasketed; with hex-washer head.
    - c. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.
  - 2. Fasteners for Aluminum-Zinc Alloy-Coated Steel Sheet: Non-corrosive alloy (painted) or hot dipped galvanized.
- C. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.
- D. Elastomeric Sealant: ASTM C 920, elastomeric silicone polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal roofing and remain watertight.
- E. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.
- F. Bituminous Coating: Cold-applied asphalt emulsion according to ASTM D 1187.

#### 2.4 ACCESSORIES

- A. Sheet Metal Accessories: Provide components required for complete sheet metal roofing assembly including trim, copings, fasciae, corner units, clips, flashings, sealants, gaskets, fillers, metal closures, closure strips, and similar items. Match material and finish of sheet metal roofing unless otherwise indicated.
  - 1. Provide accessories as recommended by manufacturer to produce sheet metal roofing assemblies that comply with UL 580 for wind-uplift resistance specified in "Quality Assurance" Arcticle.
  - 2. Cleats: For mechanically seaming into joints and formed from Metallic-Coated Steel Roofing: Minimum 0.0250-inch- (0.64-mm-) thick stainless steel.
  - 3. Clips: minimum 0.0625-inch- )1.6-mm-) thick, stainless-steel panel clips designed to withstand negative-load requirements.

- 4. Backing Plates: Plates at roofing splices, fabricated from material recommended by SMACNA.
- 5. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin foam or closed-cell laminated polyethylene; minimum 1-inch- (25-mm-) thick, flexible-closure strips; cut or premolded to match sheet metal roofing profile. Provide closure strips where necessary to ensure weathertight construction.
- 6. Flashing and Trim: Formed from same material and with same finish as sheet metal roofing, minimum 0.018 inch (0.46 mm) thick.
- 7. Pipe Flashing: Premolded, EPDM pipe collar with flexible aluminum ring bonded to base.

## 2.5 FABRICATION

- A. General: Custom fabricate sheet metal roofing, flashing and trim to comply with details shown and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions (panel width and seam height), geometry, metal thickness, and other characteristics of installation. Fabricate sheet metal roofing and accessories in shop to greatest extent possible.
- B. Form exposed sheet metal work to fit substrates with little oil canning; free of buckling and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
  - 1. Form and fabricate sheets, seams, strips, cleats, valleys, ridges, edge treatments, integral flashings, and other components of metal roofing to profiles, patterns, and drainage arrangements indicated on Drawings and as required for leakproof construction.

## PART 3 - EXECUTION

# 3.1 EXAMINATION AND PREPARATION

- A. Examine solid roof sheathing to verify that sheathing joints are supported by framing or blocking and that tops of fasteners are flush with surface.
- B. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and completely anchored, and that provision has been made for drainage, flashings, and penetrations through sheet metal roofing.
- C. Lay out panel arrangement and screw battens to wood sheathing or decking substrate as required and indicated on shop drawings before installation of sheet metal roofing.
  - 1. Space fasteners as required by manufacturer for specified UL classification for winduplift resistance and as indicated on accepted shop drawings.

#### 3.2 UNDERLAYMENT INSTALLATION

A. Self-Adhering Sheet Underlayment: Install self-adhering sheet underlayment, wrinkle free, on roof sheathing under sheet metal roofing. Apply primer if required by underlayment manufacturer. Comply with temperature restrictions of underlayment manufacturer for

installation; use primer rather than nails for installing underlayment at low temperatures. Apply over entire roof in shingle fashion to shed water, with end laps of not less than 6 inches (150 mm) staggered 24 inches (600 mm) between courses. Overlap side edges not less than 3-1/2 inches (90 mm). Roll laps with roller. Cover underlayment within the manufacturers recommended timeframe.

B. Install flashings to cover underlayment to comply with requirements in Division 07 Section "Sheet Metal Flashing and Trim". Apply slip sheet before installing sheet metal roofing.

# 3.3 INSTALLATION, GENERAL

- A. General: Install sheet metal roofing to comply with details shown and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to installation characteristics required. Install fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required for complete roofing system and as recommended by fabricator for sheet metal roofing.
  - 1. Install sheet metal roofing true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
  - 2. Anchor sheet metal roofing and other components of the Work securely in place, with provisions for thermal and structural movement.
  - 3. Field cutting of sheet metal roofing by torch is not permitted.
  - 4. Provide metal closures at peaks, rake edges, eaves, each side of ridge and hip caps.
  - 5. Flash and seal sheet metal roofing with closure strips at eaves, rakes, and perimeter of all openings. Fasten with self-tapping screws.
  - 6. Locate and space fastenings in uniform vertical and horizontal alignment. Predrill panels for fasteners.
  - 7. Install ridge and hip caps as sheet metal roofing work proceeds.
  - 8. Locate roofing splices over, but not attached to, structural supports. Stagger roofing splices and end laps to avoid four-panel lap splice condition. Install backing plates at roofing splices.
  - 9. Lap metal flashing over sheet metal roofing to direct moisture to run over and off roofing.
- B. Thermal Movement: Rigidly fasten metal roof panels to structure at only one location for each panel. Allow remainder of panel to move freely for thermal expansion and contraction.
  - 1. Point of Fixity: Fasten each panel along single line of fixing located at locations indicated on accepted shop drawings.
  - 2. Avoid attaching accessories through roof panels in manner that inhibits thermal movement.
- C. Fasteners: Use fasteners of sizes that will penetrate wood sheathing not less than 1-1/4 inches (32 mm) for wood screws and for metal decking not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.
- D. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating, by applying self-adhering sheet underlayment to each contact surface, or by other permanent separation as recommended by SMACNA.

- E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a water tight installation.
- F. Fasciae: Align bottom of sheet metal roofing and fasten with blind rivets, bolts, or self-tapping screws. Flash and seal sheet metal roofing with closure strips where fasciae meet soffits, along lower panel edges, and at perimeter of all openings.

# 3.4 SHEET METAL ROOFING INSTALLATION

- A. General: Install metal roofing panels to comply with accepted shop drawings and manufacturer's written instructions for UL wind-uplift resistance class indicated. Provide sheet metal roofing of full length from eave to ridge unless otherwise restricted by on-site or shipping limitations.
- B. Seal joints as required for watertight construction. For roofing with 3:12 slopes or less, use cleats at transverse seams. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."

# 3.5 ACCESSORY INSTALLATION

- A. General: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.
  - 1. Install components required for complete sheet metal roofing assembly including trim, copings, seam covers, flashings, sealants, gaskets, fillers, metal closures, closure strips, and similar items.
  - 2. Install accessories integral to sheet metal roofing that are specified in Section 076200 "Sheet Metal Flashing and Trim" to comply with that Section's requirements.
- B. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and install units true to line, levels, and slopes. Install work with laps, joints, and seams that are permanently watertight and weather resistant.
- C. Pipe Flashing: Form flashing around pipe penetration and sheet metal roofing. Fasten and seal to sheet metal roofing as recommended by SMACNA.
- D. Roof Curbs: Install curbs at locations indicted on Drawings. Install flashing around bases where they meet sheet metal roofing.

# 3.6 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering. Clean and neutralize flux materials. Clean off excess solder.
- B. Remove temporary protective coverings and strippable films as sheet metal roofing is installed unless otherwise indicated in manufacturer's written installation instructions. On completion of

sheet metal roofing installation, clean finished surfaces as recommended by sheet metal roofing manufacturer. Maintain sheet metal roofing in a clean condition during construction.

C. Remove sheet metal roofing components that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.
# SECTION 076200 - SHEET METAL FLASHING AND TRIM

# PART 1 - GENERAL

# 1.1 SUMMARY

- 1. Manufactured Products:
  - a. Manufactured reglets and counterflashing.
  - b. Manufactured through wall penetration accessory components.
- 2. Formed Products:
  - a. Formed roof drainage sheet metal fabrications.
  - b. Formed wall sheet metal fabrications.
  - c. Formed sheet metal decorative exterior wall trim fabrications
  - d. Formed foundation flashing and termite shield.
  - e. Formed equipment support flashing.

# 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For sheet metal flashing and trim.
  - 1. Include plans, elevations, sections, and attachment details.
  - 2. Distinguish between shop- and field-assembled work.
  - 3. Include identification of finish for each item.
  - 4. Include pattern of seams and details of termination points, expansion joints and expansion-joint covers, direction of expansion, roof-penetration flashing, and connections to adjoining work.
- C. Samples: For each exposed product and for each color and texture specified.

#### 1.3 QUALITY ASSURANCE

A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.

## 1.4 WARRANTY

A. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.

- 1. Finish Warranty Period: **10** years from date of Substantial Completion.
- 2. Labor Warranty Period: 1 year from date of Substantial Completion.

#### PART 2 - PRODUCTS

#### 2.1 PERFORMANCE REQUIREMENTS

- A. General: Sheet metal flashing and trim assemblies shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.
- B. Sheet Metal Flashing and Trim Standard: Comply with SMACNA's "Architectural Sheet Metal Manual" unless more stringent requirements are specified or shown on Drawings.
- C. SPRI Wind Design Standard: Manufacture and install **copings** and **roof edge flashings** tested according to SPRI ES-1 and capable of resisting the following design pressure:
  - 1. Design Pressure: As indicated on Drawings.
- D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.
  - 1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

## 2.2 SHEET METALS

- A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying a strippable, temporary protective film before shipping.
- B. Aluminum Sheet: ASTM B 209 (ASTM B 209M), alloy as standard with manufacturer for finish required, with temper as required to suit forming operations and performance required.
  - 1. Exposed Coil-Coated Finishes:
    - a. Two-Coat Fluoropolymer: AAMA 620. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
  - 2. Color: Galvalume for roof flashings and as selected by Owner from manufacturer's full range.
  - 3. Concealed and Field Painted Finish: Pretreat with manufacturer's standard white or lightcolored acrylic or polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil (0.013 mm).

## C. Metallic-Coated Steel Sheet:

1. Coil Coated Finish: Two-coat fluoropolymer.

# 2.3 MISCELLANEOUS MATERIALS

- A. General: Provide materials and types of fasteners, protective coatings, separators, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and recommended by manufacturer of primary sheet metal or manufactured item unless otherwise indicated.
- B. Through-wall penetrations: Provide preformed or manufactured flashing hood system suitable for attachment to sheathing substrate as recommended by manufacturer and as indicated.
- C. Aluminum T-bar edge forms: For use at elevated concrete corridor, landing and patio deck edges, provide manufacturer's system components compatible with adjacent installation requirements and as indicated.
- D. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal or manufactured item.
  - 1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.
    - a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating.
    - b. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.
    - c. Spikes and Ferrules: Same material as gutter; with spike with ferrule matching internal gutter width.
  - 2. Fasteners for Aluminum Sheet: Aluminum or Series 300 stainless steel.
- E. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.
- F. Elastomeric Sealant: ASTM C 920, elastomeric polyurethane or silicone polymer sealant; low modulus; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.
- G. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.
- H. Epoxy Seam Sealer: Two-part, noncorrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior nonmoving joints, including riveted joints.
- I. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D 1187.

# SUMMER BAY II APARTMENTS – LAKE COUNTY, FL FK #5389

- J. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required for application.
- K. General: Custom fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, geometry, metal thickness, and other characteristics of item indicated. Fabricate items at the shop to greatest extent possible.
  - 1. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
  - 2. Obtain field measurements for accurate fit before shop fabrication.
  - 3. Form sheet metal flashing and trim without excessive oil canning, buckling, and tool marks and true to line and levels indicated, with exposed edges folded back to form hems.
  - 4. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces exposed to view.
- L. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines as indicated and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.
- M. Sealed Joints: Form non-expansion but movable joints in metal to accommodate elastomeric sealant.
- N. Expansion Provisions: Where lapped expansion provisions cannot be used, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with butyl sealant concealed within joints.
- O. Fabricate cleats and attachment devices of sizes as recommended by SMACNA's "Architectural Sheet Metal Manual "for application, but not less than thickness of metal being secured.
- P. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints where necessary for strength.
- Q. Do not use graphite pencils to mark metal surfaces.

# 2.4 WALL SHEET METAL FABRICATIONS

- A. Opening Flashings in Frame Construction: Fabricate head, sill and similar flashings to extend 4 inches (100 mm) minimum beyond wall openings. Form head and sill flashing with 2-inch-(50-mm-) high, end dams. Fabricate from the following materials:
  - 1. Aluminum: 0.032 inch (0.81 mm) minimum thick.

# 2.5 ROOF DRAINAGE SYSTEM

A. General: Install sheet metal roof drainage items to produce complete roof drainage system according to SMACNA recommendations and as indicated. Coordinate installation of roof perimeter flashing with installation of roof drainage system.

# SUMMER BAY II APARTMENTS – LAKE COUNTY, FL FK #5389

- B. Hanging Gutters: Join sections with lapped joints sealed with sealant. Provide for thermal expansion. Attach gutters at eave or fascia to firmly anchored gutter brackets spaced not more than 36 inches (900 mm) apart. Provide end closures and seal watertight with sealant. Slope to downspouts.
  - 1. Anchor back of gutter that extends onto roof deck with cleats spaced not more than 24 inches (600 mm) apart.
  - 2. Install gutter with expansion joints at locations indicated, but not exceeding, 50 feet (15.24 m) apart. Install expansion-joint caps.
- C. Downspouts: Join sections with 1-1/2-inch (38-mm) telescoping joints.
  - 1. Provide hangers with fasteners designed to hold downspouts securely to walls. Locate hangers at top and bottom and at approximately 96 inches o.c. in between.
  - 2. Provide elbows at base of downspout to direct water away from building.
  - 3. Connect downspouts to underground drainage system if indicated or provide cement splash pans.
- D. Splash Pans: Install where downspouts discharge on roofs. Set in asphalt roofing cement compatible with roof shingles.

## 2.6 COUNTERFLASHING

- A. Manufactured units of heights to overlap top edges of base flashings by 4 inches (100 mm) and in lengths not exceeding 12 feet (3.6 m) designed to snap into reglets or through-wall-flashing receiver and compress against base flashings with joints lapped, from the following exposed metal:
  - 1. Formed Aluminum: 0.032 inch (0.81 mm) thick.
- B. Accessories:
  - 1. Counterflashing Wind-Restraint Clips: Provide clips to be installed before counterflashing to prevent wind uplift of counterflashing lower edge.
- C. Aluminum Finish: Two-coat fluoropolymer.
  - 1. Color: As selected by Owner from manufacturer's full range.

## PART 3 - EXECUTION

# 3.1 UNDERLAYMENT INSTALLATION

A. Felt Underlayment: Install felt underlayment, wrinkle free, using adhesive to minimize use of mechanical fasteners under sheet metal flashing and trim. Apply in shingle fashion to shed water, with lapped joints of not less than 2 inches (50 mm).

- B. Synthetic Underlayment: Install synthetic underlayment, wrinkle free, according to manufacturers' written instructions, and using adhesive where possible to minimize use of mechanical fasteners under sheet metal.
- C. Self-Adhering Sheet Underlayment: Install self-adhering sheet underlayment, wrinkle free. Prime substrate if recommended by underlayment manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation; use primer for installing underlayment at low temperatures. Apply in shingle fashion to shed water, with end laps of not less than 6 inches (150 mm) staggered 24 inches (600 mm) between courses. Overlap side edges not less than 3-1/2 inches (90 mm). Roll laps and edges with roller. Cover underlayment within 14 days.

# 3.2 INSTALLATION, GENERAL

#### 3.3 ROOF FLASHING INSTALLATION

- A. General: Install sheet metal flashing and trim to comply with performance requirements and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, set units true to line, and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.
- B. Roof Edge Flashing: Anchor to resist uplift and outward forces according to recommendations in SMACNA's "Architectural Sheet Metal Manual" and as indicated. Interlock bottom edge of roof edge flashing with continuous cleat anchored to substrate at staggered 3-inch (75-mm) centers.
- C. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Seal with elastomeric sealant and clamp flashing to pipes that penetrate roof.

#### 3.4 WALL FLASHING INSTALLATION

- A. General: Install sheet metal wall flashing to intercept and exclude penetrating moisture according to SMACNA recommendations and as indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.
- B. Opening Flashings in Frame Construction: Install continuous head, sill and similar flashings to extend 4 inches (100 mm) beyond wall openings. Seal corners and edges.

#### 3.5 COUNTERFLASHING INSTALLATION

- A. General: Coordinate installation of counterflashings with installation of base flashings.
- B. Counterflashings: Insert counterflashings into reglets or other indicated receivers; ensure that counterflashings overlap 4 inches (100 mm) over top edge of base flashings. Lap counterflashing joints a minimum of 4 inches (100 mm) and bed with butyl sealant. Fit counterflashings tightly to base flashings.

#### 3.6 ERECTION TOLERANCES

- A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines as indicated and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.
- B. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerances specified in MCA's "Guide Specification for Residential Metal Roofing."

#### 3.7 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Clean and neutralize flux materials. Clean off excess solder.
- C. Clean off excess sealants.
- D. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturers written installation instructions. On completion of installation, remove unused materials and clean finished surfaces. Maintain in a clean condition during construction.
- E. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

# SECTION 076500 – MANUFACTURED FLASHING PANELS

#### PART 1 - GENERAL

# 1.1 SUMMARY

- A. Section Includes:
  - 1. Manufactured flashing panels for through wall penetrations, rough opening protectives and corner reinforcing.

## 1.2 COORDINATION

- A. Coordinate flashing panel types sizes and placement with sizes and locations of penetrations to be flashed, and joints and seams in adjacent materials.
- B. Coordinate flashing panel installation with adjoining applied finishes and wall materials, joints, and seams to provide leakproof, secure, and noncorrosive installation.

#### 1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
  - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each manufactured product and accessory.
- B. Shop Drawings: For flashing panels and trim.
  - 1. Include plans, elevations, sections, and attachment details.
  - 2. Detail fabrication and installation layouts, and details. Distinguish between shop- and field-assembled work.
  - 3. Include identification of material, thickness, weight, and finish for each item and location in Project.
  - 4. Include details for supporting, and securing, including layout and spacing of fasteners, and other accessory attachments.
  - 5. Include details of special conditions.
  - 6. Include details of connections to adjoining work.

## 1.4 DELIVERY, STORAGE, AND HANDLING

A. Do not store flashing panels and trim materials in contact with other materials that might cause staining, denting, or other surface damage. Store flashing panels and trim materials in manufacturer's original labeled, unopened containers and packaging.

#### 1.5 WARRANTY

- A. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace flashing panels and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.
  - 1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
    - a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
    - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
    - c. Cracking, checking, peeling, or failure of paint to adhere to panel.
  - 2. Panel Warranty Period: Ten (10) years from date of Substantial Completion.
  - 3. Labor Warranty Period: 1 year from date of Substantial Completion.

#### PART 2 - PRODUCTS

#### 2.1 PERFORMANCE REQUIREMENTS

A. General: Flashing panel and trim assemblies shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed flashing panel installation shall not leak, or loosen, and shall remain watertight.

#### 2.2 FLASHING PANELS

- A. General: Provide flashing panel products and accessories sized to accommodate penetration materials and provide a weatherproof seal at the building envelope.
- B. Flashing Panels
  - 1. Manufacturers: Subject to compliance with requirements, the Basis of Design manufacturer offering products that may be incorporated into the Work includes, but is not limited to, the following:
    - a. Quickflash Weatherproofing Products, Inc. (Basis of Design) for through wall penetrations of mechanical, electrical and plumbing components
    - b. W. R. Grace & Co. "VYCORner" (Basis of Design) prefabricated opening protective corner flashing and reinforcing accessories for doors, windows and large framed openings in the exterior wall envelope.
    - c. Mid-America Components -2 piece Hooded Vents (bath exhaust and dryer exhaust), and mounting blocks for electrical outlets and fixtures, "SturdiMount", (Basis of Design).

- 2. Flashing Panels:
  - a. Combination of high-density polyethylene (HDPE) and low-density polyethylene (LDPE).
  - b. Weatherproof seal: Thermoplastic elastomer.

# 2.3 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, protective coatings, tapes, sealants, and other miscellaneous items as required for complete flashing panel and trim installation and as recommended by manufacturer of flashing panel product manufacturer unless otherwise indicated.

# PART 3 - EXECUTION

# 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, substrate, and other conditions affecting performance of the Work.
  - 1. Verify compliance with requirements for installation tolerances of substrates.
  - 2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
  - 3. Verify that air- or water-resistant barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

# 3.2 INSTALLATION, GENERAL

- A. General: Anchor flashing panels and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners protective coatings, separators, sealants, and other miscellaneous items required to complete flashing panel and trim system.
  - 1. Install flashing panels and trim true to line, levels, and slopes.
  - 2. Install flashing panels and trim to fit substrates and to result in watertight performance.
- B. Fasteners: Use fastener sizes that penetrate substrate not less than recommended by panel manufacturer to achieve maximum pull-out resistance.
- C. General: Install flashing panels to intercept and exclude penetrating moisture. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.

# SUMMER BAY II APARTMENTS – LAKE COUNTY, FL FK #5389

D. Opening Flashings in Frame Construction: Install continuous corner reinforcing flashing panel components and similar flashings to extend 4 inches (100 mm) beyond edge of framed rough wall openings.

## 3.3 CLEANING AND PROTECTION

- A. Clean exposed surfaces of substances that interfere with installation of the work of following trades.
- B. Clean off excess sealants.
- C. Replace flashing panels and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

# SECTION 078413 – PENETRATION FIRESTOPPING AND FIRE-RESISTIVE JOINT SYSTEMS

## PART 1 - GENERAL

# 1.1 SUMMARY

- A. Section Includes:
  - 1. Penetrations in fire-resistance-rated walls.
  - 2. Penetrations in horizontal assemblies.
  - 3. Penetrations in smoke barriers.
  - 4. Joints in or between fire-resistance-rated constructions.
  - 5. Joints in smoke barriers.

# 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated, submit data on product characteristics, performance and limitation criteria.
- B. Product Schedule: For each penetration firestopping and Fire-Resistive Joint system. Include location and design designation of qualified testing and inspecting agency.
- C. Product test reports.

#### PART 2 - PRODUCTS

## 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - 1. Grace Construction Products.
  - 2. Hilti, Inc.
  - 3. Specified Technologies Inc.
  - 4. 3M Fire Protection Products.
  - 5. Tremco, Inc.; Tremco Fire Protection Systems Group.
  - 6. USG Corporation.

## 2.2 PENETRATION FIRESTOPPING

A. Provide penetration firestopping that is produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated. Penetration firestopping systems shall be

compatible with one another, with the substrates forming openings, and with penetrating items if any.

- B. Penetrations in Fire-Resistance-Rated Walls: Ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg (2.49 Pa).
  - 1. F-Rating: Not less than the fire-resistance rating of constructions penetrated.
- C. Penetrations in Horizontal Assemblies: Ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg (2.49 Pa).
  - 1. F-Rating: At least 1 hour, but not less than the fire-resistance rating of constructions penetrated.
  - 2. T-Rating: At least 1 hour, but not less than the fire-resistance rating of constructions penetrated except for floor penetrations within the cavity of a wall.
- D. Penetrations in Smoke Barriers: Provide penetration firestopping with ratings determined per UL 1479.
  - 1. L-Rating: Not exceeding 5.0 cfm/sq. ft. (0.025 cu. m/s per sq. m) of penetration opening at 0.30-inch wg (74.7 Pa) at both ambient and elevated temperatures.
- E. Exposed Penetration Firestopping: Provide products with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E 84.
- F. Accessories: Provide components for each penetration firestopping system that are needed to install fill materials and to maintain ratings required. Use only those components specified by penetration firestopping manufacturer and approved by qualified testing and inspecting agency for firestopping indicated.

## 2.3 FIRE-RESISTIVE JOINT SYSTEMS

- A. Where required, provide fire-resistive joint systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of assemblies in or between which fire-resistive joint systems are installed. Fire-resistive joint systems shall accommodate building movements without impairing their ability to resist the passage of fire and hot gases.
- B. Joints in or between Fire-Resistance-Rated Construction: Ratings determined per ASTM E 1966 or UL 2079:
  - 1. Fire-Resistance Rating: Equal to or exceeding the fire-resistance rating of construction they will join.
- C. Joints in Smoke Barriers: Ratings determined per UL 2079.
  - 1. L-Rating: Not exceeding 5.0 cfm/ft (0.00775 cu. m/s x m) of joint at 0.30 inch wg (74.7 Pa) at both ambient and elevated temperatures.

- D. Exposed Fire-Resistive Joint Systems: Provide products with flame-spread and smokedeveloped indexes of less than 25 and 450, respectively, as determined per ASTM E 84.
- E. Accessories: Provide components of fire-resistive joint systems, including primers and forming materials, that are needed to install fill materials and to maintain ratings required. Use only components specified by fire-resistive joint system manufacturer and approved by the qualified testing agency for systems indicated.

# PART 3 - EXECUTION

## 3.1 INSTALLATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of the Work.
- B. Install penetration firestopping and fire-resistive joint systems to comply with manufacturer's written installation instructions and published drawings for products and applications indicated.
- C. Install forming materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.
  - 1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not indicated as permanent components of firestopping.
- D. Install fill materials for firestopping and fire-resistive joint systems by proven techniques to produce the following results:
  - 1. Fill voids and cavities formed by openings, forming materials, accessories, and penetrating items as required to achieve fire-resistance ratings indicated.
  - 2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
  - 3. For fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

# 3.2 IDENTIFICATION

- A. Identify penetration firestopping and fire-resistive joint systems as requested by the jurisdiction having authority with preprinted metal or plastic labels or by stencil.
- B. Include the following information on labels:
  - 1. The words "Warning Penetration Firestopping Do Not Disturb. Notify Building Management of Any Damage."
  - 2. The words "Warning Fire-Resistive Joint System Do Not Disturb. Notify Building Management of Any Damage".

3. Date of installation.

# 3.3 FIELD QUALITY CONTROL

- A. Where deficiencies are found or penetration firestopping and fire-resistive joint systems are damaged or removed because of testing, repair or replace penetration firestopping to comply with requirements.
- B. Proceed with enclosing penetration firestopping and fire-resistive joint systems with other construction only after inspection reports are issued and installations comply with requirements.

## SECTION 079200 - JOINT SEALANTS

#### PART 1 - GENERAL

# 1.1 SUMMARY

- A. Section Includes:
  - 1. Silicone joint sealants.
  - 2. Urethane joint sealants.
  - 3. Latex joint sealants.
  - 4. Acoustical joint sealants.

#### 1.2 CONSTRUCTION TESTING

- A. Field-Adhesion Testing: Before installing sealants, the manufacturer's representative shall field test their adhesion to Project joint substrates.
  - 1. Locate test joints where indicated on Project or, if not indicated, refer to section 079200, 3.3.A.
  - 2. Conduct field tests for each kind of sealant and joint substrate indicated , refer to section 079200, 3.3.A.

## 1.3 SUBMITTALS

- A. Product Data: For each joint-sealant product indicated. Submit data indicating sealant chemical characteristics, performance criteria, substrate preparation, limitations and color availability.
- B. Samples: For each kind and color of joint sealant required.
- C. Field-Adhesion Test Reports: For each sealant application tested.
- D. Warranties: Sample of special warranties.

## 1.4 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Qualified according to ASTM C 1021 to conduct the testing indicated.
- B. Source Limitations: Obtain each kind of joint sealant from single source from single manufacturer.
- C. Field-Constructed Mock-Ups: Each joint type.

## 1.5 WARRANTY

- A. Special Installer's Warranty: Manufacturer's standard form in which Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
  - 1. Warranty Period: Two years from date of Substantial Completion.
  - 2. Labor Warranty Period: 1 year from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer's standard form in which joint-sealant manufacturer agrees to furnish joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
  - 1. Warranty Period: Five years from date of Substantial Completion.

## PART 2 - PRODUCTS

## 2.1 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.
- B. VOC Content of Interior Sealants: Sealants and sealant primers used inside the weatherproofing system shall comply with the following limits for VOC:
  - 1. Architectural Sealants: 250 g/L.
  - 2. Sealant Primers for Nonporous Substrates: 250 g/L.
  - 3. Sealant Primers for Porous Substrates: 775 g/L.
- C. Liquid-Applied Joint Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.
- D. Stain-Test-Response Characteristics: Where sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.

# 2.2 SILICONE JOINT SEALANTS

- A. Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 50, for Use NT.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. BASF Building Systems; Omniseal 50.
    - b. Dow Corning Corporation; 795.
    - c. Pecora Corporation; 895.

- d. Sika Corporation, Construction Products Division; SikaSil-C995.
- e. Tremco Incorporated; Spectrem 2.
- B. Single-Component, Pourable, Traffic-Grade, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade P, Class 100/50, for Use T.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Dow Corning Corporation; 890-SL.
    - b. Pecora Corporation; 300 SL.
    - c. Tremco Incorporated; Spectrem 900 SL.
- C. Mildew-Resistant, Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 25, for Use NT.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Pecora Corporation; 898.

## 2.3 URETHANE JOINT SEALANTS

- A. Single-Component, Nonsag, Urethane Joint Sealant: ASTM C 920, Type S, Grade NS, Class 25, for Use NT.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. BASF Building Systems; Sonolastic NP1.
    - b. Pecora Corporation; Dynatrol I-XL.
    - c. Sika Corporation, Construction Products Division; Sikaflex 1a.
    - d. Tremco Incorporated; Vulkem 116.

## 2.4 LATEX JOINT SEALANTS – for Interior use only

- A. Latex Joint Sealant: Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF, paintable.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. BASF Building Systems; Sonolac.
    - b. Bostik, Inc.; Chem-Calk 600.
    - c. Pecora Corporation; AC-20+.
    - d. Schnee-Morehead, Inc.; SM 8200.
    - e. Tremco Incorporated; Tremflex 834.

## 2.5 ACOUSTICAL JOINT SEALANTS

A. Acoustical Joint Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through

perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.

- 1. Products: Subject to compliance with requirements, provide one the following:
  - a. Pecora Corporation; AC-20 FTR.
  - b. USG Corporation; SHEETROCK Acoustical Sealant.

#### 2.6 JOINT SEALANT BACKING

- A. Cylindrical Sealant Backings: ASTM C 1330, Type C closed-cell material with a surface skin, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
- B. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer.

#### 2.7 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

## PART 3 - EXECUTION

#### 3.1 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions.
- B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

# 3.2 INSTALLATION

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
  - 1. Environmental Limitations: Do not proceed with installation of joint sealants when ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F (4.4 deg C).
- B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
  - 1. Do not leave gaps between ends of sealant backings.
  - 2. Do not stretch, twist, puncture, or tear sealant backings.
  - 3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
  - 1. Place sealants so they directly contact and fully wet joint substrates.
  - 2. Completely fill recesses in each joint configuration.
  - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
  - 1. Remove excess sealant from surfaces adjacent to joints.
  - 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
  - 3. Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.
- G. Acoustical Sealant Installation: At sound-rated assemblies and elsewhere as indicated, seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and with manfacturer's written recommendations.

## 3.3 FIELD QUALITY CONTROL

- A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:
  - 1. Extent of Testing: Test completed and cured sealant joints as follows:
    - a. Perform 3 tests for the first 1000 feet (300 m) of joint length for each kind of sealant and joint substrate.
    - b. Perform 1 test for each 1000 feet (300 m) of joint length thereafter or 1 test per each floor per elevation.
  - 2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.
- B. Evaluation of Field-Adhesion Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

#### 3.4 CLEANING AND PROTECTION

- A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.
- B. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

#### 3.5 JOINT-SEALANT SCHEDULE

- A. Joint-Sealant Application: Exterior joints in horizontal traffic surfaces.
  - 1. Joint Locations:
    - a. Control and expansion joints in brick pavers.
    - b. Isolation and contraction joints in cast-in-place concrete slabs.
    - c. Joints between plant-precast architectural concrete paving units.
    - d. Tile control and expansion joints.
    - e. Joints between different materials listed above.
    - f. Other joints as indicated.
  - 2. Silicone Joint Sealant: Single component, nonsag, traffic grade, neutral curing or Single component, pourable, traffic grade, neutral curing.
  - 3. Joint-Sealant Color: As selected by Owner from manufacturer's full range of colors.

- B. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces.
  - 1. Joint Locations:
    - a. Construction joints in cast-in-place concrete.
    - b. Control and expansion joints in unit masonry.
    - c. Joints in dimension stone cladding.
    - d. Joints in glass unit masonry assemblies.
    - e. Joints in exterior finish systems.
    - f. Joints between metal flashings.
    - g. Joints between different materials listed above.
    - h. Perimeter joints between materials listed above and frames of doors, windows and louvers.
    - i. Control and expansion joints in ceilings and other overhead surfaces.
    - j. Thresholds.
    - k. Other joints as indicated.
  - 2. Urethane Joint Sealant: Single component, nonsag, Class 25.
  - 3. Joint Sealant at thresholds: Butyl Rubber Based Joint Sealant
  - 4. Joint-Sealant Color: As selected by Owner from manufacturer's full range of colors.
- C. Joint-Sealant Application: Interior joints in horizontal traffic surfaces.
  - 1. Joint Locations:
    - a. Isolation joints in cast-in-place concrete slabs.
    - b. Control and expansion joints in tile flooring.
    - c. Other joints as indicated.
  - 2. Urethane Joint Sealant: Single component, nonsag, traffic grade or Single component, pourable, traffic grade.
  - 3. Joint-Sealant Color: As selected by Owner from manufacturer's full range of colors.
- D. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces.
  - 1. Joint Locations:
    - a. Control and expansion joints on exposed interior surfaces of exterior walls.
    - b. Perimeter joints of exterior openings where indicated.
    - c. Tile control and expansion joints.
    - d. Joints on exposed trim surfaces.
    - e. Perimeter joints between interior wall surfaces and frames of adjacent products.
    - f. Other joints as indicated.
  - 2. Joint Sealant: Latex or Butyl rubber based.
  - 3. Joint-Sealant Color: As selected by Owner from manufacturer's full range of colors.
- E. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces.
  - 1. Joint Sealant Location:

- a. Joints between plumbing fixtures and adjoining walls, floors, and counters.
- b. Tile control and expansion joints where indicated.
- c. Other joints as indicated.
- 2. Joint Sealant: Mildew resistant, single component, nonsag, neutral curing, Silicone.
- 3. Joint-Sealant Color: As selected by Owner from manufacturer's full range of colors.
- F. Joint-Sealant Application: Interior acoustical joints in vertical surfaces and horizontal nontraffic surfaces.
  - 1. Joint Location:
    - a. Acoustical joints where indicated.
    - b. Other joints as indicated.
  - 2. Joint Sealant: Acoustical.
  - 3. Joint-Sealant Color: As selected by Owner from manufacturer's full range.

# SECTION 081113 - HOLLOW METAL DOORS AND FRAMES

#### PART 1 - GENERAL

# 1.1 SUMMARY

- A. Section includes hollow-metal doors and wood frames.
- B. Section includes hollow-metal doors and metal frames.

## 1.2 PERFORMANCE REQUIREMENTS

- A. General: Provide exterior door assemblies complying with performance requirements indicated and capable of withstanding structural movement, thermally induced movement, and exposure to weather without failure to infiltration of water into the building interior.
- B. Wind Loads: Provide exterior doors and frames, including anchorage, capable of withstanding impact loads and wind-load design pressures calculated according to requirements of the American Society of Civil Engineers' ASCE 7, "Minimum Design Loads for Buildings and Other Structures", 6.4.2, "Analytical Procedure", and the requirements of the authorities having jurisdiction.
  - 1. Wind Speed: as indicated on the drawings.

## 1.3 SUBMITTALS

- A. Product Data: For each type of product. Include construction details, material descriptions, core descriptions, fire-resistance rating and finishes.
- B. Shop Drawings: Include elevations, door edge details, frame profiles, metal thicknesses, preparations for hardware, and other details.
- C. Schedule: Prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings.
- D. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each type of hollow metal door and frame assembly.

#### PART 2 - PRODUCTS

## 2.1 MANUFACTURERS

- A. Source Limitations: Obtain hollow metal work from single source from single manufacturer.
- B. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

# SUMMER BAY II APARTMENTS – LAKE COUNTY, FL FK #5389

- 1. Windsor Republic Doors (BASIS OF DESIGN)
- 2. Ceco Door Products; an Assa Abloy Group company.
- 3. Benchmark, a division of Therma-Tru Corporation.
- 4. Curries Company; an Assa Abloy Group company.
- 5. Steelcraft; an Ingersoll-Rand company.

#### 2.2 REGULATORY REQUIREMENTS

- A. Fire-Rated Assemblies: Complying with NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.
  - 1. Smoke- and Draft-Control Assemblies: Provide an assembly with gaskets listed and labeled for smoke and draft control by a qualified testing agency acceptable to authorities having jurisdiction, based on testing according to UL 1784 and installed in compliance with NFPA 105.

## 2.3 STANDARD HOLLOW METAL DOORS AND WOOD FRAMES

- A. General: Provide doors of design indicated, not less than thickness indicated; fabricated with smooth surfaces, without visible joints or seams on exposed faces unless otherwise indicated.
  - 1. Design: As indicated.
  - 2. Core Construction: Manufacturer's standard kraft-paper honeycomb, polystyrene, polyurethane, polyisocyanurate, mineral-board, or vertical steel-stiffener core.
    - a. Thermal-Rated (Insulated) Doors: Where indicated, provide doors fabricated with thermal-resistance value (R-value) of not less than R-13 when tested according to ASTM C 1363.
      - 1) Locations: Exterior doors.
  - 3. Vertical Edges for Single-Acting Doors: Manufacturer's standard.
  - 4. Top and Bottom Edges: Closed with flush or inverted 0.042-inch- (1.0-mm-) thick, end closures or channels of same material as face sheets.
- B. Interior and Exterior Doors: Face sheets fabricated from metallic-coated steel sheet.
  - 1. Level 1 and Physical Performance Level C (Standard Duty)
- C. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.
- D. Fabricate concealed stiffeners and hardware reinforcement from either cold- or hot-rolled steel sheet.
- E. Moldings for Glazed Lites in Doors: Fabricated from same material as door face sheet in which they are installed.

F. Loose Stops for Glazed Lites in Frames: Fabricated from same material as frames in which they are installed.

#### 2.4 FABRICATION

- A. Fabricate hollow metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.
- B. Tolerances: Fabricate hollow metal work to tolerances indicated.
- C. Hollow Metal Doors:
  - 1. Exterior Doors: Provide weep-hole openings in bottom of exterior doors to permit moisture to escape. Seal joints in top edges of doors against water penetration.
  - 2. Glazed Lites: Factory cut openings in doors, factory glaze with clear, tempered, Low 'E', insulating units with Argon gas fill.
  - 3. Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch (19 mm) beyond edge of door on which astragal is mounted.
- D. Wood Frames: Where frames are fabricated in sections due to shipping, handling or field conditions, provide and maintain alignment at each joint.
  - 1. Provide countersunk, flat-head exposed screws for exposed fasteners unless otherwise indicated.
  - 2. Jamb Anchors: Locate anchors as indicated by manufacturer.
  - 3. Provide perimeter flange as required for weather barrier installation ASTM 2112.
- E. Fabricate concealed stiffeners, edge channels, and hardware reinforcement from either cold- or hot-rolled steel sheet.
- F. Hardware Preparation: Factory prepare hollow metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to the Door Hardware Schedule and templates furnished as specified in Division 08 Section "Door Hardware."
  - 1. Locate hardware as indicated, or if not indicated, according to ANSI/SDI A250.8.
  - 2. Reinforce doors and frames to receive nontemplated, mortised and surface-mounted door hardware.
  - 3. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/DHI A115 Series specifications for preparation of hollow metal work for hardware.
- G. Stops and Moldings: Provide stops and moldings where indicated. Form corners of stops and moldings with butted or mitered hairline joints.
  - 1. Provide loose casing moldings on inside and outside of doors and frames.
  - 2. Provide loose stops and moldings on inside of work.

3. Coordinate rabbet width between fixed and removable stops with type of installation indicated.

## 2.5 STEEL FINISHES

- A. Prime Finish: Apply manufacturer's standard primer immediately after cleaning and pretreating.
  - 1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI/SDI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

#### 2.6 WOOD FINISHES

- A. Prime Finish: Apply manufacturer's standard primer immediately after cleaning and preparation.
  - 1. Primer: Manufacturer's standard recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

## PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

#### 3.2 INSTALLATION

- A. General: Install hollow metal and wood frame work plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.
- B. Wood Frames: Install wood frames of size and profile indicated.
  - 1. Set wood frames accurately in position, shimmed, plumbed and aligned securely until permanent anchors are set.
    - a. At fire-protection-rated openings, install frames according to NFPA 80.
    - b. Install frames with removable glazing stops located on secure side of opening.
    - c. Remove temporary braces necessary for installation only after frames have been properly set and secured.
    - d. Check plumbness, squareness, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.

- 2. Installation Tolerances: Adjust wood frames for squareness, alignment, twist, and plumb to the following minimum tolerances:
  - a. Squareness: Plus or minus 1/16 inch (1.6 mm), measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
  - b. Alignment: Plus or minus 1/16 inch (1.6 mm), measured at jambs on a horizontal line parallel to plane of wall.
  - c. Twist: Plus or minus 1/16 inch (1.6 mm), measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
  - d. Plumbness: Plus or minus 1/16 inch (1.6 mm), measured at jambs at floor.
- 3. Fire-Rated Doors: Install door frames with clearances according to NFPA 80.
- C. Hollow Metal Doors: Fit hollow metal doors accurately in frames, within clearances specified below. Shim as necessary.
  - 1. Non-Fire-Rated Standard Steel Doors:
    - a. Jambs and Head: 1/8 inch (3 mm) plus or minus 1/16 inch (1.6 mm).
    - b. Between Edges of Pairs of Doors: 1/8 inch (3 mm) plus or minus 1/16 inch (1.6 mm).
    - c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch (9.5 mm).
  - 2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.
- D. Glazing: Comply with installation requirements in Division 08 Section "Glazing" and with hollow metal manufacturer's written instructions.
  - 1. Secure stops with countersunk flat-head wood screws spaced uniformly not more than 9 inches (230 mm) o.c. and not more than 2 inches (50 mm) o.c. from each corner and as indicated.

#### 3.3 ADJUSTING AND CLEANING

- A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow metal work that is warped, bowed, or otherwise unacceptable.
- B. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

## SECTION 081416 – INTERIOR WOOD DOORS

## PART 1 - GENERAL

## 1.1 SUMMARY

- A. Section Includes:
  - 1. Hollow-core doors with hardboard or MDF faces.
  - 2. Interior wood door frames.
  - 3. Shop priming flush wood doors.
  - 4. Factory fitting interior doors to frames and factory machining for hardware.

#### 1.2 SUBMITTALS

- A. Product Data: For each type of door indicated. Include details of core and edge construction, louvers, and trim for openings.
- B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; location and extent of hardware blocking; and other pertinent data.
  - 1. Indicate dimensions and locations of reinforcing and holes for hardware.
  - 2. Indicate dimensions and locations of cutouts.
  - 3. Indicate fire-protection ratings for fire-rated doors.
  - 4. Doors to be factory finished and finish requirements.
- C. Warranty: Sample of manufacturers warranty.

## 1.3 QUALITY ASSURANCE

A. Source Limitations: Obtain interior wood doors from single manufacturer.

#### 1.4 DELIVERY, STORAGE, AND HANDLING

A. Comply with requirements of referenced standard and manufacturer's written instructions.

#### 1.5 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period. Failures include doors that have warped (bow, cup or twist) or that show telegraphing of core construction in face veneers, or do not conform to tolerance limitations of referenced quality standards.

1. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.

#### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- A. <u>Manufacturers</u>: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - 1. Craftmaster Doors (Basis of Design) three panel "Clermont" 1-3/8".
  - 2. TruStile, Inc.
  - 3. Jeld- Wen, Inc.
  - 4. Masonite, Inc.

# 2.2 DOOR CONSTRUCTION, GENERAL

- A. Hollow-Core Doors:
  - 1. Construction: Standard hollow core.

#### 2.3 DOORS FOR OPAQUE FINISH

- A. Interior Hollow-Core Doors
  - 1. Grade: Standard
  - 2. Faces: Hardboard or MDF.
    - a. Hardboard Faces: AHA A135.4, Class 2 (standard).
    - b. MDF Faces: ANSI A208.2, Grade 150 or 160.
  - 3. Exposed Vertical and Top Edges: Any closed-grain hardwood.
  - 4. Construction: Manufacturer's standard.

#### 2.4 FABRICATION

- A. Factory fit doors to suit frame-opening sizes indicated. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.
  - 1. Comply with requirements in NFPA 80 for fire-rated doors.
- B. Factory machine doors for hardware that is not surface applied.

#### 2.5 SHOP PRIMING

A. Doors for Opaque Finish: Shop prime faces, all four edges, edges of cutouts, and mortises with one coat of wood primer specified in Section 099123 "Interior Painting".

# PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. Hardware: For installation, see Division 08 Section "Door Hardware."
- B. Installation Instructions: Install doors to comply with manufacturer's written instructions and the referenced quality standard, and as indicated.
  - 1. Install fire-rated doors in corresponding fire-rated frames according to NFPA 80.
- C. Job-Fitted Doors: Align and fit doors in frames with uniform clearances and bevels as indicated below; do not trim stiles and rails in excess of limits set by manufacturer or permitted for fire-rated doors. Machine doors for hardware. Seal edges of doors, edges of cutouts, and mortises after fitting and machining.
  - 1. Clearances: Provide 1/8 inch (3.2 mm) at heads, jambs, and between pairs of doors. Provide 1/8 inch (3.2 mm) from bottom of door to top of decorative floor finish or covering unless otherwise indicated. Where threshold is shown or schedule, provide ¹/₄ inch (6.4 mm) from bottom of door to top of threshold unless otherwise indicated.
- D. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.

#### 3.2 ADJUSTING

- A. Operation: Rehang or replace doors that do not swing or operate freely.
- B. Finished Doors: Replace doors that are damaged or that do not comply with requirements. Doors may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing.

# SECTION 083613 - SECTIONAL DOORS

#### PART 1 - GENERAL

# 1.1 SUMMARY

A. Section includes electrically operated sectional doors.

#### 1.2 SUBMITTALS

- A. Product Data: For each type and size of sectional door and accessory.
- B. Shop Drawings: For each installation and for special components not dimensioned or detailed in manufacturer's product data. Include plans, elevations, sections, details, and attachments to other work.
  - 1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
- C. Delegated-Design Submittal: For sectional doors indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
  - 1. Detail fabrication and assembly of installation anchors. Brackets and accessories.
  - 2. Summary of forces and loads on walls and jambs.
  - 3. Analysis and supporting data indicating compliance of project specific door assemblies with regulatory criteria for testing and acceptance as required by the authorities having jurisdiction.
- D. Qualification Data: For qualified installer and delegated design engineer.
- E. Warranties: Sample of special warranties.
- F. Maintenance Data: For sectional doors to include in maintenance manuals.

#### 1.3 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for both installation and maintenance of units required for this Project.
- B. Source Limitations: Obtain sectional doors from single source from single manufacturer. Obtain operators and controls from sectional door manufacturer.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

# SUMMER BAY APARTMENTS – LAKE COUNTY, FL FK #5169

D. Regulatory Requirements: Comply with U.S. Dept of Justice's "2010 ADA Standards for Design, Accessibility Guidelines for Buildings and Facilities (ADAAG)" and ICC/ANSI A117.1.

## 1.4 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of sectional doors that fail in materials or workmanship within specified warranty period.
  - 1. Warranty Period: Three years from date of Substantial Completion.
  - 2. Labor Warranty Period: 1 year from date of Substantial Completion.
- B. Special Finish Warranty: If other than primed and field painted, manufacturer agrees to repair or replace components that show evidence of deterioration of factory-applied finishes within specified warranty period.
  - 1. Warranty Period: 10 years from date of Substantial Completion.

#### PART 2 - PRODUCTS

## 2.1 PERFORMANCE REQUIREMENTS

- A. General Performance: Sectional doors shall comply with performance requirements specified without failure due to defective manufacture, fabrication, installation, or other defects in construction and without requiring temporary installation of reinforcing components.
- B. Structural Performance, Exterior Doors: Capable of withstanding the design wind loads.
  - 1. Design Wind Load: As indicated on Drawings.
  - 2. Testing: According to ASTM E 330.
- C. Seismic Performance: Sectional doors shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

#### 2.2 DOOR ASSEMBLY – Garage Doors

- A. Steel Sectional Door: Sectional door formed with hinged sections.
  - 1. <u>Basis-of-Design Product</u>: Subject to compliance with requirements, provide "Series 194 Thermacore Sectional Steel Door" by Overhead Door Corporation or comparable product by one of the following:
    - a. <u>Clopay Building Products; a Griffon company</u>.
    - b. Fimbel Architectural Door Specialties.
    - c. <u>General American Door Company</u>.
    - d. <u>Raynor</u>.
    - e. <u>Wayne-Dalton Corp</u>.
- B. Operation Cycles: Not less than 10,000.

- C. Steel Sections: Zinc-coated (galvanized) steel sheet with G60 (Z180) zinc coating.
  - 1. Section Thickness: 2 inches (51 mm).
  - Exterior-Face, Steel Sheet Thickness: Zinc-coated (galvanized) steel sheet of manufacturer's recommended thickness to meet performance requirements.
    a. Surface: Manufacturer's standard, wood-grain embossed.
- D. Reinforce bottom section with a continuous channel or angle conforming to bottom-section profile and allowing installation of astragal.
- E. Reinforce sections with continuous horizontal and diagonal reinforcement, as required to stiffen door and for wind loading. Provide galvanized-steel bars, struts, trusses, or strip steel, formed to depth and bolted or welded in place.
- F. Provide reinforcement for hardware attachment.
- G. Track Configuration: Standard-lift.
- H. Weatherseals: Fitted to bottom and top and around entire perimeter of door.
- I. Insulation: Provide a minimum of an R-5 manufacturer installed polyurethane insulation.
- J. Roller-Tire Material: Manufacturer's standard.
- K. Locking Devices: Equip door with manufacturer's standard locking device assembly.
- L. Counterbalance Type: Torsion spring.
- M. Electric Door Operator:
  - 1. Usage Classification: Light duty, up to 10 cycles per hour.
  - 2. Operator Type: Trolley.
  - 3. Motor Exposure: Interior, clean, and dry.
  - 4. Emergency Manual Operation: Push-up type.
  - 5. Obstruction-Detection Device: Manufacturer's standard automatic photoelectric sensor or electric sensor edge on bottom bar.
- N. Safety Interlock Switch: Equip power-operated doors with safety interlock switch to disengage power supply when door is locked.
- O. Control Station: Three-button control station in fixed location with momentary-contact pushbutton controls labeled "Open" and "Stop" and sustained – or constant-pressure, push-button control labeled "Close".
  - 1. Interior-Mounted Units: Full-guarded, surface-mounted, heavy-duty type, with generalpurpose NEMA ICS 6, Type 1 enclosure.
- P. Audible and Visual Signals: Audible alarm and visual indicator lights in compliance with regulatory requirements for accessibility.
- Q. Portable, Control System: Consisting of two portable control device to open and stop door may be momentary-contact type; control to close door shall be sustained or constant-pressure type.

R. Door Finish:1. Factory Prime Finish: Manufacturer's standard color.

# PART 3 - EXECUTION

## 3.1 INSTALLATION

- A. Install sectional doors and operating equipment complete with necessary hardware, anchors, inserts, hangers, and equipment supports; according to manufacturer's written instructions and as specified.
- B. Tracks: Provide sway bracing, diagonal bracing, and reinforcement as required for rigid installation of track and door-operating equipment.
- C. Accessibility: Install sectional doors, switches, and controls along accessible routes in compliance with regulatory requirements for accessibility.
- D. Power-Operated Doors: Install automatic garage doors openers according to UL 325.
- E. Adjust hardware and moving parts to function smoothly so that doors operate easily, free of warp, twist, or distortion.
- F. Touch-up Painting: Immediately after installation, clean abraded galvanized surfaces and repair galvanizing to comply with ASTM A 780.

# SECTION 084113 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

# PART 1 - GENERAL

# 1.1 SUMMARY

- A. Section Includes (at Clubhouse only):
  - 1. Exterior manual-swing entrance doors and door-frame units.
  - 2. Storefront framing for punched openings.

#### 1.2 PERFORMANCE REQUIREMENTS

- A. General Performance: Installed aluminum-framed systems shall withstand the effects of the following performance requirements without exceeding performance criteria or failure due to defective manufacture, fabrication, installation, or other defects in construction:
  - 1. Movements of supporting structure indicated on Drawings including, but not limited to, story drift and deflection from uniformly distributed and concentrated live loads.
  - 2. Dimensional tolerances of building frame and other adjacent construction.
  - 3. Failure includes the following:
    - a. Deflection exceeding specified limits.
    - b. Thermal stresses transferring to building structure.
    - c. Framing members transferring stresses, including those caused by thermal and structural movements to glazing.
    - d. Glazing-to-glazing contact.
    - e. Noise or vibration created by wind and by thermal and structural movements.
    - f. Loosening or weakening of fasteners, attachments, and other components.
    - g. Sealant failure.
    - h. Failure of operating units.
- B. Delegated Design: Design aluminum-framed systems, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated and as required by the Florida Building Code, 2010 Edition.
- C. Structural Loads:
  - 1. Wind Loads:
    - a. Basic Wind Speed: As indicated on the Drawings.
- D. Deflection of Framing Members:
  - 1. Deflection Normal to Wall Plane: Limited to 1/175 of clear span for spans up to 13 feet 6 inches (4.1 m) and to 1/240 of clear span plus 1/4 inch (6.35 mm) for spans greater than 13 feet 6 inches (4.1 m) or an amount that restricts edge deflection of individual glazing lites to 3/4 inch (19 mm), whichever is less.
## SUMMER BAY II APARTMENTS – LAKE COUNTY, FL FK #5389

- 2. Deflection Parallel to Glazing Plane: Limited to amount not exceeding that which reduces glazing bite to less than 75 percent of design dimension and that which reduces edge clearance between framing members and glazing or other fixed components directly below them to less than 1/8 inch (3.2 mm) and clearance between members and operable units directly below them to less than 1/16 inch (1.5 mm).
- E. Structural-Test Performance: Provide aluminum-framed systems tested according to ASTM E 330 as follows:
  - 1. When tested at positive and negative wind-load design pressures, systems do not evidence deflection exceeding specified limits.
  - 2. When tested at 150 percent of positive and negative wind-load design pressures, systems, including anchorage, do not evidence material failures, structural distress, and permanent deformation of main framing members exceeding 0.2 percent of span.
  - 3. Test Durations: As required by design wind velocity, but not fewer than 10 seconds.
- F. Air Infiltration: Provide aluminum-framed systems with maximum air leakage through fixed glazing and framing areas of 0.06 cfm/sq. ft. (0.03 L/s per sq. m) of fixed wall area when tested according to ASTM E 283 at a minimum static-air-pressure difference of 6.24 lbf/sq. ft.
- G. Water Penetration under Static Pressure: Provide aluminum-framed systems that do not evidence water penetration through fixed glazing and framing areas when tested according to ASTM E 331 at a minimum static-air-pressure difference of 20 percent of positive wind-load design pressure, but not less than 15.lbf/sq. ft. (300 Pa).
- H. Water Penetration under Dynamic Pressure: Provide aluminum-framed systems that do not evidence water leakage through fixed glazing and framing areas when tested according to AAMA 501.1 under dynamic pressure equal to 20 percent of positive wind-load design pressure, but not less than 15 lbf/sq. ft. (300 Pa).
  - 1. Maximum Water Leakage: No uncontrolled water penetrating aluminum-framed systems or water appearing on systems' normally exposed interior surfaces from sources other than condensation. Water leakage does not include water controlled by flashing and gutters that is drained to exterior and water that cannot damage adjacent materials or finishes.

## 1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for aluminum-framed systems.
- B. Shop Drawings: For aluminum-framed systems. Include plans, elevations, sections, details, and attachments to other work signed and sealed by the engineer responsible for their preparation.
  - 1. Include details of provisions for system expansion and contraction and for drainage of moisture in the system to the exterior.
  - 2. For entrance doors, include hardware schedule and indicate operating hardware types, functions, quantities, and locations.

- C. Samples for Initial Selection: For units with factory-applied color finishes.
- D. Other Action Submittals:
  - 1. Entrance Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of entrance door hardware, as well as procedures and diagrams. Coordinate final entrance door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of entrance door hardware.
- E. Delegated-Design Submittal: For aluminum-framed systems indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
  - 1. Detail fabrication and assembly of aluminum-framed systems.
  - 2. Include design calculations.
- F. Qualification Data: For qualified Installer, delegated design professional engineer, and testing agency.
- G. Preconstruction Test Reports: For sealant.
- H. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for aluminum-framed systems, indicating compliance with performance requirements.
- I. Field quality-control reports.
- J. Maintenance Data: For aluminum-framed systems to include in maintenance manuals.
- K. Warranties: Sample of special warranties.

## 1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
- B. Testing Agency Qualifications: Qualified according to ASTM E 699 for testing indicated.
- C. Engineering Responsibility: Prepare data for aluminum-framed systems, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in systems similar to those indicated for this Project.
- D. Accessible Entrances: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines and applicable codes and regulations adopted by the authorities having jurisdiction.
- E. Source Limitations for Aluminum-Framed Systems: Obtain from single source from single manufacturer.

## 1.5 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of structural supports for aluminum-framed systems by field measurements before fabrication and indicate measurements on Shop Drawings.

## 1.6 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of aluminum-framed systems that do not comply with requirements or that fail in materials or workmanship within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Structural failures including, but not limited to, excessive deflection.
    - b. Noise or vibration caused by thermal movements.
    - c. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
    - d. Adhesive or cohesive sealant failures.
    - e. Water leakage through fixed glazing and framing areas.
    - f. Failure of operating components.
  - 2. Warranty Period: Five (5) years from date of Substantial Completion.
- B. Special Finish Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components on which finishes do not comply with requirements or that fail in materials or workmanship within specified warranty period. Warranty does not include normal weathering.
  - 1. Warranty Period: Twenty (20) years from date of Substantial Completion.

## 1.7 MAINTENANCE SERVICE

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

## PART 2 - PRODUCTS

## 2.1 MANUFACTURERS

A. <u>Basis-of-Design Product</u>: Subject to compliance with requirements, provide product indicated as Basis of Design or comparable product by one of the following that may be incorporated into the Work include, but are not limited to:

## SUMMER BAY II APARTMENTS – LAKE COUNTY, FL FK #5389

- 1. <u>Kawneer North America</u>. TriFab 350 Series Basis of Design.
- 2. EFCO Corporation.
- 3. <u>TRACO</u>.
- 4. Tubelite.
- 5. United States Aluminum.
- 6. YKK AP America Inc.

## 2.2 MATERIALS

- A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
  - 1. Sheet and Plate: ASTM B 209 (ASTM B 209M).
  - 2. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221 (ASTM B 221M).
  - 3. Extruded Structural Pipe and Tubes: ASTM B 429.
  - 4. Structural Profiles: ASTM B 308/B 308M.
  - 5. Welding Rods and Bare Electrodes: AWS A5.10/A5.10M.
- B. Steel Reinforcement: Manufacturer's standard zinc-rich, corrosion-resistant primer, complying with SSPC-PS Guide No. 12.00; applied immediately after surface preparation and pretreatment. Select surface preparation methods according to recommendations in SSPC-SP COM and prepare surfaces according to applicable SSPC standard.
  - 1. Structural Shapes, Plates, and Bars: ASTM A 36/A 36M.
  - 2. Cold-Rolled Sheet and Strip: ASTM A 1008/A 1008M.
  - 3. Hot-Rolled Sheet and Strip: ASTM A 1011/A 1011M.

## 2.3 FRAMING SYSTEMS

- A. Framing Members: Manufacturer's standard extruded-aluminum framing members of thickness required and reinforced as required to support imposed loads.
  - 1. Construction: Thermally broken.
  - 2. Glazing System: Low E w/Argon, U=0.57 SHGC=0.25
  - 3. Glazing Plane: As indicated.
- B. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.
- C. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.
  - 1. Use self-locking devices where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration.
  - 2. Reinforce members as required to receive fastener threads.
  - 3. Use exposed fasteners with countersunk Phillips screw heads, finished to match framing system, fabricated from stainless steel.

- D. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts, complying with ASTM A 123/A 123M or ASTM A 153/A 153M.
- E. Concealed Flashing: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding flashing compatible with adjacent materials. Form exposed flashing from sheet aluminum finished to match framing and of sufficient thickness to maintain a flat appearance without visible deflection.
- F. Framing System Gaskets and Sealants: Manufacturer's standard, recommended by manufacturer for joint type.
  - 1. Provide sealants for use inside of the weatherproofing system that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

## 2.4 GLAZING SYSTEMS

- A. Glazing: As specified in Division 08 Section "Glazing."
- B. Glazing Gaskets: Manufacturer's standard compression types; replaceable, molded or extruded, of profile and hardness required to maintain watertight seal.
- C. Spacers and Setting Blocks: Manufacturer's standard elastomeric type.
- D. Bond-Breaker Tape: Manufacturer's standard TFE-fluorocarbon or polyethylene material to which sealants will not develop adhesion.

## 2.5 ENTRANCE DOOR SYSTEMS

- A. Entrance Doors: Manufacturer's standard glazed entrance doors for manual-swing operation.
  - 1. Door Construction: 1-3/4-inch (44.5-mm) overall thickness, with minimum 0.125-inch-(3.2-mm-) thick, extruded-aluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deeply penetrated and fillet welded or that incorporate concealed tie rods.
  - 2. Door Design: As indicated.
    - a. Accessible Doors: Smooth surfaced for width of door in area within 10 inches (255 mm) above floor or ground plane.
  - 3. Glazing Stops and Gaskets: Beveled, snap-on, extruded-aluminum stops and preformed gaskets.
    - a. Provide nonremovable glazing stops on outside of door.

## 2.6 ENTRANCE DOOR HARDWARE

- A. General: Provide heavy-duty entrance door hardware components in sizes and types recommended by entrance system and hardware manufacturers for entrances and uses indicated and for each entrance door to comply with requirements in this Section.
  - 1. Entrance Door Hardware Sets: Coordinate with Owner for decorative entrance hardware for Clubhouse main entry. Provide Manufacturer's standard push/pull for all other entrance doors.
  - 2. Opening-Force Requirements:
    - a. Egress Doors: Not more than 15 lbf (67 N) to release the latch and not more than 30 lbf ((133 N)) to set the door in motion and not more than 15 lbf (67 N) to open the door to its minimum required width.
    - b. Accessible Interior Doors: Not more than 5 lbf (22.2 N) to fully open door.
    - c. Delayed-Egress Locks: Lock releases within 15 seconds after applying a force of not more than 15 lbf (67 N) for not more than 3 seconds.
    - d. Latches and Exit Devices: Not more than 15 lbf (67 N) required to release latch.
- B. Pivot Hinges: BHMA A156.4, Grade 1.
  - 1. Offset-Pivot Hinges: Provide top, bottom, and intermediate offset pivots at each door leaf.
- C. Mortise Auxiliary Locks: BHMA A156.5, Grade 1.
- D. Automatic and Self-Latching Flush Bolts: BHMA A156.3, Grade 1.
- E. Panic Exit Devices: BHMA A156.3, Grade 1, listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for panic protection, based on testing according to UL 305.
- F. Cylinders: As specified in Division 08 Section "Door Hardware."
  - 1. Keying: Master key system. Permanently inscribe each key with a visual key control number and include notation "DO NOT DUPLICATE".
- G. Strikes: Provide strike with black-plastic dust box for each latch or lock bolt; fabricated for aluminum framing.
- H. Operating Trim: BHMA A156.6.
- I. Concealed Overhead Closers: BHMA A156.4, Grade 1, with accessories required for a complete installation, sized as required by door size, exposure to weather, and anticipated frequency of use; adjustable to meet field conditions and requirements for opening force.
- J. Concealed Overhead Holders: BHMA A156.8, Grade 1.
- K. Door Stops: BHMA A156.16, Grade 1, floor or wall mounted, as appropriate for door location indicated, with integral rubber bumper.

- L. Weather Stripping: Manufacturer's standard replaceable components.
  - 1. Compression Type: Made of ASTM D 2000, molded neoprene, or ASTM D 2287, molded PVC.
- M. Weather Sweeps: Manufacturer's standard exterior-door bottom sweep with concealed fasteners on mounting strip.
- N. Silencers: BHMA A156.16, Grade 1.
- O. Thresholds: BHMA A156.21, raised thresholds beveled with a slope of not more than 1:2, with maximum height of 1/2 inch (13 mm).
- P. Finger Guards: Manufacturer's standard collapsible neoprene or PVC gasket anchored to frame hinge-jamb at center-pivoted doors.

## 2.7 ACCESSORY MATERIALS

- A. Joint Sealants: For installation at perimeter of aluminum-framed systems, as specified in Division 07 Section "Joint Sealants."
  - 1. Provide sealants for use inside of the weatherproofing system that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- B. Bituminous Paint: Cold-applied, asphalt-mastic paint complying with SSPC-Paint 12 requirements except containing no asbestos; formulated for 30-mil (0.762-mm) thickness per coat.

#### 2.8 FABRICATION

- A. Form or extrude aluminum shapes before finishing.
- B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.
- C. Framing Members, General: Fabricate components that, when assembled, have the following characteristics:
  - 1. Profiles that are sharp, straight, and free of defects or deformations.
  - 2. Accurately fitted joints with ends coped or mitered.
  - 3. Means to drain water passing joints, condensation within framing members, and moisture migrating within the system to exterior.
  - 4. Physical and thermal isolation of glazing from framing members.
  - 5. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
  - 6. Provisions for field replacement of glazing from exterior.
  - 7. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

## SUMMER BAY II APARTMENTS – LAKE COUNTY, FL FK #5389

- D. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.
- E. Storefront Framing: Fabricate components for assembly using shear-block system or screw-spline system with concealed fasteners.
- F. Entrance Door Frames: Reinforce as required to support loads imposed by door operation and for installing entrance door hardware.
  - 1. At exterior doors, provide compression weather stripping at fixed stops.
  - 2. At interior doors, provide silencers at stops to prevent metal-to-metal contact. Install three silencers on strike jamb of single-door frames and two silencers on head of frames for pairs of doors.
- G. Entrance Doors: Reinforce doors as required for installing entrance door hardware.
  - 1. At pairs of exterior doors, provide sliding-type weather stripping retained in adjustable strip and mortised into door edge.
  - 2. At exterior doors, provide weather sweeps applied to door bottoms.
- H. Entrance Door Hardware Installation: Factory install entrance door hardware to the greatest extent possible. Cut, drill, and tap for factory-installed entrance door hardware before applying finishes.
- I. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

## 2.9 ALUMINUM FINISHES

- A. High-Performance Organic Finish: 2-coat fluoropolymer finish complying with AAMA 2605 and containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
  - 1. Color and Gloss: As selected by Owner from manufacturer's full range.

## PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

## 3.2 INSTALLATION

A. General:

## SUMMER BAY II APARTMENTS – LAKE COUNTY, FL FK #5389

- 1. Comply with manufacturer's written instructions.
- 2. Do not install damaged components.
- 3. Fit joints to produce hairline joints free of burrs and distortion.
- 4. Rigidly secure nonmovement joints.
- 5. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration.
- 6. Seal joints watertight unless otherwise indicated.
- B. Metal Protection:
  - 1. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or applying sealant or tape, or by installing nonconductive spacers as recommended by manufacturer for this purpose.
  - 2. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.
- C. Install components to drain water passing joints, condensation occurring within framing members, and moisture migrating within the system to exterior.
- D. Set continuous sill members and flashing in full sealant bed as specified in Division 07 Section "Joint Sealants" to produce weathertight installation.
- E. Install components plumb and true in alignment with established lines and grades, and without warp or rack.
- F. Entrance Doors: Install doors to produce smooth operation and tight fit at contact points.
  - 1. Exterior Doors: Install to produce weathertight enclosure and tight fit at weather stripping.
  - 2. Field-Installed Entrance Door Hardware: Install surface-mounted entrance door hardware according to entrance door hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.
- G. Install perimeter joint sealants as specified in Division 07 Section "Joint Sealants" to produce weathertight installation.

## 3.3 ERECTION TOLERANCES

- A. Install aluminum-framed systems to comply with the following maximum erection tolerances:
  - 1. Location and Plane: Limit variation from true location and plane to 1/8 inch in 12 feet (3 mm in 3.7 m); 1/4 inch (6 mm) over total length.
  - 2. Alignment:
    - a. Where surfaces abut in line, limit offset from true alignment to 1/16 inch (1.5 mm).
    - b. Where surfaces meet at corners, limit offset from true alignment to 1/32 inch (0.8 mm).
- B. Diagonal Measurements: Limit difference between diagonal measurements to 1/8 inch (3 mm).

## 3.4 FIELD QUALITY CONTROL

- A. Testing Agency: Contractor will engage a qualified independent testing and inspecting agency to perform field tests and inspections.
- B. Testing Services: Testing and inspecting of representative areas to determine compliance of installed systems with specified requirements shall take place as follows and in successive phases as indicated on Drawings. Do not proceed with installation of the next area until test results for previously completed areas show compliance with requirements.
  - 1. Water Penetration: Areas shall be tested according to ASTM E 1105 at a minimum uniform and cyclic static-air-pressure difference of 0.67 times the static-air-pressure difference specified for laboratory testing under "Performance Requirements" Article, but not less than 4.18 lbf/sq. ft. (200 Pa), and shall not evidence water penetration.
- C. Repair or remove work if test results and inspections indicate that it does not comply with specified requirements. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
- D. Aluminum-framed assemblies will be considered defective if they do not pass tests and inspections.
- E. Prepare test and inspection reports.

## 3.5 ADJUSTING

- A. Adjust operating entrance door hardware to function smoothly as recommended by manufacturer.
  - 1. For entrance doors accessible to people with disabilities, adjust closers to provide a 3second closer sweep period for doors to move from a 70-degree open position to 3 inches (75 mm) from the latch, measured to the leading door edge.

END OF SECTION 084113

## SECTION 085313 - VINYL WINDOWS

## PART 1 - GENERAL

## 1.1 SUMMARY

A. Section includes vinyl-framed windows.

#### 1.2 PERFORMANCE REQUIREMENTS

- A. General: Provide vinyl windows capable of complying with performance requirements indicated, based on testing manufacturer's windows that are representative of those specified, and that are of sizes required for project.
- B. Performance grade number according to AAMA/WDMA 101/I.S.2/NAFS:
  - 1. Design pressure number in pounds force per square foot used to determine the structural test pressure and water test pressure.
- C. Structural Performance: Provide vinyl windows capable of withstanding wind pressures as shown in wind pressure diagrams on the drawings and the following:
  - 1. Design Wind Loads: Determine design wind loads applicable to Project from basic wind speed indicated in miles per hour at 33 feet above grade, according to the latest version of ASCE 7, and requirements of the authorities having jurisdiction.
    - a. Basic Wind Speed: as indicated on the Structural Drawings.
  - 2. Deflection: Design glass framing system to limit lateral deflections of glass edges to less than 1/175 of glass-edge length or ³/₄ inch, whichever is less, at design pressure base don testing performed according to AAMA/WDMA 101/I.S.2/NAFS, Uniform Load Deflection Test or structural computations.
- D. Delegated Design: Design vinyl windows, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

#### 1.3 SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: Include plans, elevations, sections, hardware, accessories, insect screens, operational clearances, and details of installation, and the following:
  - 1. Mullion details, including reinforcement and stiffeners.
  - 2. Joinery details.
  - 3. Expansion provisions.
  - 4. Flashing and drainage details.
  - 5. Weather-stripping details.

- 6. Glazing details.
- 7. Window cleaning provisions.
- 8. For installed products indicated to comply with design loads, include structural analysis data prepared by or under the supervision of a qualified professional engineer detailing fabrication and assembly of vinyl windows, and used to determine structural test pressures and design pressures from basic wind speeds indicated.
- C. Product Schedule: For vinyl windows. Use same designations indicated on Drawings.
- D. Product Test Reports: Based on evaluation of comprehensive tests performed within the last four years by a qualified testing agency for each type, class, grade, and size of vinyl window. Test results based on use of downsized test units will not be accepted.
- E. Maintenance Data: For operable window sash and finishes to include in maintenance manuals.
- F. Warranty: Special warranty specified in this Section.

## 1.4 QUALITY ASSURANCE

- A. Installer Qualifications: An installer acceptable to vinyl window manufacturer for installation of units required for this Project.
- B. Engineering Responsibility: Preparation of data for vinyl windows, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.
- C. Manufacturer Qualifications: A manufacturer capable of fabricating vinyl windows that meet or exceed performance requirements indicated and of documenting this performance by inclusion in lists and by labels, test reports, and calculations.
- D. Source Limitations: Obtain vinyl windows through one source from a single manufacturer.
- E. Fenestration Standard: Comply with AAMA/WDMA 101/I.S.2/NAFS, "North American Fenestration Standard Voluntary Performance Specification for Windows, Skylights and Glass Doors", for definitions and minimum standards of performance, materials, components, accessories, and fabrication unless more stringent requirements are indicated.
  - 1. Provide AAMA-certified vinyl windows with an attached label.
- F. Glazing Publications: Comply with published recommendations of glass manufacturers and with GANA's "Glazing Manual" unless more stringent requirements are indicated.
- G. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
  - 1. Build mockup for type(s) of vinyl window indicated in locations(s) as mutually agreed by Contractor and Owner. Coordinate mockup installation with application and installation of applied components of exterior applied materials, accessories and sequences.
  - 2. Acceptance of mockup(s) does not constitute acceptance of deviations from the Contract Documents contained in mockup(s).

## 1.5 WARRANTY

- A. Manufacturer's Warranty: Manufacturer agrees to repair or replace vinyl windows that fail in materials or workmanship within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Failure to meet performance requirements.
    - b. Structural failures including excessive deflection, water leakage, air infiltration, or condensation.
    - c. Faulty operation of movable sash and hardware.
    - d. Deterioration of vinyl, other materials, and finishes beyond normal weathering.
    - e. Failure of insulating glass.
  - 2. Warranty Period:
    - a. Window: 10 years from date of Substantial Completion.
    - b. Glazing: 10 years from date of Substantial Completion.
    - c. Vinyl Finish: 10 years from date of Substantial Completion.

## PART 2 - PRODUCTS

## 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - 1. MI Windows and Doors (Basis of Design Series 3500, single hung and fixed, patterns and sizes as indicated on the documents)
  - 2. PGT Industries (Alternate BASIS OF DESIGN SERIES SH-2200 single hung and fixed, patterns and sizes as indicated on the documents)
  - 3. CertainTeed Corporation.
  - 4. JELD-WEN, Inc.
  - 5. Atrium Windows, Inc.
  - 6. PGT Industries.
  - 7. Thermal Industries.
  - 8. YKK AP America Inc.

## 2.2 WINDOW PERFORMANCE REQUIREMENTS

- A. Product Standard: AAMA/WDMA/CSA 101/I.S.2/A440.
  - 1. Minimum Performance Class: Residential Class.
  - 2. Minimum Performance Grade: 45.
- B. Thermal Transmittance: NFRC 100 maximum whole-window U-factor of 0.34 Btu/sq. ft. x h x deg F (2.0 W/sq. m x K).

- C. Condensation-Resistance Factor (CRF): Provide vinyl windows tested for thermal performance according to AAMA 1503, showing a CRF of 52.
- D. Solar Heat-Gain Coefficient (SHGC): NFRC 200 maximum whole-window SHGC of 0.27 for single hung, and an SHGC of 0.28 for fixed.
- 2.3 VINYL WINDOWS
  - A. Operating Types: Fixed and single hung as indicated on Drawings.
  - B. Frames and Sashes: Impact-resistant, UV-stabilized PVC complying with AAMA / WDMA / CSA 101 / I.S.2 / A440.
    - 1. Finish: Integral color, to be determined.
  - C. Glass: Clear annealed glass, ASTM C 1036, Type 1, Class 1, q3.
    - 1. Kind: Fully tempered where indicated on Drawings.
  - D. Insulating-Glass Units: ASTM E 2190.
    - 1. Glass: ASTM C 1036, Type 1, Class 1, q3.
      - a. Tint: Clear, unless noted otherwise.
      - b. Kind: Fully tempered where indicated on Drawings.
    - 2. Filling: Fill space between glass lites with air or argon to meet U-Factor and SHGC values indicated.
    - 3. Low-E Coating: Pyrolytic on second surface or Sputtered on second surface.
  - E. Glazing System: Manufacturer's standard factory-glazing system that produces weathertight seal.
  - F. Hardware, General: Manufacturer's standard corrosion-resistant material sized to accommodate sash weight and dimensions. Exposed Hardware Color and Finish: As selected by Owner from manufacturer's full range.
  - G. Hung Window Hardware:
    - 1. Counterbalancing Mechanism: AAMA 902.
    - 2. Locks and Latches: Operated from the inside only.
    - 3. Tilt Hardware: Releasing tilt latch allows sash to pivot above horizontal axis.
  - H. Weather Stripping: Provide full-perimeter weather stripping for each operable sash unless otherwise indicated.
  - I. Fasteners: Noncorrosive and compatible with window members, trim, hardware, anchors, and other components.
    - 1. Exposed Fasteners: Do not use exposed fasteners to the greatest extent possible. For application of hardware, use fasteners that match finish hardware being fastened.

## 2.4 ACCESSORIES

- A. Dividers (False Muntins): Provide divider grilles in designs indicated for each sash lite.
  - 1. Material: Manufacturer's standard.
  - 2. Pattern: As indicated on Drawings.
  - 3. Profile: As selected by Owner from manufacturer's full range.
  - 4. Color: As selected by Owner from manufacturer's full range.

### 2.5 INSECT SCREENS

- A. General: Fabricate insect screens to fully integrate with window frame. Provide screen for each operable exterior sash. Screen wickets are not permitted.
  - 1. Type and Location: Half, outside for single-hung sashes.
- B. Aluminum Frames: Complying with SMA 1004 or SMA 1201.
  - 1. Finish for Exterior Screens: Baked-on organic coating in color selected by Owner from manufacturer's full range.
- C. Glass-Fiber Mesh Fabric: 18-by-14 (1.1-by-1.4-mm) or 18-by-16 (1.0-by-1.1-mm) mesh complying with ASTM D 3656. Mesh Color: Manufacturer's standard.

## 2.6 FABRICATION

- A. Fabricate vinyl windows in sizes indicated. Include a complete system for assembling components and anchoring windows.
  - 1. Welded Frame and Sash Corners: Miter-cut and fusion or chemically welded.
- B. Fabricate vinyl windows that are reglazable without dismantling sash or ventilator framing.
- C. Glaze vinyl windows in the factory.
- D. Weather strip each operable sash to provide weathertight installation.
- E. Provide mullions and cover plates, compatible with window units, complete with anchors for support to structure and installation of window units. Allow for erection tolerances and provide for movement of window units due to thermal expansion and building deflections. Provide mullions and cover plates capable of withstanding design wind loads of window units. Provide manufacturer's standard finish to match window units.
- F. Mount hardware through double walls of vinyl extrusions or provide corrosion-resistant reinforcement.
- G. Complete fabrication, assembly, finishing, hardware application, and other work in the factory to greatest extent possible. Disassemble components only as necessary for shipment and installation. Allow for scribing, trimming, and fitting at Project site.

H. Integral Vinyl Finish and Color: Uniform, solid, homogeneous color as selected, interior and exterior.

## PART 3 - EXECUTION

## 3.1 EXAMINATION

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, weathertight window installation. Proceed with installation only after unsatisfactory conditions have been corrected.

## 3.2 INSTALLATION

- A. Comply with manufacturer's written instructions for installing windows, hardware, accessories, and other components. For installation procedures and requirements not addressed in manufacturer's written instructions, comply with installation requirements in ASTM E 2112.
- B. Install windows level, plumb, square, true to line, without distortion, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction to produce weathertight construction.
- C. Set sill members in bed of sealant or with gaskets, as indicated, for weathertight construction.
- D. Separate aluminum and other coordible surfaces of corrosion or electrolytic action at points of contact with other materials.
- E. Adjust operating sashes and hardware for a tight fit at contact points and weather stripping for smooth operation and weathertight closure.
- F. Clean exposed surfaces immediately after installing windows. Remove excess sealants, glazing materials, dirt, and other substances.
- G. Remove and replace sashes if glass has been broken, chipped, cracked, abraded, or damaged during construction period.

#### © American Architectural Manufacturers Association © Window & Door Manufacturers Association © Canadian Standards Association

AAMA/WDMA/CSA 101/I.S.2/A440-05

Table 3
Optional performance grades (design pressure)
(See Clauses 4.4.2.6.2 and 4.4.3.4.)

		23						š.	Water pressu	penetration re	resistan	ce test
optio	optional performance grades			Design pressure		test pressure		R, LC, C, HC		AW		
R	LC	С	HC	AW	Pa	(psf)	Pa	(psf)	Pa	(psf)	Pa	(psf)
20	8 <u>7</u>	_	V.	1 <u>1</u> 11	960	(20.00)	1 440	(30.00)	150	(3.00)		<u></u>
25	—	( <del></del> )			1 200	(25.00)	1 800	(37.50)	180	(3.75)	-	
30	30	-			1 440	(30.00)	2 160	(45.00)	220	(4.50)	3	10.21
35	35	35		-	1 680	(35.00)	2 520	(52.50)	260	(5.25)	3 <del></del> ;	
40	40	40			1 920	(40.00)	2 880	(60.00)	290	(6.00)	_	
45	45	45	45	45	2 160	(45.00)	3 240	(67.50)	330	(6.75)	440	(9.00)
50	50	50	50	50	2 400	(50.00)	3 600	(75.00)	360	(7.50)	480	(10.00)
55	55	55	55	55	2 640	(55.00)	3 960	(82.50)	400	(8.25)	530	(11.00)
60	60	60	60	60	2 880	(60.00)	4 320	(90.00)	440	(9.00)	580	(12.00)
65	65	65	65	65	3 120	(65.00)	4 680	(97.50)	470	(9.75)	580	(12.00)
70	70	70	70	70	3 360	(70.00)	5 040	(105.00)	510	(10.50)	580	(12.00)
75	75	75	75	75	3 600	(75.00)	5 400	(112.50)	540	(11.25)	580	(12.00)
_	80	80	80	80	3 840	(80.00)	5 760	(120.00)	580	(12.00)	580	(12.00)
<del></del>	85	85	85	85	4 080	(85.00)	6 120	(127.50)	580	(12.00)	580	(12.00)
<u></u>	5 <del></del> 6	90	90	90	4 320	(90.00)	6 480	(135.00)	580	(12.00)	580	(12.00)
—	—	—	95	95	4 560	(95.00)	6 840	(142.50)	580	(12.00)	580	(12.00)
-	_	-	100	100	4 800	(100.00)	7 200	(150.00)	580	(12.00)	580	(12.00)
—	—	—	Т	No limit*	No limit*	No limit*	1.5 × design pressur e	1.5 × design pressure	580	(12.00)	580	(12.00)

(Continued)

March 2007 (Replaces p. 38, February 2005)

38

## END OF SECTION 085313

## SECTION 087100 - DOOR HARDWARE

### PART 1 - GENERAL

## 1.1 SUMMARY

- A. Section includes:
  - 1. Mechanical door hardware for the following:
    - a. Swinging doors.
    - b. Sliding doors.
    - c. Folding doors.
  - 2. Cylinders for door hardware specified in other Sections.

## 1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

## 1.3 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Door Hardware: Three (3) sets of locksets and closers hardware for Unit Entry and Interior.

#### 1.4 QUALITY ASSURANCE

- A. Fire-Rated Door Assemblies: Where fire-rated door assemblies are indicated, provide door hardware rated for use in assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C, unless otherwise indicated.
- B. Means of Egress Doors: Latches do not require more than 15 lbf (67 N) to release the latch. Locks do not require use of a key, tool, or special knowledge for operation to exit.
- C. Accessibility Requirements: For door hardware on doors in an accessible route, comply with ICC/ANSI A117.1.
  - 1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf (22.2 N).
  - 2. Comply with the following maximum opening-force requirements:

- a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf (22.2 N) applied perpendicular to door.
- b. Sliding or Folding Doors: 5 lbf (22.2 N) applied parallel to door at latch.
- c. Fire Doors: Minimum opening force allowable by authorities having jurisdiction.
- 3. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch (13 mm) high.
- 4. Adjust door closer sweep periods so that, from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches (75 mm) from the latch, measured to the leading edge of the door.

## 1.5 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.
  - 1. Warranty Period: Three (3) years from date of Substantial Completion, unless otherwise indicated.
    - a. Exit Devices: Five (5) years from date of Substantial Completion.
    - b. Manual Closers: Ten (10) years from date of Substantial Completion.

## PART 2 - PRODUCTS

## 2.1 SCHEDULED DOOR HARDWARE

- A. Provide door hardware for each door as scheduled in Part 3 "Door Hardware Schedule" Article to comply with requirements in this Section.
  - 1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and named manufacturers' products.
- B. Designations: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of door hardware are indicated in Part 3 "Door Hardware Schedule" Article. Products are identified by using door hardware designations, as follows:
  - 1. Named Manufacturers' Products: Manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum requirements. Manufacturers' names are abbreviated in Part 3 "Door Hardware Schedule" Article.
  - 2. References to BHMA Designations: Provide products complying with these designations and requirements for description, quality, and function.

## 2.2 HINGES, SELF-CLOSING HINGES (SPRING HINGES), AND PIVOTS

A. Hinges: Provide template-produced hinges for hinges installed on hollow-metal doors and hollow-metal frames.

- 1. Manufacturers: provide product indicated as Basis of Design or comparable product, but are not limited to, the following:
  - a. PBB, Inc. (Basis of Design)
  - b. Bommer Industries, Inc.
  - c. IVES Hardware; an Ingersoll-Rand company.
  - d. McKinney Products Company; an ASSA ABLOY Group company.
  - e. Stanley Commercial Hardware; Div. of The Stanley Works.

### 2.3 CONTINUOUS HINGES

A. Continuous Hinges: Minimum 0.120-inch- (3.0-mm-) thick, hinge leaves with minimum overall width of 4-3/4 inches; fabricated to full height of door and frame and to template screw locations; with components finished after milling and drilling are complete.

## 2.4 MECHANICAL LOCKS AND LATCHES

- A. Lock Functions: As indicated in door hardware schedule.
- B. Lock Throw: Comply with testing requirements for length of bolts required for labeled fire doors.
- C. Lock Backset: 2-3/4 inches, unless otherwise indicated.
- D. Lock Trim:
  - 1. Description: Unit Entry and Interior; Better Home Products: Lever and Rosette as selected from manufacturer's standard designs, Color: As selected by Owner.
  - 2. Description: Common Area; Better Home Products: Lever and Rosette as selected from manufacturer's standard designs, Color: As selected by Owner.
- E. Strikes: Provide manufacturer's standard strike for each lock bolt or latchbolt complying with requirements indicated for applicable lock or latch and with strike box and curved lip extended to protect frame; finished to match lock or latch.
- F. Bored Locks: Grade 2;
  - 1. Manufacturers: provide product indicated as Basis of Design or comparable product, but are not limited to, the following:
    - a. Better Home Products. (Basis of Design)
    - b. Cal-Royal
    - c. Best Access Systems; Div. of Stanley Security Solutions, Inc.
    - d. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group Company
    - e. SARGENT Manufacturing Company; an ASSA ABLOY Group company.
- G. Mortise Locks: Operational and Security Grade 1; stamped steel case with steel or brass parts; Series 1000.

- 1. Manufacturers: provide product indicated as Basis of Design or comparable product, but are not limited to, the following:
  - a. Better Home Products. (Basis of Design)
  - b. Cal-Royal
  - c. Best Access Systems; Div. of Stanley Security Solutions, Inc.
  - d. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company.
  - e. SARGENT Manufacturing Company; an ASSA ABLOY Group company.

## 2.5 MANUAL FLUSH BOLTS

- A. Manual Flush Bolts: minimum 3/4-inch throw; designed for mortising into door edge.
  - 1. Manufacturers: provide product indicated as Basis of Design or comparable product, but are not limited to, the following:
    - a. Better Home Products. (Basis of Design)
    - b. Cal-Royal
    - c. Burns Manufacturing Inc.
    - d. Hiawatha, Inc.
    - e. IVES Hardware; an Ingersoll-Rand company.
    - f. Trimco.

## 2.6 EXIT DEVICES AND AUXILIARY ITEMS

- A. Exit Devices and Auxiliary Items:
  - 1. Manufacturers: provide product indicated as Basis of Design or comparable product, but are not limited to, the following:
    - a. Von Duprin (Basis of Design)
    - b. Dorma Architectural Hardware
    - c. Cal-Royal
    - d. Security Door Controls.
    - e. Detex Corp.
    - f. Jackson Exit Devices, an CR Laurence Company

## 2.7 LOCK CYLINDERS

- A. Lock Cylinders: Tumbler type, constructed from brass or bronze, stainless steel, or nickel silver.
  - 1. Manufacturer: Same manufacturer as for locking devices.
  - 2. Manufacturers: provide product indicated as Basis of Design or comparable product, but are not limited to, the following:
    - a. Better Home Products. (Basis of Design)
    - b. Dorma Architectural Hardware
    - c. Cal-Royal
    - d. Best Access Systems; Div. of Stanley Security Solutions, Inc.
    - e. Corbin Russwin Architectural Hardware

- f. SARGENT Manufacturing Company
- B. Lock Cylinders: Grade 1; permanent cores that are interchangeable or removable as specified in the schedule; face finished to match lockset with Serialized Key Control.
- C. Construction Master Keys: Provide cylinders with feature that permits voiding of construction keys without cylinder removal. Provide 10 construction master keys.
- D. Construction Cores: Provide construction cores that are replaceable by permanent cores. Provide 10 construction master keys.

## 2.8 KEYING

A. Keying System: 1. As indicated by Owner.

## 2.9 KEY CONTROL SYSTEM

- A. Key Control Cabinet: As indicated by Owner.
- B. Key Lock Boxes: Designed for storage of two keys, with tamper switches to connect to intrusion detection system.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. GE Security, Inc.
    - b. HPC, Inc.
    - c. Knox Company.

## 2.10 SURFACE CLOSERS

- A. Surface Closers: Rack-and-pinion hydraulic type with adjustable sweep and latch speeds controlled by key-operated valves and forged-steel main arm. Comply with manufacturer's written recommendations for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.
  - 1. Manufacturers: provide product indicated as Basis of Design or comparable product, but are not limited to, the following:
    - a. Cal-Royal (Basis of Design)
    - b. DORMA
    - c. LCN, an Ingersoll Rand Company.
    - d. Norton Door Controls, an Assa Abloy Group company.

## 2.11 MECHANICAL STOPS AND HOLDERS

A. Wall- and Floor-Mounted Stops: Brass, base metal.

## DOOR HARDWARE

- 1. Manufacturers: provide product indicated as Basis of Design or comparable product, but are not limited to, the following:
  - a. Better Home Products. (Basis of Design)
  - b. Cal-Royal
  - c. Burns Mftg
  - d. IVES Hardware; an Ingersoll-Rand company.
  - e. Rockwood Manufacturing Company.
  - f. Stanley Commercial Hardware; Div. of The Stanley Works.
  - g. Trimco.

## 2.12 DOOR GASKETING

- A. Door Gasketing: Air leakage not to exceed 0.50 cfm per foot (0.000774 cu. m/s per m) of crack length for gasketing other than for smoke control, as tested according to ASTM E 283; with resilient or flexible seal strips that are easily replaceable and readily available from stocks maintained by manufacturer.
  - 1. Manufacturers: provide product indicated as Basis of Design or comparable product, but are not limited to, the following:
    - a. KN Crowder
    - b. National Guard Products.
    - c. Pemko Manufacturing Co.; an Assa Abloy Group company.
    - d. Zero International.

## 2.13 THRESHOLDS

- A. Thresholds: Fabricated to full width of opening indicated.
  - 1. Manufacturers: provide product indicated as Basis of Design or comparable product, but are not limited to, the following:
    - a. Pemko Manufacturing Co.; an Assa Abloy Group company.
    - b. Zero International.
    - c. KN Crowder

### 2.14 SLIDING/BY-PASS DOOR HARDWARE

- A. Sliding Door Hardware: consisting of complete sets including rails, hangers, supports, bumpers, floor guides, and accessories indicated.
  - 1. Manufacturers: provide product indicated as Basis of Design or comparable product, but are not limited to, the following:
    - a. Better Home Products. (Basis of Design)
    - b. KN Crowder
    - c. Cox, Arthur, & Sons, Inc.
    - d. Henderson, PC Inc.

## 2.15 BI-FOLDING DOOR HARDWARE

- A. General: Complete sets including overhead rails, hangers, supports, bumpers, floor guides, and accessories indicated.
  - 1. Manufacturers: provide product indicated as Basis of Design or comparable product, but are not limited to, the following:
    - a. Better Home Products. (Basis of Design)
    - b. KN Crowder (Basis of Design)
    - c. Cox, Arthur, & Sons, Inc.
    - d. Henderson, PC Inc.

## 2.16 AUXILIARY DOOR HARDWARE

- A. Auxiliary Hardware
  - 1. Manufacturers: provide product indicated as Basis of Design or comparable product, but are not limited to, the following:
    - a. Better Home Products. (Basis of Design)
    - b. Burns Mftg.
    - c. Baldwin Hardware Corporation.
    - d. Rockwood Manufacturing Company.
    - e. Stanley Commercial Hardware; Div. of The Stanley Works.
    - f. Trimco.

#### 2.17 FINISHES

- A. Provide finishes as indicated in door hardware schedule.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

#### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. Steel Doors and Frames: For surface applied door hardware, drill and tap doors and frames according to ANSI/SDI A250.6.
- B. Wood Doors: Comply with DHI WDHS.5 "Recommended Hardware Reinforcement Locations for Mineral Core Wood Flush Doors."
- C. Mounting Heights: Mount door hardware units at heights to comply with the following unless otherwise indicated or required to comply with governing regulations.
  - 1. Standard Steel Doors and Frames: ANSI/SDI A250.8.

- 2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
- D. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work. Do not install surface-mounted items until finishes have been completed on substrates involved.
  - 1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
  - 2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
- E. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches (750 mm) of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.
- F. Lock Cylinders: Install construction cores to secure building and areas during construction period.
- G. Thresholds: Set thresholds for exterior doors and other doors indicated in full bed of sealant.
- H. Stops: Provide wall/floor/hinge stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they will impede traffic.
- I. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.
- J. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.
- K. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.
- L. Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

## 3.3 DOOR HARDWARE SCHEDULE

1. Manufacturers: Subject to compliance with requirements, provide product indicated on schedule or comparable product:

Un	its		
Doo	r Harc	lware Set No. 1 (Unit Entry)	
Qty		Description	Manuf.
2	ea	Butts 4.5 x 4.5 Spring Hinges	PBB
1	ea	Butts 4.5 x 4.5	PBB
1	ea	Entry Lockset	BHP
1	ea	Stop	
1	ea	Threshold 158A	Pemko
1	set	Seal S88	Pemko
1	ea	Door Sweep	
1	ea	Viewer	
Doo	r Hard	Iware Set No. 2 (Pair of Doors)	
Otv		Description	Manuf
6	ea	Butts 3.5 x 3.5	PRR
1	ea	Latch	BHP
2	ea	Ball Catch	
3	ea	Stop	
1	ea	Silencers	
1	Cu	Shelleelis	
Doo	r Hard	lware Set No. 3 (Privacy)	
Otv		Description	Manuf.
3	ea	Butts 3.5 x 3.5	PBB
1	ea	Privacy Set	BHP
1	ea	Hinge Stop	
3	ea	Silencers	
Doo	r Harc	lware Set No. 4 (Passage)	
Qty		Description	Manuf.
3	ea	Butts 3.5 x 3.5	PBB
1	ea	Passage Set	BHP
1	ea	Hinge Stop	
3	ea	Silencers	
Doo	r Hard	ware Set No. 5 (Unit Balcony Door)	
Otv		Description	Manuf.
2	ea	Butts 4.5 x 4.5 Spring Hinges	PBB
- 1	ea	Butts 4.5 x 4.5	PRR
1	ea	Lockset	BHP
1	ea	Deadbolt	
1		Hinge Pin Stop	
	100	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	

1	ea	Threshold 158A	Pemko			
1	set	Seal S88	Pemko			
1	ea	Door Sweep				
			·			
Door	Hard	ware Set No. 6A (Balcony Storage Door)				
Qty		Description	Manuf.			
2	ea	Butts 4.5 x 4.5 Spring Hinges	PBB			
1	ea	Butts 4.5 x 4.5	PBB			
1	ea	Storeroom Set	BHP			
1	ea	Deadbolt				
1	ea	Hinge Pin Stop				
1	ea	Threshold 158A	Pemko			
1	set	Seal S88	Pemko			
1	ea	Door Sweep				
		-	·			
Door	Harc	lware Set No. 6B (Solarium Storage Door)				
Qty		Description	Manuf.			
3	ea	Butts 3.5 x 3.5	PBB			
1	ea	Passage Set	BHP			
1	ea	Hinge Stop				
3	ea	Silencers				
L						
Door	Hard	ware Set No. 7 (Bi-Fold Door)				
Qty		Description	Manuf.			
1	ea	Overhead Track (Heavy Duty)				
1	ea	Bi-fold door hardware set				
Door	Harc	ware Set No. 8 (Bypass Door)				
Qty		Description	Manuf.			
1	ea	Overhead Track (Heavy Duty)				
1	ea	Bi-pass door hardware set				

Common Area (Apartments)						
Door	Door Hardware Set No. 1 (Garage Door)					
Qty		Description	Manuf.			
1	set	Heavy Duty Track and Guides				
1	set	Perimeter Seals				
Door Hardware Set No. 2 (Storage, Garage Passage, Water Riser)						
Qty		Description	Manuf.			

2	ea	Butts 4.5 x 4.5 Spring Hinges	PBB
1	ea	Butts 4.5 x 4.5	PBB
1	ea	Storeroom Lockset	BHP
1	ea	Door Head Flashing	
1	ea	Hinge Pin Stop	
1	ea	Threshold 158A	Pemko
1	set	Seal S88	Pemko
1	ea	Door Sweep	
Door	Harc	lware Set No. 3 (Fire Riser, Pair)	_
Qty		Description	Manuf.
4	ea	Butts 4.5 x 4.5 Spring Hinges	PBB
2	ea	Butts 4.5 x 4.5	PBB
1	ea	Storeroom Lockset	BHP
1	pr	Fulshbolt	
1	ea	Astragal	
1	ea	Door Head Flashing	
2	ea	Hinge Pin Stop	
1	ea	Coordinator	
1	ea	Threshold 158A	Pemko
1	set	Seal S88	Pemko
1	ea	Door Sweep	

Pool Pavilion							
Door	Door Hardware Set No. P1 (Restrooms)						
Qty		Description	Manuf.				
3	ea	Butts 4.5 x 4.5	PBB				
1	ea	Privacy Lockset	BHP				
1	ea	Closer					
1	ea	Wall Stop					
1	ea	Threshold 158A	Pemko				
1	set	Seal S88	Pemko				
1	ea	Door Sweep					

Maintenance Building						
Door	Door Hardware Set No. M1 (Entry Door)					
Qty		Description	Manuf.			
2	ea	Butts 4.5 x 4.5 Spring Hinges	PBB			
1	ea	Butts 4.5 x 4.5	PBB			

1	ea	Storeroom Lockset	BHP
1	ea	Hinge Pin Stop	
1	ea	Threshold 158A	Pemko
1	set	Seal S88	Pemko
1	ea	Door Sweep	
Door	Hard	lware Set No. M2 (Restroom)	
Qty		Description	Manuf.
3	ea	Butts 4.5 x 4.5	PBB
1	ea	Privacy Lockset	BHP
1	ea	Wall Stop	
1	ea	Threshold	Pemko
1	set	Seal S88	Pemko
1	ea	Door Sweep	
Door	Hard	lware Set No. M3 (Garage Door)	
Qty		Description	Manuf.
1	set	Heavy Duty Track and Guides	
1	set	Perimeter Seals	

Clu	Clubhouse						
Door	Door Hardware Set No. CH1 (Entry Door)						
Qty		Description	Manuf.				
1	ea	Offset Pivot Hinge					
2	ea	Intermediate Pivot Hinge					
1	ea	Closer					
1	ea	Cylinder / Thumb Turn					
1	ea	Core					
1	set	Hook Bolt Lock					
1	ea	Pull - Exterior 86079US15	Emtek				
1	ea	Push - Interior					
1	ea	Flush Bolt Set					
1	ea	Threshold					
1	set	Seals					
1	ea	Bottom Sweep					
Door	Door Hardware Set No. CH2 (Verandah Pair of Doors)						
Qty		Description	Manuf.				
2	ea	Offset Pivot Hinge					
4	ea	Intermediate Pivot Hinge					

2	ea	Panic Device		
2	ea	Closer		
1	ea	Cylinder / Thumb Turn		
1	ea	Core		
1	set	Hook Bolt Lock		
1	ea	Pull - Exterior		
1	ea	Flush Bolt Set		
1	ea	Threshold		
1	set	Seals		
1	ea	Bottom Sween		
1	Cu	Dottom Sweep		
Door	Hard	lware Set No. CH3 (Verandah Door, Hall Exit)		
Oty		Description	Manuf.	
1	ea	Offset Pivot Hinge		
2	ea	Intermediate Pivot Hinge		
1	ea	Panic Device		
1	ea	Closer		
1	ea	Cylinder / Thumb Turn		
1	ea	Core		
1	set	Hook Bolt Lock		
1	ea	Pull - Exterior		
1	ea	Threshold		
1	set	Seals		
1	ea	Bottom Sweep		
Door	Hard	lware Set No. CH4 (Office, Mechanical, AV, Ha	lls)	
Qty		Description	Manuf.	
3	ea	Butts 4.5 x 4.5		
1	ea	Storeroom set		
1	ea	Stop		
3	ea	Silencers		
Door	Hard	lware Set No. CH5 (Work Room, Closets)		
Qty		Description	Manuf.	
3	ea	Butts 4.5 x 4.5		
1	ea	Passage set		
1	ea	Stop		
3	ea	Silencers		
Door	Hard	lware Set No. CH6 (Restrooms)		
Qty		Description	Manuf.	

# SUMMER BAY II APARTMENTS – LAKE COUNTY, FL FK #5389

3	ea	Butts 4.5 x 4.5				
1	ea	Passage set				
1	ea	Stop				
3	ea	Silencers				
Door	Harc	lware Set No. CH7 (Fitness, Hall)				
Qty		Description	Manuf.			
3	ea	Butts 4.5 x 4.5				
1	ea	Classroom Set				
1	ea	Stop				
3	ea	Silencers				
Door	Harc	lware Set No. CH8 (Conference, Pair)				
Qty		Description	Manuf.			
6	ea	Butts 4.5 x 4.5				
1	ea	Classroom Set				
1	ea	Flush Bolt Top				
1	ea	Flush Bolt Bottom				
2	ea	Stop				
6	ea	Silencers				
Door	Harc	ware Set No. CH9 (Conference, Pair)				
Qty		Description	Manuf.			
6	ea	Butts 4.5 x 4.5				
1	ea	Storeroom Set				
1	ea	Flush Bolt Top				
1	ea	Flush Bolt Bottom				
2	ea	Hinge Stop				
6	ea	Silencers				

END OF SECTION 087100

## SECTION 088000 - GLAZING

## PART 1 - GENERAL

## 1.1 SUMMARY

- A. Section includes glazing for the following products and applications, including those specified in other Sections where glazing requirements are specified by reference to this Section:
  - 1. Storefront windows and doors at the Clubhouse

## 1.2 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design glass, including comprehensive engineering analysis according to 2010 Florida Building Code by a qualified professional engineer, using the following design criteria:
  - 1. Design Wind Pressures: As indicated on Drawings.
  - 2. Differential Shading: Design glass to resist thermal stresses induced by differential shading within individual glass lites.

## 1.3 PRECONSTRUCTION TESTING

- A. Preconstruction Adhesion and Compatibility Testing: Test each glazing material type, tape sealant, gasket, glazing accessory, and glass-framing member for adhesion to and compatibility with elastomeric glazing sealants.
  - 1. Testing will not be required if data are submitted based on previous testing of current sealant products and glazing materials matching those submitted.

## 1.4 ACTION SUBMITTALS

A. Product Data: For each glass product and glazing material indicated.

## 1.5 QUALITY ASSURANCE

- A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below, unless more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.
  - 1. GANA Publications: GANA's "Glazing Manual."
  - 2. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."

- B. Safety Glazing Labeling: Where safety glazing labeling is indicated, permanently mark glazing with certification label of the manufacturer. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.
- C. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of IGCC.

## 1.6 WARRANTY

- A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer's standard form in which coated-glass manufacturer agrees to replace coated-glass units that deteriorate within specified warranty period. Deterioration of coated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in coating.
  - 1. Warranty Period: 10 years from date of Substantial Completion.
- B. Manufacturer's Special Warranty on Insulating Glass: Manufacturer's standard form in which insulating-glass manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.
  - 1. Warranty Period: 10 years from date of Substantial Completion.

## PART 2 - PRODUCTS

## 2.1 GLASS PRODUCTS, GENERAL

- A. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass lites in thicknesses as needed to comply with requirements indicated.
- B. Strength: Where float glass is indicated, provide annealed float glass, Kind HS heat-treated float glass, or Kind FT heat-treated float glass as needed to comply with "Performance Requirements" Article. Where heat-strengthened glass is indicated, provide Kind HS heat-treated float glass or Kind FT heat-treated float glass as needed to comply with "Performance Requirements" Article. Where fully tempered glass is indicated, provide Kind FT heat-treated float glass.
- C. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:
  - 1. U-Factors: Center-of-glazing values, according to NFRC 100 and based on LBL's WINDOW 5.2 computer program, expressed as Btu/sq. ft. x h x deg F (W/sq. m x K).

- 2. Solar Heat-Gain Coefficient and Visible Transmittance: Center-of-glazing values, according to NFRC 200 and based on LBL's WINDOW 5.2 computer program.
- 3. Visible Reflectance: Center-of-glazing values, according to NFRC 300.

## 2.2 GLASS PRODUCTS

- A. Float Glass: ASTM C 1036, Type I, Quality-Q3, Class I (clear) unless otherwise indicated.
- B. Heat-Treated Float Glass: ASTM C 1048; Type I; Quality-Q3; Class I (clear) unless otherwise indicated; of kind and condition indicated.

## 2.3 INSULATING GLASS

- A. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified according to ASTM E 2190, and complying with other requirements specified.
  - 1. Sealing System: Dual seal, with manufacturer's standard primary and secondary components.
  - 2. Spacer: Manufacturer's standard spacer material and construction.
  - 3. Desiccant: Molecular sieve or silica gel, or blend of both.
- B. Glass: Comply with applicable requirements in "Glass Products" Article as indicated by designations in "Insulating Glass Types" Article.

## 2.4 GLAZING GASKETS

- A. Dense Compression Gaskets: Molded or extruded gaskets of profile and hardness required to maintain watertight seal, made from one of the following:
  - 1. Neoprene complying with ASTM C 864.
  - 2. EPDM complying with ASTM C 864.
  - 3. Silicone complying with ASTM C 1115.
  - 4. Thermoplastic polyolefin rubber complying with ASTM C 1115.
- B. Soft Compression Gaskets: Extruded or molded, closed-cell, integral-skinned neoprene EPDM silicone or thermoplastic polyolefin rubber gaskets complying with ASTM C 509, Type II, black; of profile and hardness required to maintain watertight seal.
  - 1. Application: Use where soft compression gaskets will be compressed by inserting dense compression gaskets on opposite side of glazing or pressure applied by means of pressure-glazing stops on opposite side of glazing.
- C. Lock-Strip Gaskets: Neoprene extrusions in size and shape indicated, fabricated into frames with molded corner units and zipper lock-strips, complying with ASTM C 542, black.

## 2.5 GLAZING SEALANTS

- A. General:
  - 1. Compatibility: Provide glazing sealants that are compatible with one another and with other materials they will contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
  - 2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
  - 3. VOC Content: For sealants used inside of the weatherproofing system, not more than 250 g/L when calculated according to 40 CFR 59, Subpart D.
  - 4. Colors of Exposed Glazing Sealants: As selected by Owner from manufacturer's full range.
- B. Elastomeric Glazing Sealant Standard: Comply with ASTM C 920 and other requirements indicated for each liquid-applied, chemically curing sealant including those referencing ASTM C 920 classifications for type, grade, class, and uses.
  - 1. Additional Movement Capability: Where additional movement capability is specified in the Glazing Sealant Schedule, provide products with the capability, when tested for adhesion and cohesion under maximum cyclic movement per ASTM C 719, to withstand the specified percentage change in the joint width existing at time of installation and remain in compliance with other requirements in ASTM C 920 for uses indicated.

## 2.6 GLAZING TAPES

- A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C 1281 and AAMA 800 for products indicated below:
  - 1. AAMA 804.3 tape, where indicated.
  - 2. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
  - 3. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.
- B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:
  - 1. AAMA 810.1, Type 1, for glazing applications in which tape acts as the primary sealant.
  - 2. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

### 2.7 MISCELLANEOUS GLAZING MATERIALS

- A. General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.
- B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
- C. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.
- D. Spacers: Elastomeric blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
- E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).
- F. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

## 2.8 FABRICATION OF GLAZING UNITS

- A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.
- 2.9 MONOLITHIC-GLASS TYPES

## 2.10 MONOLITHIC-GLASS TYPES

- A. Glass Type GL-01: Clear float glass, fully tempered float glass as required. (interior of Clubhouse only)
  - 1. Provide safety glazing labeling.

#### 2.11 INSULATING-GLASS TYPES

- A. Glass Type GL-02: Low-e-coated, clear or tinted insulating glass. (Apartments, Basis of Design MI Windows 3500 series Low-E/Argon 6331)
  - 1. Overall Unit Thickness: 1/2 inch (25 mm).
  - 2. Thickness of Each Glass Lite: 6.0 mm minimum
  - 3. Outdoor Lite: Clear float glass.
  - 4. Interspace Content: Argon.
  - 5. Indoor Lite: Clear float glass.
  - 6. Low-E Coating: Pyrolitic or Sputtered on second surface.
# SUMMER BAY II APARTMENTS – LAKE COUNTY, FL FK #5389

- 7. Tinting: As required to meet the U-factor and SHGC requirements. Colors to be from manufacturers standard color selections meeting the State requirements.
- 8. Visible Light Transmittance: As required to meet the U-factor and SHGC requirements
- 9. U-Factor: 0.30 maximum.
- 10. Solar Heat Gain Coefficient: 0.25 maximum.
- B. Glass Type GL-03: Low-e-coated, clear or tinted insulating glass. (Clubhouse)
  - 1. Overall Unit Thickness: 1 inch (25 mm).
  - 2. Thickness of Each Glass Lite: 6.0 mm minimum
  - 3. Outdoor Lite: Clear float glass.
  - 4. Interspace Content: Argon.
  - 5. Indoor Lite: Clear float glass.
  - 6. Low-E Coating: Pyrolitic or Sputtered on second surface.
  - 7. Tinting: As required to meet the U-factor and SHGC requirements. Colors to be from manufacturers standard color selections meeting the State requirements.
  - 8. Visible Light Transmittance: As required to meet the U-factor and SHGC requirements
  - 9. U-Factor: 0.27 maximum.
  - 10. Solar Heat Gain Coefficient: 0.25 maximum.
  - 11. Tempered as required per location.

## PART 3 - EXECUTION

- 3.1 GLAZING, GENERAL
  - A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.
  - B. Adjust glazing channel dimensions as required by Project conditions during installation to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.
  - C. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.
  - D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.
  - E. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
  - F. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
  - G. Provide spacers for glass lites where length plus width is larger than 50 inches (1270 mm).

# SUMMER BAY II APARTMENTS – LAKE COUNTY, FL FK #5389

H. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.

# 3.2 TAPE GLAZING

- A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.
- B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.
- C. Cover vertical framing joints by applying tapes to heads and sills first and then to jambs. Cover horizontal framing joints by applying tapes to jambs and then to heads and sills.
- D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.
- E. Apply heel bead of elastomeric sealant.
- F. Center glass lites in openings on setting blocks and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.
- G. Apply cap bead of elastomeric sealant over exposed edge of tape.

# 3.3 GASKET GLAZING (DRY)

- A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.
- B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.
- C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- D. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- E. Install gaskets so they protrude past face of glazing stops.

# 3.4 CLEANING AND PROTECTION

- A. Protect exterior glass from damage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface. Remove nonpermanent labels and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer.
- C. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains; remove as recommended in writing by glass manufacturer.
- D. Remove and replace glass that is broken, chipped, cracked, or abraded or that is damaged from natural causes, accidents, and vandalism, during construction period.

# SECTION 088300 - MIRRORS

# PART 1 - GENERAL

# 1.1 SUMMARY

- A. Section includes the following types of silvered flat glass mirrors:
  - 1. Annealed monolithic glass mirrors.

## 1.2 ACTION SUBMITTALS

A. Shop Drawings: Include mirror elevations, edge details, mirror hardware, and attachments to other work.

## 1.3 INFORMATIONAL SUBMITTALS

A. Warranty: Sample of special warranty.

## 1.4 CLOSEOUT SUBMITTALS

A. Maintenance data.

## 1.5 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which mirror manufacturer agrees to replace mirrors that deteriorate within specified warranty period. Deterioration of mirrors is defined as defects developed from normal use that are not attributed to mirror breakage or to maintaining and cleaning mirrors contrary to manufacturer's written instructions. Defects include discoloration, black spots, and clouding of the silver film.
  - 1. Warranty Period: Five years from date of Substantial Completion.

# PART 2 - PRODUCTS

# 2.1 SILVERED FLAT GLASS MIRRORS

- A. Glass Mirrors, General: ASTM C 1503; manufactured using copper-free, low-lead mirror coating process.
  - 1. <u>Manufacturers</u>: Subject to compliance with requirements, provide products by one of the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

- a. Arch Aluminum & Glass Co., Inc.
- b. <u>Guardian Industries</u>.
- c. <u>Independent Mirror Industries, Inc</u>.
- d. <u>Lenoir Mirror Company</u>.
- e. <u>National Glass Industries</u>.
- f. <u>Sunshine Mirror; Westshore Glass Corp.</u>
- g. <u>Walker Glass Co., Ltd</u>.
- B. Clear Glass: Mirror Quality.1. Nominal Thickness: 5.0 mm.
- C. Mirror Types:
  - 1. Apartments and Ancillary Structures: Decorative framed mirrors as selected by the Owner / Interior Designer.

# 2.2 FABRICATION

- A. Cutouts: Fabricate cutouts before tempering for notches and holes in mirrors without marring visible surfaces. Locate and size cutouts so they fit closely around penetrations in mirrors.
- B. Mirror Edge Treatment: Rounded polished. Seal edges of mirrors with edge sealer.
- C. Film-Backed Safety Mirrors: Apply film backing with adhesive coating over mirror backing paint as recommended in writing by film-backing manufacturer.

# PART 3 - EXECUTION

# 3.1 INSTALLATION

- A. Wall-Mounted Mirrors: Install mirrors with mirror hardware. Attach mirror hardware securely to mounting surfaces with mechanical fasteners installed with anchors or inserts as applicable. Install fasteners so heads do not impose point loads on backs of mirrors.
- B. Protect mirrors from breakage and contaminating substances resulting from construction operations.
- C. Do not permit edges of mirrors to be exposed to standing water.
- D. Maintain environmental conditions that will prevent mirrors from being exposed to moisture from condensation or other sources for continuous periods of time.
- E. Wash exposed surface of mirrors not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash mirrors as recommended in writing by mirror manufacturer.

# SECTION 092216 - NON-STRUCTURAL METAL FRAMING

## PART 1 - GENERAL

# 1.1 SUMMARY

- A. Section Includes:
  - 1. Non-load-bearing steel framing systems for interior gypsum board assemblies.
  - 2. Suspension systems for interior gypsum ceilings and soffits.

# 1.2 SUBMITTALS

A. Product Data: For each type of product.

## PART 2 - PRODUCTS

## 2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: Provide materials and construction identical to those tested according to ASTM E 119.
- B. Fire-Rated Assemblies: For fire-rated assemblies provide products listed by designated and referenced tested assemblies.
- C. STC & IIC-Rated Assemblies: Provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413.

## 2.2 FRAMING SYSTEMS

- A. Framing Members, General: Comply with ASTM C 754 for conditions indicated.
  - 1. Steel Sheet Components: Comply with ASTM C 645 requirements for metal unless otherwise indicated.
  - 2. Protective Coating: coating with equivalent corrosion resistance of ASTM A 653/A 653M, G40 (Z120), hot-dip galvanized unless otherwise indicated.
- B. Framing Systems:
  - 1. Studs and Runners: In depth as indicated on drawings. Base-Metal thickness as indicated on Drawings or if not indicated minimum 0.018 inch (0.45 mm) thick.
  - 2. Flat Strap and Backing: Steel sheet for blocking and bracing in length and width indicated. Minimum Base-Metal thickness 0.033 inch (0.84 mm).
  - 3. Hat-Shaped, Rigid Furring Channels: 7/8 inch (22 mm) deep, unless otherwise indicated. Base-Metal thickness: as indicated on Drawings or minimum 0.033 inch (0.84 mm) thick.

- 4. Cold-Rolled Channel Bridging: Steel, 0.053-inch (1.34-mm) minimum base-metal thickness, with minimum 1/2-inch- (13-mm-) wide flanges. Depth: As indicated on Drawings.
  - a. Clip Angle: Not less than 1-1/2 by 1-1/2 inches (38 by 38 mm), 0.068-inch- (1.72-mm-) thick, galvanized steel.
- 5. Resilient Furring Channels: 1/2-inch- (13-mm-) deep, steel sheet members designed to reduce sound transmission. Configuration: Asymmetrical.
  - a. Manufacturer's: Subject to compliance with requirements, provide one of the following:
    - 1) Dietrich Metal Framing; RC Series, RCSD resilient channel (Reference Product).
    - 2) PAC International, Inc.
    - 3) Kinetics Noise Control, Inc.
- C. Suspension Systems:
  - 1. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.062-inch- (1.59-mm-) diameter wire, or double strand of 0.048-inch- (1.21-mm-) diameter wire.
  - 2. Wire Hangers: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.16 inch (4.12 mm) in diameter minimum.
  - 3. Flat Hangers: Steel sheet in size indicated on Drawings.
  - 4. Carrying Channels: Cold-rolled, commercial-steel sheet with a base-metal thickness of 0.053 inch (1.34 mm) and minimum 1/2-inch- (13-mm-) wide flanges
    - a. Depth: As indicated on Drawings.
    - b. Resilient Furring Channels: 1/2-inch- (13-mm-) deep members designed to reduce sound transmission. Configuration: Asymmetrical.
  - 5. Grid Suspension System for Gypsum Board Ceilings: ASTM C 645, direct-hung system composed of main beams and cross-furring members that interlock.
    - a. Products: Subject to compliance with requirements, provide one of the following:
      - 1) Armstrong World Industries, Inc.; Drywall Grid Systems.
      - 2) Chicago Metallic Corporation; Drywall Grid System.
      - 3) USG Corporation; Drywall Suspension System.

# 2.3 AUXILIARY MATERIALS

A. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.

# PART 3 - EXECUTION

# 3.1 INSTALLATION, GENERAL

- A. Installation Standard: ASTM C 754.
  - 1. Gypsum Board Assemblies: Also comply with requirements in ASTM C 840 that apply to framing installation.
- B. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.
- C. Install bracing at terminations in assemblies.
- D. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

# 3.2 INSTALLING FRAMED ASSEMBLIES

- A. Comply with requirements of indicated and tested assemblies for fire resistance and acoustic performance.
  - 1. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.
  - 2. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.
- B. Resilient Channels: Screw to wood framing.
- C. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch (3 mm) from the plane formed by faces of adjacent framing.
- D. Install framing system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
  - 1. Single-Layer Application: 16 inches (406 mm)o.c. maximum unless otherwise indicated.
- E. Install studs so flanges within framing system point in same direction.

## 3.3 INSTALLING SUSPENSION SYSTEMS

- A. Install suspension system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
  - 1. Hangers: 48 inches (1219 mm) maximum o.c.
  - 2. Carrying Channels (Main Runners): 48 inches (1219 mm) maximum o.c.
  - 3. Furring Channels (Furring Members): 16 inches (406 mm) maximumo.c.

- B. Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.
- C. Suspend hangers from building structure as follows:
  - 1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or suspension system. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
  - 2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with locations of hangers required to support standard suspension system members, install supplemental suspension members and hangers in the form of trapezes or equivalent devices. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced installation standards.
  - 3. Wire Hangers: Secure by looping and wire tying, either directly to structures or to inserts, eye screws, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause hangers to deteriorate or otherwise fail.
  - 4. Flat Hangers: Secure to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices and fasteners that are secure and appropriate for structure and hanger, and in a manner that will not cause hangers to deteriorate or otherwise fail.
  - 5. Do not connect or suspend steel framing from ducts, pipes, or conduit.
- D. Fire-Resistance-Rated Assemblies: Wire tie furring channels to supports.
- E. Grid Suspension Systems: Attach perimeter wall track or angle where grid suspension systems meet vertical surfaces. Mechanically join main beam and cross-furring members to each other and butt-cut to fit into wall track.
- F. Installation Tolerances: Install suspension systems that are level to within 1/8 inch in 12 feet (3 mm in 3.6 m) measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

# SECTION 092400 - PORTLAND CEMENT PLASTERING

## PART 1 - GENERAL

# 1.1 SUMMARY

- A. Section Includes:
  - 1. Exterior portland cement plasterwork (stucco) on metal lath, unit masonry and monolithic concrete.

## 1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Show locations and installation of control and expansion joints including plans, elevations, sections, details of components, and attachments to other work.

## 1.3 QUALITY ASSURANCE

- A. Fire-Resistance Ratings: Where indicated, provide portland cement plaster assemblies identical to those of assemblies tested for fire resistance per ASTM E 119 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
  - 1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.
- B. Mockups: Before plastering, install mockups of at least 100 sq. ft. (9.3 sq. m) in surface area to demonstrate aesthetic effects and set quality standards for materials and execution.
  - 1. Install mockups for each type of finish indicated.
  - 2. Mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- C. Preinstallation Conference: Conduct conference at Project site.

## 1.4 DELIVERY, STORAGE, AND HANDLING

A. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes.

## 1.5 PROJECT CONDITIONS

A. Comply with ASTM C 926 requirements.

#### PORTLAND CEMENT PLASTERING

# B. Exterior Plasterwork:

- 1. Apply and cure plaster to prevent plaster drying out during curing period. Use procedures required by climatic conditions, including moist curing, providing coverings, and providing barriers to deflect sunlight and wind.
- 2. Apply plaster when ambient temperature is greater than 40 deg F (4.4 deg C).
- 3. Protect plaster coats from freezing for not less than 48 hours after set of plaster coat has occurred.

# PART 2 - PRODUCTS

# 2.1 METAL LATH

- A. Expanded-Metal Lath: ASTM C 847 with ASTM A 653/A 653M, G60 (Z180), hot-dip galvanized zinc coating.
  - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Alabama Metal Industries Corporation; a Gibraltar Industries company.
    - b. CEMCO.
    - c. Clark Western Building Systems.
    - d. Dietrich Metal Framing; a Worthington Industries company.
    - e. MarinoWARE.
    - f. Phillips Manufacturing Co.
  - 2. Diamond-Mesh Lath: Self-furring, 3.4 lb/sq. yd. (1.8 kg/sq. m), at vertical locations and self-furring, 2.5 lb/sq. yd. at horizontal locations.
- B. Building Paper: ASTM D 226, Type 1 (No. 15 asphalt-saturated organic felt), nonperforated.

# 2.2 ACCESSORIES

- A. General: Comply with ASTM C 1063. Coordinate depth of trim and accessories with indicated thicknesses and number of plaster coats required.
- B. Plastic Accessories: Fabricated from high-impact PVC.
  - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Alabama Metal Industries Corporation; a Gibraltar Industries company.
    - b. Dietrich Metal Framing; a Worthington Industries company.
    - c. Phillips Manufacturing Co.
    - d. Plastic Components, Inc.
    - e. Vinyl Corp.

- 2. Cornerbeads: With perforated flanges.
  - a. Small nose cornerbead; use unless otherwise indicated.
- 3. Casing Beads: With perforated flanges in depth required to suit plaster bases indicated and flange length required to suit applications indicated.
  - a. Square-edge style; use unless otherwise indicated.
- 4. Control Joints: One-piece-type, folded pair of unperforated screeds in M-shaped configuration; with perforated flanges and removable protective tape on plaster face of control joint.
- 5. Expansion Joints: Two-piece type, formed to produce slip-joint and square-edged 1/2inch- (13-mm-) wide reveal; with perforated concealed flanges.
- 6. Drainable Drip Screeds (weep screeds): With perforated flanges.

## 2.3 MISCELLANEOUS MATERIALS

- A. Water for Mixing: Potable and free of substances capable of affecting plaster set or of damaging plaster, lath, or accessories.
- B. Fiber for Base Coat: Alkaline-resistant glass or polypropylene fibers, 1/2 inch (13 mm) long, free of contaminants, manufactured for use in portland cement plaster.
- C. Bonding Compound: ASTM C 932.
- D. Steel Drill Screws: For metal-to-metal fastening, ASTM C 1002 or ASTM C 954, as required by thickness of metal being fastened; with pan head that is suitable for application; in lengths required to achieve penetration through joined materials of no fewer than three exposed threads.
- E. Fasteners for Attaching Metal Lath to Substrates: Complying with ASTM C 1063.
- F. Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, not less than 0.0475-inch (1.21-mm) diameter, unless otherwise indicated.
- G. Acoustical Sealant: As specified in Division 07 Section "Joint Sealants"

## 2.4 PLASTER MATERIALS

- A. Portland Cement: ASTM C 150, Type II.
  - 1. Color for Finish Coats: Grey.
- B. Lime: ASTM C 206, Type S; or ASTM C 207, Type S.
- C. Sand Aggregate: ASTM C 897.
  - 1. Color for Job-Mixed Finish Coats: Grey.

#### PORTLAND CEMENT PLASTERING

#### 2.5 PLASTER MIXES

- A. General: Comply with ASTM C 926 for applications indicated.
  - 1. Fiber Content: Add fiber to base-coat mixes after ingredients have mixed at least two minutes. Comply with fiber manufacturer's written instructions for fiber quantities in mixes, but do not exceed 1 lb of fiber/cu. yd. (0.6 kg of fiber/cu. m) of cementitious materials.
- B. Base-Coat Mixes for Use over Metal Lath: Scratch and brown coats for three-coat plasterwork as follows:
  - 1. Portland Cement Mixes:
    - a. Scratch Coat: For cementitious material, mix 1 part portland cement and 3/4 to 1-1/2 parts lime. Use 2-1/2 to 4 parts aggregate per part of cementitious material.
    - b. Brown Coat: For cementitious material, mix 1 part portland cement and 3/4 to 1-1/2 parts lime. Use 3 to 5 parts aggregate per part of cementitious material, but not less than volume of aggregate used in scratch coat.
- C. Base-Coat Mixes (over low-absorption plaster bases such as concrete): Single base coats for two-coat plasterwork as follows:
  - 1. Portland Cement Mix: For cementitious material, mix 1 part portland cement and 0 to 3/4 part lime. Use 2-1/2 to 4 parts aggregate per part of cementitious material.
- D. Base-Coat Mixes (over high-absorption plaster bases such as masonry): Single base coats for two-coat plasterwork as follows:
  - 1. Portland Cement Mix: For cementitious material, mix 1 part portland cement and 3/4 to 1-1/2 parts lime. Use 2-1/2 to 4 parts aggregate per part of cementitious material.
- E. Job-Mixed Finish-Coat Mixes:
  - 1. Portland Cement Mix: For cementitious materials, mix 1 part portland cement and 1-1/2 to 2 parts lime. Use 1-1/2 to 3 parts aggregate per part of cementitious material.
- F. Factory-Prepared Finish-Coat Mixes: For ready-mixed finish-coat plasters, comply with manufacturer's written instructions.

# PART 3 - EXECUTION

## 3.1 EXAMINATION

- A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

# 3.2 PREPARATION

- A. Protect adjacent work from soiling, spattering, moisture deterioration, and other harmful effects caused by plastering.
- B. Prepare solid substrates for plaster that are smooth or that do not have the suction capability required to bond with plaster according to ASTM C 926.

## 3.3 INSTALLATION, GENERAL

- A. Fire-Resistance-Rated Assemblies: Install components according to requirements for design designations from listing organization and publication indicated on Drawings.
- B. Acoustical Sealant: Where required, seal joints between edges of plasterwork and abutting construction with acoustical sealant.

## 3.4 INSTALLING METAL LATH

- A. Expanded-Metal Lath: Install according to ASTM C 1063.
  - 1. On Solid Surfaces, Not Otherwise Furred: Install self-furring, diamond-mesh lath.

#### 3.5 INSTALLING ACCESSORIES

- A. Install according to ASTM C 1063 and at locations indicated on Drawings.
- B. Reinforcement for External Corners:
  - 1. Install cornerbead at interior and exterior locations.
- C. Drip Screed: Install locations indicated to provide continuous unobstructed drainage from barrier plane to exterior.
- D. Control Joints: Install control joints at locations required for proper spacing.
  - 1. As required to delineate plasterwork into areas (panels) of the following maximum sizes:
    - a. Vertical Surfaces: 144 sq. ft. (13.4 sq. m).
    - b. Horizontal and other Nonvertical Surfaces: 100 sq. ft. (9.3 sq. m).
  - 2. At distances between control joints of not greater than 18 feet (5.5 m) o.c.
  - 3. As required to delineate plasterwork into areas (panels) with length-to-width ratios of not greater than 2-1/2:1.
  - 4. Where control joints occur in surface of construction directly behind plaster.
  - 5. Where plasterwork areas change dimensions, to delineate rectangular-shaped areas (panels) and to relieve the stress that occurs at the corner formed by the dimension change.

## 3.6 PLASTER APPLICATION

- A. General: Comply with ASTM C 926.
  - 1. Do not deviate more than plus or minus 1/4 inch in 10 feet (6.4 mm in 3 m) from a true plane in finished plaster surfaces, as measured by a 10-foot (3-m) straightedge placed on surface.
  - 2. Finish plaster flush with metal frames and other built-in metal items or accessories that act as a plaster ground unless otherwise indicated. Where casing bead does not terminate plaster at metal frame, cut base coat free from metal frame before plaster sets and groove finish coat at junctures with metal.
  - 3. Provide plaster surfaces that are ready to receive field-applied finishes indicated.
- B. Bonding Compound: Apply on unit masonry and concrete plaster bases.
- C. Walls; Base-Coat Mixes for Use over Metal Lath: Scratch and brown coats for three-coat plasterwork; 7/8-inch thickness.
- D. Ceilings; Base-Coat Mixes for Use over Metal Lath: Scratch and brown coats for three-coat plasterwork; 7/8 inch thickness.
- E. Walls; Base-Coat Mix: Scratch coat for two-coat plasterwork, 5/8 inch (10 mm) thick on concrete and concrete masonry.
- F. Plaster Finish Coats: Apply to provide smooth finish to match Owner's accepted mock up samples.
- G. Acrylic-Based Finish Coatings: Apply coating system, including primers, finish coats, and sealing topcoats, according to manufacturer's written instructions.
- H. Concealed Exterior Plasterwork: Where plaster application will be used as a base for adhered finishes, omit finish coat.

## 3.7 PLASTER REPAIRS

A. Repair or replace work to eliminate cracks, dents, blisters, buckles, crazing and check cracking, dry outs, efflorescence, sweat outs, and similar defects and where bond to substrate has failed.

# 3.8 **PROTECTION**

A. Remove temporary protection and enclosure of other work. Promptly remove plaster from door frames, windows, and other surfaces not indicated to be plastered. Repair floors, walls, and other surfaces stained, marred, or otherwise damaged during plastering.

# SECTION 092900 - GYPSUM BOARD

#### PART 1 - GENERAL

# 1.1 SUMMARY

- A. Section Includes:
  - 1. Interior gypsum board.
  - 2. Exterior gypsum board for ceilings and soffits.
  - 3. Tile backing panels.
  - 4. Draftstopping
  - 5. Texture finishes.

## 1.2 SUBMITTALS

- A. Product Data: For each type of product.
- B. Certification: Certificate of Origin for each type of product.

# PART 2 - PRODUCTS

## 2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.
- B. STC & IIC-Rated Assemblies: For STC & IIC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

# 2.2 INTERIOR GYPSUM BOARD

- A. <u>Manufacturers</u>: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - 1. American Gypsum Company, Basis of Design.
  - 2. CertainTeed Corp.
  - 3. Canadian Gypsum Corp.
  - 4. Georgia-Pacific Gypsum LLC.
  - 5. Lafarge North America Inc.
  - 6. National Gypsum Company.
  - 7. Temple-Inland.
  - 8. USG Corporation.

- B. Gypsum Wallboard: ASTM C 1396/C 1396M.
  - 1. Thickness: 1/2 or 5/8 inch,
  - 2. Long Edges: Tapered and featured (rounded or beveled) for prefilling.
- C. Gypsum Board, Type X: ASTM C 1396/C 1396M.
  - 1. Thickness: 5/8 inch (15.9 mm).
  - 2. Long Edges: Tapered and featured (rounded or beveled) for prefilling.
- D. Gypsum Ceiling Board: ASTM C 1396/C 1396M.
  - 1. Thickness: 5/8 inch (15.9 mm), Type X.
  - 2. Long Edges: Tapered.
- E. Moisture- and Mold-Resistant Gypsum Board: ASTM C 1396/C 1396M. With moisture- and mold-resistant core and paper surfaces.
  - 1. Core: 5/8 inch (15.9 mm), Type X where indicated.
  - 2. Long Edges: Tapered.
  - 3. Mold Resistance: ASTM D 3273, score of 10.

## 2.3 EXTERIOR GYPSUM BOARD FOR CEILINGS AND CORRIDOR SOFFITS

- A. Glass-Mat Gypsum Sheathing Board: ASTM C 1177/C 1177M, with fiberglass mat laminated to both sides and with manufacturer's standard edges.
  - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. CertainTeed Corp.; GlasRoc Sheathing.
    - b. Georgia-Pacific Gypsum LLC; Dens-Glass Gold.
    - c. National Gypsum Company; Gold Bond, e(2)XP.
    - d. USG Corporation; Securock Glass Mat Sheathing.
  - 2. Core: 5/8 inch (15.9 mm), Type X.

# 2.4 TILE BACKING PANELS

- A. Cementitious Backer Units: ANSI A118.9 and ASTM C 1288 or 1325, with manufacturer's standard edges.
  - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. C-Cure; C-Cure Board 990.
    - b. CertainTeed Corp.; FiberCement BackerBoard.
    - c. FinPan, Inc.; Util-A-Crete Concrete Backer Board
    - d. National Gypsum Company, Permabase Cement Board.

- e. USG Corporation; DUROCK Cement Board.
- 2. Thickness: 5/8 inch (15.9 mm).
- 3. Mold Resistance: ASTM D 3273, score of 10.

# 2.5 DRAFTSTOPPING (if not Wood Structural Panels)

- A. Paper-Surfaced Gypsum Wall Sheathing: ASTM C 1396/C 1396M, gypsum sheathing; with water-resistant-treated core and with water-repellent paper bonded to core's face, back, and long edges.
  - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following: Refer to list of manufacturer's noted above for Interior Gypsum Board.
  - 2. Type and Thickness: Regular, 1/2 inch thick minimum, where indicated on Drawings.
  - 3. Edge and End Configuration: Square.
  - 4. Size: As required for vertical or horizontal installation or as required for coordination with framing and to comply with the specified fire rated assembly.

## 2.6 TRIM ACCESSORIES

- A. Interior Trim: ASTM C 1047.
  - 1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized steel sheet
  - 2. Shapes:
    - a. Cornerbead.
    - b. Bullnose bead.
    - c. LC-Bead: J-shaped; exposed long flange receives joint compound.
    - d. L-Bead: L-shaped; exposed long flange receives joint compound.
    - e. U-Bead: J-shaped; exposed short flange does not receive joint compound.
- B. Exterior Trim: ASTM C 1047.
  - 1. Material: Hot-dip galvanized steel sheet, plastic, or rolled zinc.
  - 2. Shapes:
    - a. Cornerbead.
    - b. LC-Bead: J-shaped; exposed long flange receives joint compound.
    - c. Expansion (Control) Joint: One-piece, rolled zinc with V-shaped slot and removable strip covering slot opening.

# 2.7 JOINT TREATMENT MATERIALS

- A. General: Comply with ASTM C 475/C 475M.
- B. Joint Tape:

- 1. Interior Gypsum Board: Paper.
- 2. Exterior Gypsum Soffit Board: Paper or as recommended by panel manufacturer.
- 3. Glass-Mat Gypsum Sheathing Board: 10-by-10 glass mesh or as recommended by panel manufacturer.
- C. Joint Compound for Interior Gypsum Board: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
  - 1. Prefilling: At open joints, rounded or beveled panel edges, and damaged surface areas, use setting-type taping compound.
  - 2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping compound. Use setting-type compound for installing paper-faced metal trim accessories.
  - 3. Fill Coat: For second coat, use drying-type, all-purpose compound.
  - 4. Finish Coat: For third coat, use setting-type, sandable topping compound.
- D. Joint Compound for Exterior Applications:
  - 1. Exterior Gypsum Soffit Board: Use setting-type taping compound and setting-type, sandable topping compound.
  - 2. Glass-Mat Gypsum Sheathing Board: As recommended by sheathing board manufacturer.

## 2.8 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.
- B. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.
- C. Sound Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.
  - 1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.
- D. Acoustical Joint Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
  - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following::
    - a. Accumetric LLC; BOSS 824 Acoustical Sound Sealant.
    - b. Grabber Construction Products; Acoustical Sealant GSC.
    - c. Pecora Corporation; AC-20 FTR or AIS-919.
    - d. Specified Technologies, Inc.; Smoke N Sound Acoustical Sealant.
    - e. USG Corporation; SHEETROCK Acoustical Sealant.

- 2. Acoustical joint sealant shall have a VOC content of 250g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- E. Thermal Insulation: As specified in Division 07 Section "Thermal Insulation."

# 2.9 TEXTURE FINISHES

- A. Primer: As recommended by textured finish manufacturer.
- B. Non-Aggregate Finish: Pre-mixed, vinyl texture finish for spray application.
  - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following::
    - a. CertainTeed Corp.; ProRoc Easi-Tex Spray Texture.
    - b. USG Corporation; BEADEX FasTex Wall and Ceiling Spray Texture.
  - 2. Wall Texture: Orange Peel.
  - 3. Ceiling Texture: Light Knock Down

# PART 3 - EXECUTION

- 3.1 APPLYING AND FINISHING PANELS
  - A. Comply with ASTM C 840.
  - B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.
  - C. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
  - D. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch (1.5 mm) of open space between panels. Do not force into place.
  - E. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.
  - F. Single-Layer Application:
    - 1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.
    - 2. On partitions/walls, apply gypsum panels as indicated or required by fire-resistance-rated assembly, and minimize end joints.

- a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
- b. At high walls, install horizontally unless otherwise indicated or required by fire-resistance-rated assembly.
- 3. On Z-furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.
- 4. Fastening Methods: Apply gypsum panels to supports with steel drill screws or as indicated.
- G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- (6.4- to 12.7-mm-) wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- H. STC-Rated Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and with manufacturer's written recommendations for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.
- I. Install sound attenuation blankets before installing gypsum panels unless blankets are readily installed after panels have been installed on one side.
- J. Install trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
  1. Control Joints: Install control joints at locations indicated on Drawings.
- K. Prefill open joints, rounded or beveled edges, and damaged surface areas.
- L. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.
- M. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:
  - 1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
  - 2. Level 4: Minimum finish level at panel surfaces that will be exposed to view unless otherwise indicated. Primer and its application to surfaces are specified in other Division 09 Sections.
- N. Glass-Mat Gypsum Sheathing Board: Finish according to manufacturer's written instructions for use as exposed soffit board.
- O. Texture Finish Application: Prepare and apply primer to gypsum panels and other surfaces receiving texture finishes. Mix and apply finish using powered spray equipment, to produce a uniform texture matching approved mockup and free of starved spots or other evidence of thin application or of application patterns.

- P. Protect adjacent surfaces from drywall compound and texture finishes and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.
- Q. Remove and replace panels that are wet, moisture damaged, and mold damaged.

# SECTION 093000 - TILING

## PART 1 - GENERAL

# 1.1 SUMMARY

- A. Section Includes:
  - 1. Ceramic tile.
  - 2. Stone thresholds.
  - 3. Waterproofing, sound, and crack isolation membrane.
  - 4. Setting Materials

## 1.2 PERFORMANCE REQUIREMENTS

- A. Static Coefficient of Friction: For tile installed on walkway surfaces, provide products with the following values as determined by testing identical products per ASTM C 1028:
  - 1. Level Surfaces: Minimum 0.6.
  - 2. Step Treads: Minimum 0.6.
  - 3. Ramp Surfaces: Minimum 0.8.

# 1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples:
  - 1. Each type and composition of tile and grout for each color and finish required.
- C. Material Test Reports: For each membrane, tile-setting and grouting product.
- D. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering and identified with labels describing contents.
  - 1. Tile and Trim Units: Furnish quantity of full-size units equal to 2 percent of amount installed for each type, composition, color, pattern, and size indicated.

#### 1.4 QUALITY ASSURANCE

- A. Source Limitations for Tile: Obtain tile of each type and color or finish from one source or producer.
  - 1. Obtain tile of each type and color or finish from same production run and of consistent quality in appearance and physical properties for each contiguous area.

- B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from one manufacturer and each aggregate from one source of producer.
- C. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.
- D. Environmental Limitations: Do not install tile until construction is spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

# PART 2 - PRODUCTS

# 2.1 TILE PRODUCTS

- A. Tile Type As selected by Owner.
  - 1. Manufacturers, Face Size, Tile Color, pattern & Grout Color: As selected by Owner (from manufacturer's full range).
  - 2. Composition: Vitreous or impervious natural clay or porcelain.
  - 3. Thickness: Manufacturer's standard.
  - 4. Face: Plain with square or cushion edges.
  - 5. Finish: Mat, opaque glaze.
- B. Tile Type Glazed wall tile As selected by Owner.
  - 1. Manufacturers: Face Size, Tile Color and Pattern & Grout Color: As selected by Owner (from manufacturer's full range).
  - 2. Thickness: Manufacturer's standard.
  - 3. Face: Plain with cushion edges.
  - 4. Finish: Semimat, clear.glaze.
  - 5. Mounting: Factory, back mounted.
  - 6. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile. Provide shapes as indicated and, selected from manufacturer's standard shapes:

# 2.2 THRESHOLDS

- A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.
  - 1. Bevel edges at 1:2 slope, with lower edge of bevel aligned with or up to 1/16 inch (1.5 mm) above adjacent floor surface. Finish bevel to match top surface of threshold. Limit height of threshold to 1/2 inch (12.7 mm) or less above adjacent floor surface.
- B. Marble Thresholds: ASTM C 503, with a minimum abrasion resistance of 12 per ASTM C 1353 or ASTM C 241 and with honed finish.

1. Description: As selected by Owner.

## 2.3 WATERPROOFING, SOUND, AND CRACK-SUPRESSION MEMBRANE

- A. General: Manufacturer's standard product, selected from the following, that complies with ANSI A118.10 and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.
  - 1. Waterproofing Membrane:
    - a. Laticrete, Hydroban
    - b. Durock, Tile Membrane and associated accessories
  - 2. Sound and Crack Isolation Membrane Description: Laticrete 170 Sound and Crack Isolation membrane or equal for elevated floors over living units.

## 2.4 SETTING MATERIALS

- A. Dry-Set Portland Cement Mortar (Thin Set): ANSI A118.1.
  - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, the following:
    - a. Boiardi Products; a QEP company.
    - b. Bonsal American; an Oldcastle company.
    - c. Bostik, Inc.
    - d. Custom Building Products.
    - e. Laticrete International, Inc.
    - f. MAPEI Corporation.
    - g. Southern Grouts & Mortars, Inc.
    - h. Summitville Tiles, Inc.
  - 2. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.1.
- B. Latex-Portland Cement Mortar (Thin Set): ANSI A118.4.
  - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, the following:
    - a. Bonsal American; an Oldcastle company.
    - b. Bostik, Inc.
    - c. Custom Building Products.
    - d. Laticrete International, Inc.
    - e. MAPEI Corporation.
    - f. Mer-Kote Products, Inc.
    - g. Southern Grouts & Mortars, Inc.
  - 2. Provide prepackaged, dry-mortar mix containing dry, redispersible, vinyl acetate or acrylic additive to which only water must be added at Project site.
  - 3. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.4.

# SUMMER BAY II APARTMENTS – LAKE COUNTY, FL FK #5389

## 2.5 GROUT MATERIALS

- A. Polymer-Modified Tile Grout: ANSI A118.7.
  - 1. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, the following:
    - a. Boiardi Products; a QEP company.
    - b. Bonsal American; an Oldcastle company.
    - c. Bostik, Inc.
    - d. Custom Building Products.
    - e. Laticrete International, Inc.
    - f. MAPEI Corporation.
    - g. Southern Grouts & Mortars, Inc.
  - 2. Polymer Type: Ethylene vinyl acetate or acrylic additive, in dry, redispersible form, prepackaged with other dry ingredients.

# 2.6 ELASTOMERIC SEALANTS

- A. General: Provide sealants, primers, backer rods, and other sealant accessories that comply with the applicable requirements in Division 07 Section "Joint Sealants."
- B. Colors: Provide colors of exposed sealants to match colors of grout in tile adjoining sealed joints unless otherwise indicated.

#### 2.7 MISCELLANEOUS MATERIALS

- A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.
- B. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.
- C. Grout Sealer: Manufacturer's standard product for sealing grout joints and that does not change color or appearance of grout.

#### PART 3 - EXECUTION

## 3.1 EXAMINATION

A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.

- 1. Verify that substrates for setting tile are firm, dry, clean, free of coatings that are incompatible with tile-setting materials including curing compounds and other substances that contain soap, wax, oil, or silicone.
- 2. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed.
- 3. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Owner.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

# 3.2 PREPARATION

- A. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with thin-set mortar with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.
- B. Where indicated, prepare substrates to receive waterproofing by applying a reinforced mortar bed that is sloped 1/4 inch per foot (1:50) toward drains.

# 3.3 TILE INSTALLATION

- A. Comply with TCNA's "Handbook for Ceramic Tile Installation" for TCNA installation methods.
  - 1. For the following installations, follow procedures in the ANSI A108 Series of tile installation standards for providing 95 percent mortar coverage:
    - a. Tile floors in wet areas.
    - b. Tile floors composed of tiles 8 by 8 inches (200 by 200 mm) or larger.
    - c. Tile floors composed of rib-backed tiles.
- B. Extend tile work into recesses and under or behind equipment and fixtures, including kitchen and bathroom base cabinets designated to be removable on drawings, to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
- C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.
- D. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.
- E. Lay tile in grid pattern unless otherwise indicated. Align joints where adjoining tiles on floor, base, walls, and trim are the same size.
- F. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:
  - 1. Paver Tile: 3/16 inch (4.8 mm) or as indicated.
  - 2. Glazed Wall Tile: 1/4 inch (6.35 mm) or as indicated.

# SUMMER BAY II APARTMENTS – LAKE COUNTY, FL FK #5389

- G. Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.
- H. Expansion Joints: Provide expansion joints, including control, contraction, and isolation joints, where required by installation method employed. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them. Prepare joints and apply sealants.
- I. Metal Edge Strips: Install where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with top of tile and where threshold is not indicated.

# 3.4 CLEANING AND PROTECTING

- A. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
  - 1. Remove latex-portland cement grout residue from tile as soon as possible.
  - 2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions but no sooner than 10 days after installation. Use cleaners only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.
- B. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors. Restrict foot and wheel traffic from tiled floors during construction. Before final inspection, rinse neutral protective cleaner from tile surfaces.

# 3.5 INTERIOR TILE INSTALLATION SCHEDULE

- A. Interior Floor Installation, Concrete Slab.
  - 1. Thin-set mortar on waterproof membrane:
    - a. Tile Type: paver tile.
    - b. Thin-Set Mortar: Latex-portland cement mortar.
    - c. Grout: Polymer-modified grout.
- B. Interior Wall Installations, Wood Studs or Furring Bathtub, shower walls:
  - 1. Thin-set mortar on cement backer board or coated glass-mat, water-resistant gypsum backer board:
    - a. Tile Type: ceramic tile.
    - b. Thin-Set Mortar: Latex- portland cement mortar.
    - c. Grout: Polymer-modified grout.

# SECTION 096519 - RESILIENT TILE AND STRIP FLOORING

## PART 1 - GENERAL

# 1.1 SUMMARY

- A. Section Includes:
  - 1. Vinyl composition floor tile.
  - 2. Vinyl composition strip flooring.
  - 3. Acoustical underlayment.

# 1.2 SUBMITTALS

- A. Product Data: For each type of product indicated, including installed product compliance with STC and IIC performance requirements indicated and adopted by the authorities having jurisdiction.
- B. Samples for Verification: Full-size units of each color and pattern of floor tile required.
- C. Product Schedule: For floor tile and strip flooring.
- D. Manufacturer's installation instructions for each type of floor product, performance requirement and installation condition.
- E. Qualification Data: For qualified Installer.
- F. Maintenance Data: For each type of floor tile and strip flooring product to include in maintenance manuals.

# 1.3 MATERIALS MAINTENANCE SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Flooring Products: Furnish 1 box for every (20) fifty boxes or fraction thereof, of each type, color, and pattern of floor tile and strip flooring installed.

## 1.4 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs workers for this Project who are competent in techniques required by manufacturer for flooring products and installations indicated.

- B. Fire-Test-Response Characteristics: Provide products identical to those tested for fire exposure performance and behavior by test method indicated and acceptable to the authorities having jurisdiction.
- C. Store flooring products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F (10 deg C) or more than 90 deg F (32 deg C). Store flooring products on flat surfaces.

## 1.5 PROJECT CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 65 deg F or more than 85 deg F in spaces to receive floor tile and strip flooring products during the following time periods:
  - 1. 48 hours before installation.
  - 2. During installation.
  - 3. 48 hours after installation.
- B. Until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 65 deg F or more than 85 deg F.
- C. Close spaces to traffic during floor product installation.
- D. Close spaces to traffic for 48 hours after floor product installation.
- E. Install floor products after other finishing operations, including painting, have been completed.

# PART 2 - PRODUCTS

#### 2.1 VINYL COMPOSITION STRIP FLOORING (LVT)

#### A. Products:

- 1. Congoleum
  - a. Style: Endurance Plank, matte urethane
  - b. Size: 6" x 36"
  - c. Color: Selected by Owner/Interior Designer
- 2. Mohawk Hard Surfaces
  - a. Style: Prospects Luxury Vinyl Tile
  - b. Size: 6" x 36"
  - c. Color: Selected by Owner/Interior Designer
- B. Tile Standard: ASTM F 1700 99 with sound reducing backing for use in all residential dwelling units, unless noted otherwise.
  - 1. Class: Class II, surface-decorated vinyl plank.
  - 2. Type: Type A, smooth surface.
- C. Thickness: 0.080 inch (2.0 mm minimum).

# 2.2 VINYL COMPOSITION FLOOR TILE (VCT)

- A. Products: Provide product selected by Owner/Interior Designer.
- B. Tile Standard: ASTM F 1066, Class 3, surface-pattern tile.
- C. Wearing Surface: Smooth.
- D. Thickness: 0.125 inch (3.2 mm).
- E. Size: 12 by 12 inches (305 by 305 mm) unless indicated otherwise.
- F. Colors and Patterns: As selected by Owner from full range of industry colors.

# 2.3 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by resilient floor product manufacturer for applications indicated.
- B. Acoustic underlayment: Composite mat direct adhered mat underlayment for LVT flooring. Install according to manufacturer's written instructions.
  - 1. Product: Diversified Industries, Inc.: Floor Muffler acoustic mat (Basis of Design).
- C. Adhesives: Water-resistant type recommended by manufacturer to suit floor tile and substrate conditions indicated.
  - 1. Adhesives shall comply with the following limits for VOC content:
    - a. VCT and VP Adhesives: Not more than 50 g/L.
- D. Metal Edge Strips; Extruded aluminum with mill finish of height required to protect exposed edges of resilient flooring products and in maximum available lengths to minimize running joints.
- E. Transition strips; Manufacturer's standard accessory products for VP edge and direction transitions in the same finish color, texture and grain as the selected VP product.

#### PART 3 - EXECUTION

## 3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient floor products.

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

#### 3.2 PREPARATION

- A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient flooring products.
- B. Concrete and gypsum concrete floor underlayment Substrates: Prepare according to ASTM F 710.
  - 1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
  - 2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
  - 3. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
  - 4. Moisture Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
- C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.
- D. Do not install floor products until they are same temperature as space where they are to be installed.
  - 1. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
- E. Clean substrates to be covered by resilient products immediately before installation as recommended by the Manufacturer.

## 3.3 FLOOR PRODUCT INSTALLATION

- A. Comply with manufacturer's written instructions for installing floor product, perform moisture tests as required by the manufacturer.
- B. Lay out flooring from center marks established with principal walls, discounting minor offsets, so product at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter. Lay flooring products square with room axis unless otherwise indicated.
- C. Match flooring products for color and pattern by selecting products from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed products.
- D. Scribe, cut, and fit floor products according to manufacturer's written instructions and to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.

- E. Extend floor products into toe spaces, door reveals, closets, and similar openings. Extend floor products to center of door openings.
- F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor products as marked on substrates. Use chalk or other nonpermanent, nonstaining marking device.
- G. Install floor products on covers for telephone and electrical ducts, building expansion-joint covers, and similar items in finished floor areas. Maintain overall continuity of color and pattern between pieces of floor product installed on covers and adjoining tiles. Tightly adhere product edges to substrates that abut covers and to cover perimeters.
- H. Adhere floor products to flooring substrates according to manufacturer's written instruction and using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

# 3.4 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning, polishing and protection of floor products.
- B. Perform the following operations immediately after completing floor product installation:
  - 1. Remove adhesive and other blemishes from exposed surfaces.
  - 2. Sweep and vacuum surfaces thoroughly.
  - 3. Damp-mop surfaces to remove marks and soil.
- C. Protect floor products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- D. Joint Sealant: Apply sealant to floor product installed perimeter and around columns, at door frames, and at other joints and penetrations.
- E. Cover floor products until Substantial Completion.

# SECTION 096816 – SHEET CARPETING

## PART 1 – GENERAL

## 1.1 SUMMARY

- A. This Section includes the following:
  - 1. Sheet carpet, carpet cushion and accessories.
  - 2. Store carpet, carpet cushion and accessories in facility and under conditions as approved by Owner.
  - 3. Installation of carpet and accessories in locations and as scheduled by Owner.

# 1.2 SUBMITTALS

- A. Product Data for each type of installation accessory specified. Submit methods of installation for each type of substrate.
- B. Samples: 12-inch square samples of each type of carpet materials required.

## 1.3 QUALITY ASSURANCE

- A. Single-Source Responsibility: Obtain each type of carpet from one source and by a single manufacturer.
- B. Carpet and carpet cushion Fire-Test-Response Characteristics: Provide carpet and carpet cushion with the following fire-test-response characteristics as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify carpet and carpet cushion with appropriate markings of applicable testing and inspecting agency.
  - 1. Surface Flammability: Passes CPSC 16 CFR, Part 1630.
  - 2. Flame Spread: 25 or less per ASTM E 84.
  - 3. Smoke Developed: 450 or less per ASTM E 84.

#### 1.4 DELIVERY, STORAGE, AND HANDLING

- A. General: Comply with the Carpet and Rug Institute's CRI 104, Section 5: "Storage and Handling."
- B. Store materials in facility approved by Owner.
- C. Deliver materials to Project site in original factory wrapping and conmtainers, labeled with identification of manufacturer, brand name, and lot number. Do not store materials on site for more than one week.

# 1.5 WARRANTY

- A. Labor Warranty Period: 1 years from date of Substantial Completion.
- B. Manufacturer's Warranty Period: 5 Years

## PART 2 - PRODUCTS

- 2.1 MANUFACTURERS
  - A. <u>Manufacturers</u>: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - 1. Mohawk (BASIS OF DESIGN)
    - 2. Shaw Contract Carpet.
    - 3. Armstrong Industries
    - 4. Dupont Stainmaster
    - 5. Other manufacturers as accepted by Owner prior to submittal.

# 2.2 CARPET

- A. Products: Subject to compliance with requirements, provide products::
  - 1. Style: Mohawk Industries Smartstrand a. Wondrous / Splurge
  - 2. Color: Owner/Interior Designer selected.

## 2.3 CARPET CUSHION

- A. Products: Subject to compliance with requirements, provide minimum 6 lb density / ½" rated rebound pad materials recommended by selected carpet manufacturer.
  - 1. Style: Mohawk Industries PW67A, PW61A

#### 2.4 INSTALLATION ACCESSORIES

- A. Concrete-Slab Primer: Nonstaining type as recommended by the carpet manufacturer and carpet cushion manufacturer.
- B. Trowelable Underlayments and Patching Compounds: As recommended by the carpet manufacturer and carpet cushion manufacturer.
- C. Tackless Carpet Stripping: Water-resistant plywood in strips as required to match cushion thickness and in compliance with CRI 104, 12.2.
- D. Seaming Cement: Hot-melt adhesive tape or similar product recommended by carpet manufacturer for taping seams and butting cut edges at backing to form secure seams and to prevent pile loss at seams. Provide adhesive tape in minimum width of six (6) inches.

## PART 3 - EXECUTION

## 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation toerances, and other conditions affecting carpet performance. Examine carpet for type, color, pattern, and potential defects.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

# 3.2 PREPARATION

- A. Level subfloor within 1/8 inch in 10 feet, noncumulative, in all directions. Sand or grind protrusions, bumps, and ridges. Patch and repair cracks and rough areas. Fill depressions. Use leveling and patching compounds to fill cracks, holes, and depressions in subfloor as recommended by the carpet manufacturer and carpet cushion manufacturer.
- B. Clean subfloors to be covered with carpet. Following cleaning, examine subfloors for moisture, alkaline salts, carbonation, or dust.
- 3.3 INSTALLATION
  - A. Comply with carpet manufacturer's recommendations and Shop Drawings for seam locations and direction of carpet; maintain uniformity of carpet direction and lay of pile. At doorways, center seams under door in closed position.
  - B. Cut and fit carpet to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings.
  - C. Extend carpet into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
  - D. Install pattern parallel to walls and borders to comply with CRI 104, Section 15, "Patterned Carpet Installations" and with carpet manufacturer's written recommendations.
  - E. Comply with carpet cushion manufacturer's written recommendations. Install carpet cushion seams at 90-degree angle with carpet seams.
  - F. Perform the following operations immediately after completing installation.
    - 1. Remove visible adhesive, seam sealer, and other surface blemishes using cleaner recommended by carpet manufacturer.
    - 2. Remove protruding yarns from carpet surface.
    - 3. Vacuum carpet.
  - G. Provide instructions for final protection and maintainance.

## END OF SECTION 096816

SHEET CARPETING
# SECTION 099113 - EXTERIOR PAINTING

# PART 1 - GENERAL

# 1.1 SUMMARY

- A. Section includes surface preparation and the application of paint systems on exterior substrates and surfaces.
  - 1. Steel.
  - 2. Plastic trim fabrications.
  - 3. Aluminum (not factory finished).
  - 4. Cementitious siding and trim.
  - 5. Finish carpentry.
  - 6. Stucco.
  - 7. Concrete, pre-cast concrete and masonry.

#### 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
- B. Samples for Verification: For each type of paint system and each color and gloss of topcoat.
  - 1. Submit Samples on rigid backing, 8 inches (200 mm) square.
  - 2. Step coats on Samples to show each coat required for system.
  - 3. Label each coat of each Sample.
  - 4. Label each Sample for location and application area.
- C. Product List: For each product indicated, include the following:
  - 1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.

# 1.3 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Paint: Five percent, but not less than 1 gal. (3.8 L) of each material and color applied.

#### 1.4 QUALITY ASSURANCE

A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

- 1. Owner will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.
  - a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft. (9 sq. m).
  - b. Other Items: Owner will designate items or areas required.
- 2. Final acceptance of color selections will be based on mockups.
  - a. If preliminary color selections are not acceptable, apply additional mockups of additional colors selected by Owner at no added cost to Owner.
- 3. Review of mockups does not constitute acceptance of deviations from the Contract Documents contained in mockups unless Owner specifically accepts such deviations in writing.
- 4. Subject to compliance with requirements, accepted mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

# 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).
  - 1. Maintain containers in clean condition, free of foreign materials and residue.
  - 2. Remove rags and waste from storage areas daily.

# 1.6 FIELD CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).
- B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

# PART 2 - PRODUCTS

# 2.1 MANUFACTURERS

- A. Manufacturers: Basis of Design manufacturer, Subject to compliance with requirements, provide products manufactured by listed manufacturer or comparable products by one of the following:
  - 1. Sherwin-Williams Company (Basis of Design).
  - 2. Benjamin Moore & Co.
  - 3. Color Wheel Paints & Coatings.
  - 4. Dunn-Edwards Corporation.
  - 5. Duron, Inc.
  - 6. ICI Paints.
  - 7. Pittsburg Paints (PPG).

# SUMMER BAY II APARTMENTS – LAKE COUNTY, FL FK #5389

B. Products: Subject to compliance with requirements, provide Basis of Design product listed in other Part 3 articles for the paint category indicated or equivalent product by manufacturer listed in Article 2.1.A.

# 2.2 PAINT, GENERAL

- A. Material Compatibility:
  - 1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
  - 2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
- B. Colors: As selected by Owner from manufacturer's full range.

# 2.3 SOURCE QUALITY CONTROL

- A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure:
  - 1. Owner may engage the services of a qualified testing agency to sample paint materials. Contractor will be notified in advance and may be present when samples are taken. If paint materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
  - 2. Testing agency will perform tests for compliance with product requirements.
  - 3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

# PART 3 - EXECUTION

# 3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content, pH level of cementitious surfaces and other conditions affecting performance of the Work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
  - 1. 12 percent.

- C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- D. Proceed with coating application only after unsatisfactory conditions have been corrected.
  - 1. Application of coating indicates acceptance of surfaces and conditions.

# 3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Manual" applicable to substrates and paint systems indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
  - 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.
- C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
  - 1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
- D. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.
- E. Aluminum Substrates: Remove loose surface oxidation.
- F. Plastic Trim Fabrication Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.

# 3.3 APPLICATION

- A. Apply paints according to manufacturer's written instructions and recommendations in "MPI Manual."
  - 1. Use applicators and techniques suited for paint and substrate indicated.
  - 2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.
  - 3. Paint both sides and edges of exterior doors and entire exposed surface of exterior door frames.
  - 4. Paint entire exposed surface of window frames and sashes.
  - 5. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
  - 6. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.

- B. Tint undercoats same color as topcoat, but tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Provide sufficient difference in shade of undercoats to distinguish each separate coat.
- C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
- E. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:
  - 1. Paint the following work where exposed to view:
    - a. Equipment, including panelboards and switch gear.
    - b. Uninsulated metal piping.
    - c. Uninsulated plastic piping.
    - d. Pipe hangers and supports.
    - e. Metal conduit.
    - f. Plastic conduit.

#### 3.4 FIELD QUALITY CONTROL

- A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.
  - 1. Contractor shall touch up and restore painted surfaces damaged by testing.
  - 2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

#### 3.5 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Owner, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

# 3.6 PAINT SCHEDULE

- A. General: Provide the following paint systems for the various substrates indicated.
- B. Stucco (Portland Cement Plastering).
  - 1. Satin Latex Finish: 2 Finish Coats over Primer
    - a. 1st Coat: S-W Loxon Concrete & Masonry Primer, A24W8300 applied at a minimum 5.0 mils DFT.
    - b. 2nd Coat: S-W SuperPaint Latex, A89 Series applied at a minimum 2 mils DFT.
    - c. 3rd Coat: S-W SuperPaint Latex, A89 Series applied at a minimum 2 mils DFT.
- C. Cementitous Siding and Trim:
  - 1. Satin Latex Finish: 2 Finish Coats over Primer
    - a. 1st Coat: S-W Loxon Concrete & Masonry Primer, A24W8300 applied at a minimum 5.0 mils DFT.
    - b. 2nd Coat: S-W SuperPaint Latex, A89 Series applied at a minimum 2 mils DFT.
    - c. 3rd Coat: S-W SuperPaint Latex, A89 Series applied at a minimum 2 mils DFT.
- D. Plastic Trim Fabrications:
  - 1. Satin Latex Finish: 2 Finish Coats over Primer
    - a. 1st Coat: S-W Adhesion Primer, B51W8050 applied at a minimum 2.0 mils DFT.
    - b. 2nd Coat: S-W SuperPaint Latex, A89 Series applied at a minimum 2.0 mils DFT.
    - c. 3rd Coat: S-W SuperPaint Latex, A89 Series applied at a minimum 2.0 mils DFT.
- E. Ferrous Metal:
  - 1. Gloss Waterbased Urethane Finish: 2 Finish Coats over Primer
    - a. 1st Coat: S-W Pro Industrial Pro-Cryl Universal Primer, B66-310 Series applied at a minimum 4.0 mils DFT.
    - b. 2nd Coat: S-W Waterbased Acrolon 100 Urethane, B65-720 Series applied at minimum 4.0 mils DFT.
    - c. 3rd Coat: S-W Waterbased Acrolon 100 Urethane, B65-720 Series applied at minimum 4.0 mils DFT.
- F. Zinc-Coated Metal:
  - 1. Gloss Waterbased Urethane Finish: 2 Finish Coats over Primer
    - a. 1st Coat: S-W Pro Industrial Pro-Cryl Universal Primer, B66-310 Series applied at a minimum 4.0 mils DFT.
    - b. 2nd Coat: S-W Waterbased Acrolon 100 Urethane, B65-720 Series applied at minimum 4.0 mils DFT.
    - c. 3rd Coat: S-W Waterbased Acrolon 100 Urethane, B65-720 Series applied at minimum 4.0 mils DFT.

#### G. Aluminum

- 1. Gloss Waterbased Urethane Finish: 2 Finish Coats over Primer

  - a. 1st Coat: S-W DTM Wash Primer, B71 Y1 applied at minimum 0.7 mils DFT.
    b. 2nd Coat: S-W Waterbased Acrolon 100 Urethane, B65-720 Series applied at minimum 4.0 mils DFT.
  - c. 3rd Coat: S-W Waterbased Acrolon 100 Urethane, B650720 Series applied at minimum 4.0 mils DFT.

	EXTERIOR FINI	SH SCHEDULE	
COLOR SCHEME	A	BUILDINGS 2, 6, 8, 10, 11	
	MANUFACTURER	SERIES / COLOR #	COLOR NAME
	SHERWIN		
BASE PAINT	WILLIAMS	SW 0024	CURIO GRAY
BASE STONE	EL DORADO	MOUNTAIN LEDGE	SIERRA
	SHERWIN		
BODY COLOR	WILLIAMS	SW 7738	CARGO PANTS
	SHERWIN	0144 7040	
		SW 7610	
		SW/ 0014	SHERATON
	SHERWIN	300014	JAGL
	WILLIAMS	SW 7009	PEARLY WHITE
DOWNSPOUTS		WHITE	
FASCIA		WHITE	
ROOFING			GALVALUME
		TRUDEFINITION	
ROOFING	OWENS CORNING	DURATION	ESTATE GRAY
COLOR SCHEME	В	BUILDINGS 4, 5, 7	
	MANUFACTURER	SERIES / COLOR #	COLOR NAME
	SHERWIN		
BASE PAINT	WILLIAMS	SW 0024	CURIO GRAY
BASE STONE	EL DORADO	MOUNTAIN LEDGE	SIERRA
	SHERWIN		
BODY COLOR	WILLIAMS	SW 7738	
	SHERWIN	SW 0014	SHERATON
		500014	SAGE
ACCENT PAINT 2	WILLIAMS	SW 7579	
	SHERWIN		
TRIM PAINT	WILLIAMS	SW 7009	PEARLY WHITE
DOWNSPOUTS		WHITE	
FASCIA		WHITE	
METAL ACCENT			
ROOFING			GALVALUME
		TRUDEFINITION	
ROOFING	OWENS CORNING	DURATION	ESTATE GRAY

COLOR SCHEME	С	BUILDINGS 3, 9	
	MANUFACTURER	SERIES / COLOR #	COLOR NAME
	SHERWIN		
BASE PAINT	WILLIAMS	SW 0024	CURIO GRAY
BASE STONE	EL DORADO	MOUNTAIN LEDGE	SIERRA
	SHERWIN		
BODY COLOR	WILLIAMS	SW 7738	CARGO PANTS
	SHERWIN		
ACCENT PAINT 1	WILLIAMS	SW 7610	TURKISH TILE
	SHERWIN		
ACCENT PAINT 2	WILLIAMS	SW 7701	CAVERN CLAY
	SHERWIN		
TRIM PAINT	WILLIAMS	SW 7009	PEARLY WHITE
DOWNSPOUTS		WHITE	
FASCIA		WHITE	
METAL ACCENT			
ROOFING			GALVALUME
		TRUDEFINITION	
ROOFING	OWENS CORNING	DURATION	ESTATE GRAY

# SECTION 099123 - INTERIOR PAINTING

# PART 1 - GENERAL

# 1.1 SUMMARY

- A. Section includes surface preparation and the application of paint systems on interior substrates.
  - 1. Wood.
  - 2. Gypsum board.
  - 3. Plaster.
- B. Product Data: For each type of product. Include preparation requirements and application instructions.
- C. Samples: For each type of paint system and in each color and gloss of topcoat.

# 1.2 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Paint: Two percent, but not less than 1 gal. (3.8 L) of each material and color applied.

# 1.3 QUALITY ASSURANCE

- A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
  - 1. Select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.
    - a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft. (9 sq. m).
  - 2. Final approval of color selections will be based on mockups.
    - a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Owner at no added cost to Owner.

# PART 2 - PRODUCTS

## 2.1 MANUFACTURERS

- A. Manufacturers: Basis of Design manufacturer, Subject to compliance with requirements, provide products manufactured by listed manufacturer or comparable products by one of the following:
  - 1. Sherwin-Williams Company (Basis of Design).
  - 2. Benjamin Moore & Co.
  - 3. Color Wheel Paints & Coatings.
  - 4. Dunn-Edwards Corporation.
  - 5. Duron, Inc.
  - 6. ICI Paints.
  - 7. Pittsburg Paints (PPG).

# 2.2 PAINT, GENERAL

- A. Material Compatibility:
  - 1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
  - 2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
- B. Colors: As selected by Owner from manufacturer's full range.
  - 1. Residential units Walls, ceiling, and trim shall be a minimum of a pastel tint base.
  - 2. Clubhouse will include a minimum of 30 percent surface area painted with deep tones.

# PART 3 - EXECUTION

# 3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
  - 1. Wood: 15 percent.
  - 2. Gypsum Board: 12 percent.
- C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- D. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Application of coating indicates acceptance of surfaces and conditions.

#### 3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Manual" applicable to substrates indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
  - 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
- C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
  - 1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.

# 3.3 APPLICATION

- A. Apply paints according to manufacturer's written instructions and to recommendations in "MPI Manual."
- B. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

#### 3.4 CLEANING AND PROTECTION

- A. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Owner, and leave in an undamaged condition.
- B. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.
- 3.5 PAINT SCHEDULE
- A. General: Provide the following paint systems for the various substrates, as indicated.
- B. Concrete:
  - 1. Semi-Gloss Latex Finish: 1 Finish Coats over Primer
    - a. 1st Coat: S-W ProMar 200 Latex Wall Primer, B28W200 applied at minimum 1.2 mils DFT.

- b. 2nd Coat: S-W ProMar 200 Zero VOC Latex Semi-Gloss Enamel, B31-2600 Series applied at minimum 1.6 mils DFT.
- C. Gypsum Drywall Systems:
  - 1. Flat Latex Finish: 2 finish coats over primer (Clubhouse), 1 finish coat over primer (Apartments).
    - a. 1st Coat: S-W ProMar 200 Latex Wall Primer, B28W200 applied at minimum 1.4 mils DFT.
    - b. 2nd Coat: S-W ProMar 200 Zero VOC Latex Flat Wall Paint, B30W2600 applied at minimum 1.6 mils DFT minimum.
    - c. 3rd Coat: S-W ProMar 200 Zero VOC Latex Flat Wall Paint, B30W2600 applied at minimum 1.6 mils DFT minimum.
  - 2. Semi-Gloss Latex Finish: 2 finish coats over primer (Clubhouse), 1 finish coat over primer (Apartments).
    - a. 1st Coat: S-W ProMar 200 Latex Wall Primer, B28W200 applied at minimum 1.2 mils DFT.
    - b. 2nd Coat: S-W ProMar 200 Zero VOC Latex Semi-Gloss Enamel, B31-2600 Series applied at minimum 1.6 mils DFT.
    - c. 3rd Coat: S-W ProMar 200 Zero VOC Latex Semi-Gloss Enamel, B31-2600 Series applied at minimum 1.6 mils DFT.
- D. Woodwork:
  - 1. Semi-Gloss Latex Finish: 2 finish coats over primer (Clubhouse), 1 finish coat over primer (Apartments).
    - a. 1st Coat: S-W Premium Wall & Wood Primer, B28W8111 applied at minimum 1.8 mils DFT.
    - b. 2nd Coat: S-W ProMar 200 Zero VOC Latex Semi-Gloss Enamel, B31-2600 Series applied at minimum 1.6 mils DFT.
    - c. 3rd Coat: S-W ProMar 200 Zero VOC Latex Semi-Gloss Enamel, B31-2600 Series applied at minimum 1.6 mils DFT.
- E. Ferrous Metal:
  - 1. Semi-Gloss Alkyd Finish: 1 Finish Coats over Primer
    - a. 1st Coat: S-W Kem Kromik Metal Primer, B50 Series applied at minimum 3.0 mils DFT.
    - b. 2nd Coat: S-W ProMar 200 Alkyd Semi-Gloss, B34W200 Series applied at minimum 1.7 mils DFT.
- F. Zinc-Coated Material:
  - 1. Semi-Gloss Alkyd Finish: 1 Finish Coats over Primer
    - a. 1st Coat: S-W Galvite Paint, B50W1 applied at minimum 2.0 mils DFT.
    - b. 2nd Coat: S-W ProMar 200 Alkyd Semi-Gloss B34W200 Series applied at minimum 1.7 mils DFT.

# SECTION 101400 - SIGNAGE

# PART 1 - GENERAL

# 1.1 SUMMARY

- A. This Section includes the following:
  - 1. Panel signs for dwelling unit numbers adjacent to dwelling unit entries to be provided by Owner.
  - 2. Signage required by applicable codes and regulations to be provided by Contractor.

# 1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Show fabrication and installation details for signs.
  - 1. Show sign mounting heights, locations of supplementary supports to be provided by others, and accessories.
  - 2. Provide message list, typestyles, graphic elements, including tactile characters and Braille, and layout for each sign.
- C. Samples for Initial Selection: Manufacturer's color charts consisting of actual units or sections of units showing the full range of colors available for the following:
  - 1. Acrylic sheet.
  - 2. Polycarbonate sheet.
  - 3. Die-cut vinyl characters and graphic symbols. Include representative samples of available typestyles and graphic symbols.
- D. Sign Schedule: Provide schedule of signage and locations.

# 1.3 QUALITY ASSURANCE

- A. Installer Qualifications: Fabricator of products.
- B. Source Limitations for Signs: Obtain each sign type indicated from one source from a single manufacturer.
- C. Regulatory Requirements: Comply with applicable provisions in ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

# 1.4 COORDINATION

A. Coordinate placement of anchorage devices with templates for installing signs.

# 1.5 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within Five years from date of Substantial Completion.
  - 1. Failures include, but are not limited to, the following:
    - a. Deterioration of metal and polymer finishes beyond normal weathering.
    - b. Deterioration of embedded graphic image colors and sign lamination.
- B. Labor Warranty Period: 1 year from date of Substantial Completion.

# PART 2 - PRODUCTS

# 2.1 MATERIALS

- A. Aluminum Sheet and Plate: Alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with at least the strength and durability properties of Alloy 5005-H32.
- B. Acrylic Sheet: Category A-1 (cell-cast sheet), Type UVA (UV absorbing).
- C. Polycarbonate Sheet: Of thickness indicated, manufactured by extrusion process, coated on both surfaces with abrasion-resistant coating.
- D. Applied Vinyl: Die-cut characters from vinyl film of nominal thickness of 3 mils (0.076 mm) with pressure-sensitive adhesive backing, suitable for exterior applications.

# 2.2 PANEL SIGNS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Mayorgo Sign Shop
  - 2. Advance Corporation; Braille-Tac Division.
  - 3. Allenite Signs; Allen Marking Products, Inc.
  - 4. ASI-Modulex, Inc.
  - 5. Best Sign Systems Inc.
  - 6. Grimco, Inc.
  - 7. Innerface Sign Systems, Inc.
  - 8. Mohawk Sign Systems.
  - 9. Signature Signs, Incorporated.
- B. Interior Panel Signs: Provide smooth sign panel surfaces constructed to remain flat under installed conditions within a tolerance of plus or minus 1/16 inch (1.5 mm) measured diagonally from corner to corner, complying with the following requirements.

- 1. Finishes and Colors: As selected by Owner.
- 2. Tactile Characters: Characters and Grade 2 Braille raised 1/32 inch (0.8 mm) above surface with contrasting colors (as required).
- C. Laminated Exterior Signs: Solid phenolic panel core with graphic image covered with thermosetting resin face layer.
  - 1. Surface Finish: UV resistant, outdoor.
  - 2. Finishes and Colors: As selected by Owner.

#### 2.3 ACCESSORIES

A. Anchors and Inserts: Provide nonferrous-metal or hot-dip galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion-bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete or masonry work.

#### 2.4 FABRICATION

- A. General: Provide manufacturer's standard signs of configurations indicated.
  - 1. Mill joints to tight, hairline fit. Form joints exposed to weather to exclude water penetration.
  - 2. Preassemble signs in the shop to greatest extent possible. Disassemble signs only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation, in location not exposed to view after final assembly.
  - 3. Conceal fasteners if possible; otherwise, locate fasteners where they will be inconspicuous.

#### 2.5 FINISHES, GENERAL

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

#### 2.6 ACRYLIC SHEET FINISHES

A. Colored Coatings for Acrylic Sheet: For copy and background colors, provide colored coatings, including inks, dyes, and paints, that are recommended by acrylic manufacturers for optimum adherence to acrylic surface and that are UV and water resistant for five years for application intended.

# PART 3 - EXECUTION

# 3.1 INSTALLATION

- A. Locate signs and accessories using mounting methods of types described and complying with manufacturer's written instructions.
  - 1. Install signs level, plumb, and at heights indicated, with sign surfaces free of distortion and other defects in appearance.
  - 2. Interior Wall Signs: Install signs in locations as indicated by Owner.
- B. Wall-Mounted Signs: Comply with sign manufacturer's written instructions except where more stringent requirements apply.
  - 1. Two-Face Tape: Mount signs to smooth, nonporous surfaces. Do not use this method for vinyl-covered or rough surfaces.
  - 2. Silicone-Adhesive Mounting: Attach signs to irregular, porous, or vinyl-covered surfaces.
  - 3. Mechanical Fasteners: Use non-removable mechanical fasteners placed through predrilled holes. Attach signs with fasteners and anchors suitable for secure attachment to substrate as recommended in writing by sign manufacturer.

# 3.2 CLEANING AND PROTECTION

A. After installation, clean soiled sign surfaces according to manufacturer's written instructions. Protect signs from damage until acceptance by Owner.

# SECTION 102800 – TOILET AND BATH ACCESSORIES

# PART 1 - GENERAL

# 1.1 SUMMARY

- A. Section Includes:
  - 1. Public-use washroom accessories.
  - 2. Private-use bathroom accessories.
  - 3. Underlavatory guards.

# 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- 1.3 INFORMATIONAL SUBMITTALS
  - A. Warranty: Sample of special warranty.
- 1.4 CLOSEOUT SUBMITTALS
  - A. Maintenance data.
- 1.5 QUALITY ASSURANCE
  - A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

#### 1.6 WARRANTY

- A. Special Mirror Warranty: Manufacturer's standard form in which manufacturer agrees to replace mirrors that develop visible silver spoilage defects and that fail in materials or workmanship within specified warranty period.
  - 1. Warranty Period: 15 years from date of Substantial Completion.

# PART 2 - PRODUCTS

## 2.1 PUBLIC-USE WASHROOM ACCESSORIES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - 1. Donner, Inc.
  - 2. <u>A & J Washroom Accessories, Inc</u>.
  - 3. <u>American Specialties, Inc</u>.
  - 4. <u>Bobrick Washroom Equipment, Inc.</u>
  - 5. <u>Bradley Corporation</u>.
  - 6. GAMCO Specialty Accessories; a division of Bobrick Washroom Equipment, Inc.
  - 7. <u>Tubular Specialties Manufacturing, Inc.</u>
- B. Refer to drawings for basis of design model numbers.

#### 2.2 PRIVATE-USE BATHROOM ACCESSORIES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - 1. Donner, Inc.
  - 2. <u>Basco, Inc</u>.
  - 3. <u>Bobrick Washroom Equipment, Inc.</u>
  - 4. <u>Franklin Brass by Liberty Hardware Manufacturing Corporation; a Masco company</u>.
  - 5. GAMCO Specialty Accessories; a division of Bobrick Washroom Equipment, Inc.
  - 6. <u>Ginger; a Masco company</u>.
  - 7. <u>Seachrome Corporation</u>.
  - 8. <u>Tubular Specialties Manufacturing, Inc</u>.
- B. Refer to drawings for basis of design model numbers.

#### 2.3 UNDERLAVATORY GUARDS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - 1. Bobrick Washroom Equipment, Inc.
  - 2. <u>Plumberex Specialty Products, Inc.</u>
  - 3. <u>Truebro by IPS Corporation</u>.
- B. Underlavatory Guard :
  - 1. Description: Insulating pipe covering for supply and drain piping assemblies that prevent direct contact with and burns from piping; allow service access without removing coverings.

2. Material and Finish: Antimicrobial, molded plastic, white.

#### 2.4 FABRICATION

A. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to Owner's representative.

#### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
- B. Grab Bars: Install to withstand a downward load of at least 250 lbf (1112 N), when tested according to ASTM F 446.

# SECTION 103000 - PRE-FABRICATED FIREPLACES

# PART 1-GENERAL

# 1.1 SECTION INCLUDES

A. Prefabricated electric fireplaces.

#### 1.2 REFERENCES

A. WH (CERT) - Certification Listings; Warnock Hersey.

#### 1.3 SUBMITTALS

- A. Product Data: Provide manufacturer's standard details and installation instructions.
- B. Operation and Maintenance Data: Deliver to Owner manufacturer's recommended printed operation and maintenance procedures.

# 1.4 DELIVERY, STORAGE, AND HANDLING

- A. Inspect products upon receipt to ensure products are free from damage occurring in transit.
- B. Store products in covered area, well-protected from weather.

# PART 2 PRODUCTS

# 2.1 MANUFACTURER

A. Subject to compliance with requirements, manufacturers offering pre-fabricated fireplaces that may be considered are as follows:

1. Majestic Products. Allura – Fire Model WEF36

a. Stone surround to be determined by Interior Designer.

#### PART 3 EXECUTION

# 3.1 EXAMINATION

- A. Verify that dimensions are correct and substrate is in proper condition for installation. Do not proceed with installation until unsatisfactory conditions have been corrected.
- 3.2 INSTALLATION

A. Install in strict accordance with manufacturer's instructions and approval listings.

# 3.3 ADJUST AND CLEAN

A. Adjust components for proper operation.

# SECTION 104413 - FIRE EXTINGUISHERS AND CABINETS

#### PART 1 - GENERAL

#### 1.1 SUMMARY

A. Section includes portable fire extinguishers and fire protection cabinets for portable fire extinguishers.

# 1.2 SUBMITTALS

- A. Product Data (Extinguishers): For each type of product indicated. Include rating and classification, material descriptions, dimensions of individual components and profiles, and finishes for fire extinguisher and mounting brackets.
- B. Operation and Maintenance Data: For fire extinguishers to include in maintenance manuals.
- C. Warranty: Sample of manufacturer's warranty.
- D. Product Data (Cabinets): For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for fire protection cabinets. Include roughing-in dimensions, details showing mounting methods, relationships of box and trim to surrounding construction, door hardware, cabinet type, trim style, and panel style.

#### 1.3 QUALITY ASSURANCE

- A. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."
- B. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction. Provide fire extinguishers approved, listed, and labeled by FMG.
- C. Coordinate type and capacity of fire extinguishers with fire protection cabinets to ensure fit and function.
- D. Fire-Rated, Fire Protection Cabinets: Listed and labeled to comply with requirements in ASTM E 814 for fire-resistance rating of walls where they are installed.

# 1.4 WARRANTY

A. Manufacturer's Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace fire extinguishers that fail in materials or workmanship within specified warranty period.

- 1. Failures include, but are not limited to, the following:
  - a. Failure of hydrostatic test according to NFPA 10.
  - b. Faulty operation of valves or release levers.
- 2. Warranty Period: Six (6) years from date of Substantial Completion.

# 1.5 COORDINATION

- A. Coordinate size of fire protection cabinets to ensure that type and capacity of fire extinguishers indicated are accommodated.
- B. Coordinate sizes and locations of fire protection cabinets with wall depths.

# PART 2 - PRODUCTS

# 2.1 PORTABLE, HAND-CARRIED FIRE EXTINGUISHERS

- A. Fire Extinguishers: Type, size, and capacity for each fire protection cabinet and mounting bracket indicated.
- B. <u>Manufacturers</u>: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - a. J. L. Industries, Inc.; a division of Activar Construction Products Group. Model Nos. Cosmic 10E (UL 4-A:80-B:C) and 5E (UL 3-A:40-B:C) @ UNITS. – Basis of Design product reference.
  - b. Kidde Residential and Commercial Division; Subsidiary of Kidde plc.
  - c. Larsen's Manufacturing Company.
  - d. Potter Roemer LLC.
  - e. Amerex Corporation.
  - 2. Valves: Manufacturer's standard.
  - 3. Handles and Levers: Manufacturer's standard.
  - 4. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B and bar coding for documenting fire extinguisher location, inspections, maintenance, and recharging.
- C. Multipurpose Dry-Chemical Type in Steel Container: UL-rated 4-A:10-B:C, 5-lb (2.3-kg) for bracket mounting within dwelling units in locations indicated and as accepted by the authorities having jurisdiction and 4-A:80-B:C, 10-lb (4.5-kg) nominal capacity for placement in fire extinguisher cabinets at locations indicated, with monoammonium phosphate-based dry chemical in enameled-steel container.

# 2.2 MOUNTING BRACKETS

A. Mounting Brackets: Manufacturer's standard galvanized steel, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated, with plated or redbaked-enamel finish.

# 2.3 FIRE PROTECTION CABINET

- A. Cabinet Type: Suitable for portable fire extinguisher.
- B. <u>Manufacturers</u>: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - a. J. L. Industries, Inc., a division of Activar Construction Products Group.
  - b. Larsen's Manufacturing Company.
  - c. Potter Roemer LLC.
- C. Cabinet Construction: Fire rated to match adjacent wall assembly as indicated.
- D. Cabinet Material: Steel sheet.
  - 1. Shelf: Same metal and finish as cabinet.
- E. Semirecessed Cabinet: Cabinet box partially recessed in walls of sufficient depth to suit style of trim indicated; with one-piece combination trim and perimeter door frame overlapping surrounding wall surface with exposed trim face and wall return at outer edge (backbend). Provide where walls are of insufficient depth for recessed cabinets but are of sufficient depth to accommodate semirecessed cabinet installation.
  - 1. Rolled-Edge Trim: 2-1/2-inch (64-mm) backbend depth.
- F. Door Material: Steel sheet.
- G. Door Style: Fully glazed panel with frame.
- H. Door Glazing: Acrylic sheet. Color: Clear transparent acrylic sheet.
- I. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.
  - 1. Provide projecting door pull and friction latch with cylinder lock and pull pressure release as manufacturer's standard.
  - 2. Provide continuous hinge, of same material and finish as trim, permitting door to open 180 degrees.
- J. Accessories:
  - 1. Mounting Bracket: Manufacturer's standard steel, designed to secure fire extinguisher to fire protection cabinet, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.

- 2. Door Lock: Cam lock that allows door to be opened during emergency by pulling sharply on door handle.
- 3. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location.
  - a. Identify fire extinguisher in fire protection cabinet with the words "FIRE EXTINGUISHER.
    - 1) Location: Applied to cabinet glazing.
    - 2) Application Process: Pressure-sensitive vinyl letters.
    - 3) Lettering Color: Red.
    - 4) Orientation: Vertical.
- K. Finishes:
  - 1. Manufacturer's standard baked-enamel paint for the following:
    - a. Exterior of cabinet door, and trim except for those surfaces indicated to receive another finish.
  - 2. Steel: Factory powder coat..

#### 2.4 FABRICATION

- A. Fire Protection Cabinets: Provide manufacturer's standard box (tub) with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated.
- B. Cabinet Doors: Fabricate doors according to manufacturer's standards, from materials indicated and coordinated with cabinet types and trim styles selected.
  - 1. Fabricate door frames of one-piece construction with edges flanged.
- C. Cabinet Trim: Fabricate cabinet trim in one piece with corners mitered, welded, and ground smooth.
- D. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- E. Protect mechanical finishes on exposed surfaces of fire protection cabinets from damage by applying a strippable, temporary protective covering before shipping.

#### PART 3 - EXECUTION

# 3.1 INSTALLATION

- A. Fire extinguisher:
  - 1. Examine fire extinguishers for proper charging and tagging. Remove and replace damaged, defective, or undercharged fire extinguishers.

- 2. Install fire extinguishers and mounting brackets in locations indicated and in compliance with requirements of authorities having jurisdiction. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.
- 3. Examine walls and partitions for suitable framing depth and blocking where semirecessed cabinets will be installed. Proceed with installation only after unsatisfactory conditions have been corrected.
- B. Fire Extinguisher Cabinet:
  - 1. Prepare recesses for semirecessed fire protection cabinets as required by type and size of cabinet and trim style.
  - 2. Install fire protection cabinets in locations and at mounting heights indicated or, if not indicated, at heights acceptable to authorities having jurisdiction.
  - 3. Fire Protection Cabinets: 48 inches above finished floor to top of cabinet.
  - 4. Fire Protection Cabinets: Fasten cabinets to structure, square and plumb.
  - 5. Identification: Apply vinyl lettering at locations indicated.

# 3.2 ADJUSTING AND CLEANING

- A. Remove temporary protective coverings and strippable films, if any, as fire protection cabinets are installed unless otherwise indicated in manufacturer's written installation instructions.
- B. Adjust fire protection cabinet doors to operate easily without binding. Verify that integral locking devices operate properly.
- C. On completion of fire protection cabinet installation, clean interior and exterior surfaces as recommended by manufacturer.
- D. Touch up marred finishes, or replace fire protection cabinets that cannot be restored to factoryfinished appearance. Use only materials and procedures recommended or furnished by fire protection cabinet and mounting bracket manufacturers.
- E. Replace fire protection cabinets that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

# SECTION 105500 - POSTAL SPECIALTIES

# PART 1 - GENERAL

# 1.1 SUMMARY

A. Section Includes:1. USPS-approved horizontal mail and parcel receptacles.

### 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For postal specialties. Include plans, elevations, sections, details, identification sequence for compartments, and attachments to other work.

#### 1.3 CLOSEOUT SUBMITTALS

A. Maintenance data.

#### 1.4 QUALITY ASSURANCE

A. Source Limitations for Each Type of Postal Specialty: For USPS-approved products, use only those included on current lists of USPS manufacturers and models.

# 1.5 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of postal specialties that fail in materials or workmanship within [Five] Five years from date of Substantial Completion.

# PART 2 - PRODUCTS

#### 2.1 MATERIALS

- A. Aluminum: Manufacturer's standard alloy and temper for type of use and finish indicated.
- B. Stainless-Steel Anchor Bolts, Nuts, and Washers: ASTM A 193/A 193M, Grade B8M, Type 316.

#### 2.2 USPS-APPROVED HORIZONTAL MAIL AND PARCEL RECEPTACLES

- A. Front-Loading, USPS-Approved Horizontal Mail Receptacles: Multiple compartments with fixed, solid compartment backs, enclosed within recessed wall box. Provide access to compartments for distributing incoming mail from front of unit by unlocking master lock and swinging side-hinged master door to provide accessibility to entire group of compartments. Provide access to each compartment for removing mail by swinging compartment door. Comply with USPS-STD-4C requirements for multi-family developments.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Mailboxes.com Model # 3716d-20 (Basis of Design)
    - b. <u>American Postal Manufacturing Co.; Division of Postal Products Unlimited, Inc.</u>
    - c. <u>Auth-Florence Manufacturing; a Florence company</u>.
    - d. <u>Bommer Industries, Inc</u>.
    - e. Jensen Industries.
    - f. Salsbury Industries.
  - 2. Compartments: Number and size as follows: As indicated on Drawings and to comply with the USPS-STD-4C requirements.
  - 3. Front-Loading Master Door: Fabricated from extruded aluminum and braced and framed to hold compartment doors; prepared to receive master-door lock provided by local postmaster.
  - 4. Compartment Doors: Fabricated from extruded aluminum. Equip each with lock and tenant identification as required by cited standard. Provide mail slot in the compartment with master-door lock.
    - a. Compartment-Door Locks: Comply with USPS-L-1172C, PSIN O910, for locks and keys, or equivalent as approved by USPS; with three keys for each compartment door. Key each compartment differently.
  - 5. Frames: Fabricated from extruded aluminum or aluminum sheet; ganged and nested units, with cardholder and blank cards for tenant's identification within each compartment.
  - 6. Snap-on Trim: Fabricated from same material and finish as compartment doors.
  - 7. Concealed Components and Mounting Frames: Aluminum or steel sheet with manufacturer's standard finish.
  - 8. Exposed Aluminum Finish: Finish surfaces exposed to view as follows:
    - a. Anodic Finish: Clear

#### 2.3 ACCESSORIES

A. Key Keeper : Single compartment with door; interior compartment size not less than 4-3/4 inches wide by 2-1/4 inches high by 1-1/2 inches deep (121 mm wide by 57 mm high by 38 mm deep), USPS approved.

- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - a. Mailboxes.com
  - b. <u>Auth-Florence Manufacturing; a Florence company</u>.
  - c. <u>Bommer Industries, Inc</u>.
  - d. Jensen Industries.
  - e. <u>Knox Company</u>.
  - f. <u>Salsbury Industries</u>.
- 2. Mounting: Surface mounted.
- 3. Style: Compartment door extending full width and height of unit, with no exposed frame.
- 4. Type of Operation: Loose key in box
- 5. Door Lock: Door prepared to receive lock furnished by local postmaster.
- 6. Exposed Material and Finish: Exposed surfaces fabricated from same material and finish as adjacent mail receptacles.
- 7. Exposed Material and Finish: Steel, powder-coated finish.
- B. Key Cabinet : Wall-mounted, steel cabinet with pivoting, key-holding panels and side-hinged door equipped with five-pin tumbler, cylinder door lock and concealed, full-length flush hinge. Finish cabinet, panels, and door with baked-enamel or powder-coated finish. Provide key control system consisting of key-holding hooks, labels, two sets of key tags with self-locking key holders, key-gathering envelopes, and temporary and permanent markers.
  - 1. Capacity: Keys for 150 percent of the number of mail-receptacle locks.
  - 2. Cross-Index System: Index cards for recording key information. Include three receipt forms for each key-holding hook.
  - 3. Baked-Enamel or Powder-Coated Finish: Color as indicated by manufacturer's designations.

# 2.4 FABRICATION

- A. Form postal specialties to required shapes and sizes, with true lines and angles, square, rigid, and without warp, and with metal faces flat and free of dents or distortion. Make exposed metal edges and corners free of sharp edges and burrs and safe to touch.
- B. Preassemble postal specialties in shop to greatest extent possible to minimize field assembly.
- C. Form joints exposed to weather to exclude water penetration.
- D. Where dissimilar metals will contact each other, protect against galvanic action by painting contact surfaces with bituminous coating or by applying other permanent separation.

# PART 3 - EXECUTION

# 3.1 INSTALLATION

- A. General:
  - 1. Where dissimilar metals will be in permanent contact with each other, protect against galvanic action by painting contact surfaces with bituminous coating or by applying other permanent separation.
  - 2. Where aluminum will contact grout, concrete, masonry, or wood, protect against corrosion by painting contact surfaces with bituminous coating.
  - 3. Final acceptance of postal specialties depends on compliance with USPS requirements.
- B. Horizontal Mail Receptacles: Install horizontal mail receptacles with center of tenant-door lock cylinders and bottom of compartments at the maximum and minimum heights above finished floor established by USPS and manufacturer's written instructions.
- C. Key Keeper: Install per Owner's requirements.

# 3.2 FIELD QUALITY CONTROL

- A. Arrange for USPS personnel to examine and test postal specialties after they have been installed according to USPS regulations.
- B. Obtain written final approval from USPS postmaster that authorizes mail collection for the served installation.

# SECTION 105610 - CLOSET SPECIALTIES

# PART 1 – GENERAL

#### 1.1 SUMMARY

- A. This section includes vinyl coated wire shelving and steel coat rod produced by single manufacturer for entire project.
  - 1. Laundry Room closet shelving shall be vinyl coated wire shelving, unless noted otherwise.
  - 2. Bedroom closet shelving shall be of solid finish lumber and as installed as indicated within the drawings.

### 1.2 SUBMITTALS

- A. Product data for each type of product specified.
- B. WARRANTY: Provide manufacturer's written 10 year warranty against any defects in material and workmanship.

#### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- A. A.Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Closet Maid (SuperSlide Basis of Design)
  - 2. Schulte
  - 3. Shelfco, Inc.

#### 2.2 PRODUCTS

A. MATERIALS: Vinyl coated wire shelving shall be constructed of C1008 cold drawn basic steel wire, 100,000 psi tensile strength. Deck wires .116 dia. shall be spaced on 1" centers and shall be resistance welded to main rib wires, .225 diameter (.225 dia. + .3125 dia. for closet rod) in accordance with RMWA welding standards.

Provide in sizes as required for application indicated on the drawings.

- B. FINISH: Color: White vinyl.
- C. COATING: Wire shelving shall be thoroughly cleaned in detergent solutions, iron phosphated and then primed with a special primer for the purpose of insuring total adhesion of the vinyl material to the steel wire. Vinyl coating shall be of a non-exudating formula PVC, applied by fluidized, bed process to a thickness of 7-11 mills. Vinyl coating shall bridge intersections of the welded cross wires to provide a continuous coating. Elasticity of

the protective coating shall be sufficient to prevent chipping, and cracking of the protective finish.

D. LOAD CAPACITY: Shelves shall withstand a static load of 75 pounds per square foot. Installed as per manufacturers specification.

# PART 3 - EXECUTION

- 3.1 INSTALLATION
  - A. GENERAL: Comply with manufacturer's instructions and recommendations.
  - B. MOUNTING HARDWARE: Components shall provide for shelving installations to drywall without requiring mounting to concealed wall structure members.

Support brackets shall be made of 18 ga. sheet metal and polyester coated. They shall be used so that spans do not exceed 3'-6" on the shelf-closet/rod and 4'-0" on shelf-storage/linen.

Plastic hardware shall be manufactured of engineering plastic and shall comply with the shelf load capacity.

# SECTION 113100 - RESIDENTIAL APPLIANCES

# PART 1 - GENERAL

# 1.1 SUMMARY

- A. Section Includes:
  - 1. Residential appliances.

#### 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Product certificates.
- C. Warranties: Sample of special warranties.

#### 1.3 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

#### 1.4 WARRANTY

- A. Special Warranties: Manufacturer's standard form in which manufacturer agrees to repair or replace residential appliances or components that fail in materials or workmanship within specified warranty period.
  - 1. Warranty Period: One year from date of date of Substantial Completion.

#### PART 2 - PRODUCTS

- 2.1 Appliances will be Owner selected. The specifications for the products below are to be used as a basis of design. Coordinate product install and electrical requirements.
  - A. <u>Manufacturers</u>: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - 1. Whirlpool Corporation (Basis of Design).
    - 2. Amana, Inc.
    - 3. General Electric Company (GE).
    - 4. General Electric Company (Hotpoint).
    - 5. Sears Brands LLC (Kenmore).

# 2.2 RANGES

- A. Electric Range; Freestanding range with one oven.
  - 1. Reference Product: Whirlpool Appliances: Model # AER5523XAB.
  - 2. Location: All dwelling units except designated accessible units.

# 2.3 MICROWAVE OVENS

- A. Microwave Oven; Over the Range mounted with recirculating venting system.
  - 1. Reference Product: Whirlpool Appliances: Model # AMV1150VAB.
  - 2. Location; All dwelling units except designated accessible units.

# 2.4 REFRIGERATOR/FREEZERS

- A. Refrigerator/Freezer; Two-door refrigerator w/ top freezer.
  - 1. Reference Product: Whirlpool Appliances: Model # W8TXNGMWB.
  - 2. Location; All dwelling units and Clubhouse break room.
- B. Under Counter Beverage Cooler (at Clubhouse, Energy Star Rated)
  - 1. Reference Product: GE Appliances Model # GVS 048 BDWSS
  - 2. Location; Clubhouse.

# 2.5 DISHWASHERS

- A. Dishwasher;
  - 1. Reference Product: Whirlpool Appliances: Model #ADB1100AWB.
  - 2. Location: All dwelling units.
- B. Coordinate pig-tail or plug end electrical requirements with field conditions prior to purchase.

# 2.6 WASTE DISPOSAL UNITS

- A. Waste Disposal Unit;
  - 1. Reference Product: Whirlpool Appliances: Model # GC 2000 XE.
  - 2. Location: All residential dwelling units, installed at Kitchen Sink.

# 2.7 CLOTHES WASHERS AND DRYERS

- A. Clothes Washer;
  - 1. Reference Product: Whirlpool Appliances Model #WTW 4800 XQ.
  - 2. Location: All dwelling units.

# SUMMER BAY II APARTMENTS – LAKE COUNTY, FL FK #5389

- B. Clothes Dryer;
  - 1. Reference Product: Whirlpool Appliances Model # WED 4800 XQ (Energy Star Rated)
  - 2. Location: All dwelling units.

# PART 3 - EXECUTION

#### 3.1 INSTALLATION, GENERAL

- A. Built-in Equipment: Securely anchor units to supporting cabinets or countertops with concealed fasteners. Verify that clearances are adequate for proper functioning and that rough openings are completely concealed.
- B. Freestanding Equipment: Place units in final locations after finishes have been completed in each area. Verify that clearances are adequate to properly operate equipment.
- C. Range Anti-Tip Device: Install at each range according to manufacturer's written instructions.
- D. Utilities: Comply with plumbing and electrical requirements.

# SECTION 122113 - HORIZONTAL LOUVER BLINDS

# PART 1 - GENERAL

# 1.1 SUMMARY

- A. Section Includes:
  - 1. Horizontal louver blinds with wood and polymer slats.

#### 1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

# 1.3 CLOSEOUT SUBMITTALS

A. Maintenance data.

#### 1.4 QUALITY ASSURANCE

- A. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.
  - 1. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Owner specifically approves such deviations in writing.
  - 2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

#### PART 2 - PRODUCTS

#### 2.1 HORIZONTAL LOUVER BLINDS

- A. Manufacturers: As selected by Owner.
- B. Wood Slats: Hardwood.
  - 1. Width: 2 inches (51 mm)
  - 2. Profile: Flat
  - 3. Corners: Square.
  - 4. Flame-Resistance Rating: Comply with NFPA 701; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
- C. Polymer Slats: Lead free, UV stabilized.
- 1. Width: 2 inches (51 mm).
- 2. Profile: Manufacturer's standard.
- 3. Flame-Resistance Rating: Comply with NFPA 701; testing by a qualified
- D. Colors, Textures, Patterns, and Gloss:
  - 1. Slats: As selected by Owner.

# 2.2 HORIZONTAL LOUVER BLIND FABRICATION

A. Product Safety Standard: Fabricate horizontal louver blinds to comply with WCMA A 100.1 including requirements for corded, flexible, looped devices; lead content of components; and warning labels.

# PART 3 - EXECUTION

# 3.1 INSTALLATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, operational clearances, and other conditions affecting performance.
  - 1. Proceed with installation only after unsatisfactory conditions have been corrected.
- B. Install horizontal louver blinds level and plumb, aligned and centered on openings, and aligned with adjacent units according to manufacturer's written instructions.
  - 1. Locate so exterior slat edges are not closer than 1 inch (25 mm) from interior faces of glass and not closer than 1-1/2 inches (38 mm) from interior faces of glazing frames through full operating ranges of blinds.
  - 2. Install mounting and intermediate brackets to prevent deflection of headrails.
  - 3. Install with clearances that prevent interference with adjacent blinds, adjacent construction, and operating hardware of glazed openings, other window treatments, and similar building components and furnishings.
- C. Adjust horizontal louver blinds to operate free of binding or malfunction through full operating ranges.
- D. Clean horizontal louver blind surfaces after installation according to manufacturer's written instructions.

# SECTION 123530 - RESIDENTIAL CASEWORK

# PART 1 - GENERAL

# 1.1 SUMMARY

A. Section includes kitchen and vanity cabinets.

## 1.2 DEFINITIONS

A. MDF: Medium-density fiberboard.

## 1.3 ACTION SUBMITTALS

- A. Product Data: For the following:
  - 1. Cabinets.
  - 2. Cabinet hardware.
- B. Shop Drawings: Include plans, elevations, details, and attachments to other work. Show materials, finishes, filler panels, and hardware.

# 1.4 INFORMATIONAL SUBMITTALS

A. Product Certificates: For casework.

## 1.5 CABINETS

- A. Products: Subject to compliance with requirements, provide one of the following:
  - 1. Grandview Products Company, Inc.
  - 2. Saco Industries, Inc.
  - 3. Armstrong Cabinet Products.
  - 4. Kraft Made Cabinets.
  - 5. Carbide Industries, Inc.
- B. Quality Standard: Provide cabinets that comply with KCMA A161.1.
  - 1. KCMA Certification: Provide cabinets with KCMA's "Certified Cabinet" seal affixed in a semiexposed location of each unit and showing compliance with the above standard.
- C. Face Style: Full overlay; door and drawer faces fully cover cabinet fronts. Face design to be determined by Owner/Interior Designer.
- D. Cabinet Style: Face frame.

- E. Door and Drawer Fronts: Solid-wood stiles and rails, 3/4 inch (19 mm) thick, with 1/4-inch-(6.4-mm-) thick, veneer-faced plywood center panels.
- F. Face Frames: 3/4-by-1-5/8-inch (19-by-41-mm) solid wood with glued mortise and tenon or doweled joints.
- G. Exposed Cabinet End Finish: Manufacturer's standard.
- H. Cabinet End Construction: 1/2-inch- (12.7-mm-) thick particleboard or 1/2-inch- (12.7-mm-) thick plywood.
- I. Cabinet Tops and Bottoms: 1/2-inch- (12.7-mm-) thick particleboard or 1/2-inch- (12.7-mm-) thick plywood, fully supported by and secured in rabbets in end panels, front frame, and back rail.
- J. Back, Top, and Bottom Rails: 3/4-by-2-1/2-inch (19-by-63-mm) solid wood, interlocking with end panels and rabbeted to receive top and bottom panels. Back rails secured under pressure with glue and with mechanical fasteners.
- K. Wall-Hung-Unit Back Panels: 3/16-inch- (4.8-mm-) thick plywood fastened to rear edge of end panels and to top and bottom rails.
- L. Base-Unit Back Panels: 3/16-inch- (4.8-mm-) thick plywood fastened to rear edge of end panels and to top and bottom rails.
- M. Front Frame Drawer Rails: 3/4-by-1-1/4-inch (19-by-32-mm) solid wood mortised and fastened into face frame.
- N. Drawers: Fabricate with exposed fronts fastened to subfront with mounting screws from interior of body.
  - 1. Join subfronts, backs, and sides with glued rabbeted joints supplemented by mechanical fasteners.
  - 2. Subfronts, Backs, and Sides: 1/2-inch- (12.7-mm-) thick solid wood or plywood.
  - 3. Bottoms: 3/16-inch- (4.8-mm-) thick plywood or hardboard.
- O. Shelves: 5/8-inch- (16-mm-) thick particleboard or 5/8-inch- (16-mm-) thick plywood.
- P. Joinery: Rabbet backs flush into end panels and secure with concealed mechanical fasteners. Connect tops and bottoms of wall cabinets and bottoms and stretchers of base cabinets to ends and dividers with mechanical fasteners. Rabbet tops, bottoms, and backs into end panels.
- Q. Factory Finishing: Finish cabinets at factory. Defer only final touchup until after installation.

# 1.6 CABINET MATERIALS

- A. Exposed Materials:
  - 1. Exposed Wood Species: As selected by Owner.

# SUMMER BAY II APARTMENTS – LAKE COUNTY, FL FK #5389

- 2. Solid Wood: Clear hardwood lumber of species indicated, free of defects.
- 3. Plywood: Hardwood plywood with face veneer of species indicated, with Grade A faces and Grade C backs of same species as faces.
  - a. Edge band exposed edges with minimum 1/8-inch- (3-mm-) thick, solid-wood veneer edging of same species as face veneer.
- B. Semiexposed Materials: Unless otherwise indicated, provide the following:
  - 1. Solid Wood: Sound hardwood lumber, selected to eliminate appearance defects. Same species as exposed surfaces or stained to be compatible with exposed surfaces.
  - 2. Plywood: Hardwood plywood with Grade C faces and not less than Grade 3 backs of same species as faces. Face veneers of same species as exposed surfaces or stained to be compatible with exposed surfaces.
- C. Concealed Materials: Solid wood or plywood, of any hardwood or softwood species, with no defects affecting strength or utility; particleboard; medium-density fiberboard; or hardboard.

## 1.7 CABINET HARDWARE

- A. General: Manufacturer's standard units complying with BHMA A156.9, of type, size, style, material, and finish as selected by Owner from manufacturer's full range.
- B. Pulls: Back-mounted decorative pulls as selected by Owner
- C. Hinges: Concealed European-style self-closing hinges.
- D. Drawer Guides: Epoxy-coated-metal, self-closing drawer guides; designed to prevent rebound when drawers are closed; with nylon-tired, ball-bearing.

# PART 2 - EXECUTION

## 2.1 INSTALLATION

- A. Install cabinets with no variations in flushness of adjoining surfaces; use concealed shims. Where cabinets abut other finished work, scribe and cut for accurate fit. Provide filler strips, scribe strips, and moldings in finish to match cabinet face.
- B. Install cabinets without distortion so doors and drawers fit openings, are aligned, and are uniformly spaced. Complete installation of hardware and accessories as indicated.
- C. Install cabinets and countertop level and plumb to a tolerance of 1/8 inch in 8 feet (3 mm in 2.4 m).
- D. Fasten cabinets to adjacent units and to backing.
  - 1. Fasten wall cabinets through back, near top and bottom, at ends and not less than 24 inches (600 mm) o.c. with No. 10 wafer-head screws sized for 1-inch (25-mm) penetration into wood framing, blocking, or hanging strips.

## 2.2 ADJUSTING AND CLEANING

A. Adjust cabinets and hardware so doors and drawers are centered in openings and operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

# SECTION 123640 - STONE COUNTERTOPS

## PART 1 - GENERAL

# 1.1 SUMMARY

A. Section includes stone countertops.

## 1.2 ACTION SUBMITTALS

- A. Product Data: For each variety of stone, stone accessory, and manufactured product.
- B. Shop Drawings: Include plans, sections, details, and attachments to other work.
- C. Samples: Provide 4" x 4" sample of each color

## 1.3 QUALITY ASSURANCE

A. Installer Qualifications: Fabricator of stone countertops.

## 1.4 FIELD CONDITIONS

A. Field Measurements: Verify dimensions of construction to receive stone countertops by field measurements before fabrication.

# PART 2 - PRODUCTS

- 2.1 GRANITE
  - A. Granite: Comply with ASTM C 615.
  - B. Description: Uniform, medium-grained, stone without veining.
  - C. Available Varieties and Sources: Subject to compliance with requirements, stone varieties that may be incorporated into the Work include, but are not limited to, the following:
  - D. Variety and Source: Subject to compliance with requirements, provide the following:
    - 1. Stone products indicated on drawings as Basis of Design.
  - E. Cut stone from contiguous, matched slabs in which natural markings occur.
  - F. Finish: Polished.

G. Match selection indicated with submitted samples for color, finish, and other stone characteristics relating to aesthetic effects.

# 2.2 ADHESIVES, GROUT, SEALANTS, AND STONE ACCESSORIES

- A. General: Use only adhesives formulated for stone and ceramic tile and recommended by their manufacturer for the application indicated.
- B. Water-Cleanable Epoxy Adhesive: ANSI A118, with a VOC content of 65 g/L or less.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Bonsal, W. R. Company.
    - b. Bonstone Materials Corporation.
    - c. C-Cure.
    - d. Custom Building Products.
    - e. Laticrete International, Inc.
    - f. MAPEI Corp.
    - g. Summitville Tiles, Inc.
- C. Stone Adhesive: Two-part epoxy or polyester adhesive, formulated specifically for bonding stone to stone, with an initial set time of not more than two hours at 70 deg F (21 deg C), and with a VOC content of 65 g/L or less.
  - 1. Color: Clear
  - 2. Products: Subject to compliance with requirements, provide one of the following:
    - a. Epoxy Adhesive: Akemi North America; Akepox.
    - b. Epoxy Adhesive: Axson North America, Inc., Wood & Stone Company; Akabond Epoxy.
    - c. Epoxy Adhesive: Bonstone Materials Corporation; Touchstone Ratio Pac Clear Gel Epoxy.
    - d. Epoxy Adhesive: Bonstone Materials Corporation; Touchstone Last Patch.
    - e. Polyester Adhesive: Akemi North America; Platinum Clear Polyester Adhesive.
    - f. Polyester Adhesive: Axson North America, Inc., Wood & Stone Company; Wood & Stone Polyester.
    - g. Polyester Adhesive: Bonstone Materials Corporation; Gripstone L-200KG.
- D. Sealant for Countertops: Manufacturer's standard sealant of characteristics indicated below that complies with applicable requirements in Division 07 Section "Joint Sealants" and will not stain the stone it is applied to.
- E. Stone Cleaner: Cleaner specifically formulated for stone types, finishes, and applications indicated, as recommended by stone producer and, if a sealer is specified, by sealer manufacturer. Do not use cleaning compounds containing acids, caustics, harsh fillers, or abrasives.
- F. Stone Sealer: Colorless, stain-resistant sealer that does not affect color or physical properties of stone surfaces, as recommended by stone producer for application indicated.

- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Bostik Findley Inc.
  - b. Custom Building Products.
  - c. Hillyard, Inc.
  - d. HMK Stone Care System.
  - e. Miracle Sealants Company.
  - f. Stone Care International Inc.
  - g. Summitville Tiles, Inc.

## 2.3 STONE FABRICATION

- A. Select stone for intended use to prevent fabricated units from containing cracks, seams, and starts that could impair structural integrity or function.
- B. Fabricate stone countertops in sizes and shapes required to comply with requirements indicated.
  - 1. Dress joints straight and at right angle to face unless otherwise indicated.
  - 2. Fabricate molded edges with machines having abrasive shaping wheels made to reverse contour of edge profile to produce uniform shape throughout entire length of edge and with precisely formed arris slightly eased to prevent snipping, and matched at joints between units. Form corners of molded edges as indicated with outside corners slightly eased unless otherwise indicated.
  - 3. Finish exposed faces of stone to comply with requirements indicated for finish of each stone type required and to match approved Samples and mockups. Provide matching finish on exposed edges of countertops, splashes, and cutouts.
- C. General: Comply with recommendations in MIA's "Dimension Stone Design Manual VI."
- D. Nominal Thickness: Provide thickness indicated, but not less than [3/4 inch (20 mm)] [7/8 inch (22 mm)] [1-1/4 inches (32 mm)]. Gage backs to provide units of identical thickness.
- E. Splashes: Provide 3/4-inch- (20-mm-) thick backsplashes and end splashes unless otherwise indicated.
- F. Joints: Fabricate countertops without joints.
- G. Joints: Fabricate countertops in sections for joining in field, with joints at locations indicated and 1/16 inch (1.5 mm) in width.
- H. Cutouts and Holes:
  - 1. Undercounter Fixtures: Make cutouts for undercounter fixtures in shop using template or pattern furnished by fixture manufacturer. Form cutouts to smooth, even curves.
  - 2. Counter-Mounted Fixtures: Prepare countertops in shop for field cutting openings for counter-mounted fixtures. Mark tops for cutouts and drill holes at corners of cutout locations. Make corner holes of largest radius practical.

# PART 3 - EXECUTION

## 3.1 INSTALLATION OF COUNTERTOPS

- A. General: Install countertops over plywood subtops with full spread of water-cleanable epoxy adhesive.
- B. General: Install countertops by adhering to supports with water-cleanable epoxy adhesive.
- C. Set stone to comply with requirements indicated. Shim and adjust stone to locations indicated, with uniform joints of widths indicated and with edges and faces aligned according to established relationships
- D. Space joints with 1/16-inch (1.5-mm) gap for filling with sealant. Use temporary shims to ensure uniform spacing.
  - 1. Clamp units to temporary bracing, supports, or each other to ensure that countertops are properly aligned and joints are of specified width.
- E. Complete cutouts not finished in shop. Mask areas of countertops adjacent to cutouts to prevent damage while cutting. Use power saws with diamond blades to cut stone. Make cutouts to accurately fit items to be installed, and at right angles to finished surfaces unless beveling is required for clearance. Ease edges slightly to prevent snipping.
- F. Install backsplashes and end splashes by adhering to wall with water-cleanable epoxy adhesive. Leave 1/16-inch (1.5-mm) gap between countertop and splashes for filling with sealant. Use temporary shims to ensure uniform spacing.
- G. Grout joints to comply with ANSI A108.10. Remove temporary shims before grouting. Tool grout uniformly and smoothly with plastic tool.
- H. Apply sealant to joints and gaps; comply with Section 079200 "Joint Sealants." Remove temporary shims before applying sealant.

## 3.2 ADJUSTING AND CLEANING

- A. In-Progress Cleaning: Clean countertops as work progresses. Remove adhesive, grout, mortar, and sealant smears immediately.
- B. Clean stone countertops no fewer than six days after completion of sealant installation, using clean water and soft rags. Do not use wire brushes, acid-type cleaning agents, cleaning compounds with caustic or harsh fillers, or other materials or methods that could damage stone.
- C. Sealer Application: Apply stone sealer to comply with stone producer's and sealer manufacturer's written instructions.

# SECTION 123661 - SIMULATED STONE COUNTERTOPS

# PART 1 - GENERAL

# 1.1 SUMMARY

- A. Section Includes:
  - 1. Solid-surface-material countertops and backsplashes.
  - 2. Quartz agglomerate countertops and backsplashes.

# 1.2 ACTION SUBMITTALS

- A. Product Data: For countertop materials.
- B. Shop Drawings: For countertops. Show materials, finishes, edge and backsplash profiles, methods of joining, and cutouts for plumbing fixtures.
- C. Samples: For each type of material exposed to view.

## PART 2 - PRODUCTS

# 2.1 SOLID-SURFACE-MATERIAL COUNTERTOPS

- A. Configuration: Provide countertops with the following front and backsplash style:
  - 1. Front: Beveled, 3/4-inch (19-mm) eased
  - 2. Backsplash: Straight, slightly eased at corner
  - 3. Endsplash: Matching backsplash.
- B. Countertops: 1/2-inch- (12.7-mm-) thick, solid surface material with front edge built up with same material.
- C. Backsplashes: 3/4-inch- (19-mm-) thick, solid surface material.

# 2.2 QUARTZ AGGLOMERATE COUNTERTOPS

- A. Configuration: Provide countertops with the following front and backsplash style:
  - 1. Front: Beveled, 3/4-inch (19-mm) eased.
  - 2. Backsplash: Straight, slightly eased at corner.
  - 3. Endsplash: Matching backsplash.
- B. Countertops: 1/2-inch- (12.7-mm-) thick, quartz agglomerate with front edge built up with same material.

C. Backsplashes: 3/4-inch- (19-mm-) thick, quartz agglomerate.

# 2.3 COUNTERTOP MATERIALS

- A. Particleboard: ANSI A208.1, Grade M-2, made with binder containing no urea formaldehyde.
- B. Plywood: Exterior softwood plywood complying with DOC PS 1, Grade C-C Plugged, touch sanded.
- C. Solid Surface Material: Homogeneous solid sheets of filled plastic resin complying with ANSI SS1.
  - 1. <u>Manufacturers</u>: Subject to compliance with requirements, provide products by one of the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. <u>Avonite Surfaces</u>.
    - b. <u>E. I. du Pont de Nemours and Company</u>.
    - c. <u>Formica Corporation</u>.
    - d. <u>Meganite Inc</u>.
    - e. <u>Wilsonart International</u>.
  - 2. Colors and Patterns: As selected by Owner from manufacturer's full range.
- D. Quartz Agglomerate: Solid sheets consisting of quartz aggregates bound together with a matrix of filled plastic resin and complying with the "Physical Characteristics of Materials" Article of ANSI SS1.
  - 1. <u>Manufacturers</u>: Subject to compliance with requirements, provide products by one of the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. <u>Cambria</u>.
    - b. <u>Cosentino USA</u>.
    - c. <u>E. I. du Pont de Nemours and Company</u>.
    - d. <u>Meganite Inc</u>.
  - 2. Colors and Patterns: As selected by Owner from manufacturer's full range.

# PART 3 - EXECUTION

# 3.1 INSTALLATION

A. Fasten countertops by screwing through corner blocks of base units into underside of countertop. Align adjacent surfaces and, using adhesive in color to match countertop, form seams to comply with manufacturer's written instructions. Carefully dress joints smooth, remove surface scratches, and clean entire surface.

# SECTION 313116 - TERMITE CONTROL

# PART 1 - GENERAL

# 1.1 SUMMARY

- A. Section Includes:
  - 1. Soil treatment with termiticide.

#### 1.2 SUBMITTALS

- A. Product Data: For each type of product indicated. Include the EPA-Registered Label for termiticide products.
- B. Product certificates.
- C. Soil Treatment Application Report: Include the following:
  - 1. Date and time of application.
  - 2. Moisture content of soil before application.
  - 3. Termiticide brand name and manufacturer.
  - 4. Quantity of undiluted termiticide used.
  - 5. Dilutions, methods, volumes used, and rates of application.
  - 6. Areas of application.
  - 7. Water source for application.
- D. Warranties: Sample of special warranties.

## 1.3 QUALITY ASSURANCE

- A. Installer Qualifications: A specialist who is licensed according to regulations of authorities having jurisdiction to apply termite control treatment and products in jurisdiction where Project is located and who employs workers trained and approved by manufacturer to install manufacturer's products.
- B. Regulatory Requirements: Formulate and apply termiticides and termiticide devices according to the EPA-Registered Label.

#### 1.4 **PROJECT CONDITIONS**

A. Environmental Limitations: To ensure penetration, do not treat soil that is water saturated or frozen. Do not treat soil while precipitation is occurring. Comply with requirements of the EPA-Registered Label and requirements of authorities having jurisdiction.

# SUMMER BAY II APARTMENTS – LAKE COUNTY, FL FK #5389

B. Coordinate soil treatment application with excavating, filling, grading, and concreting operations. Treat soil under footings, grade beams, and ground-supported slabs before construction.

## 1.5 WARRANTY

- A. Soil Treatment Special Warranty: Manufacturer's standard form, signed by Applicator and Contractor, certifying that termite control work, consisting of applied soil termiticide treatment, will prevent infestation of subterranean termites. If subterranean termite activity or damage is discovered during warranty period, re-treat soil and repair or replace damage caused by termite infestation.
  - 1. Warranty Period: 5 years from date of Substantial Completion.

## 1.6 MAINTENANCE SERVICE

A. Continuing Service: Beginning at Substantial Completion, provide 12 months' continuing service including monitoring, inspection, and re-treatment for occurrences of termite activity. Provide a standard continuing service agreement. State services, obligations, conditions, terms for agreement period, and terms for future renewal options.

## PART 2 - PRODUCTS

# 2.1 SOIL TREATMENT

- A. Termiticide: Provide an EPA-Registered termiticide, complying with requirements of authorities having jurisdiction, in an aqueous solution formulated to prevent termite infestation. Provide quantity required for application at the label volume and rate for the maximum termiticide concentration allowed for each specific use, according to product's EPA-Registered Label.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. BASF Corporation, Agricultural Products; Termidor.
    - b. Bayer Environmental Science; Premise 75.
    - c. FMC Corporation, Agricultural Products Group; Prevail.
    - d. Syngenta; Demon TC.
  - 2. Service Life of Treatment: Soil treatment termiticide that is effective for not less than five (5) years against infestation of subterranean termites.

# PART 3 - EXECUTION

## 3.1 APPLICATION, GENERAL

A. General: Comply with the most stringent requirements of authorities having jurisdiction and with manufacturer's EPA-Registered Label for products.

## 3.2 APPLYING SOIL TREATMENT

- A. Application: Mix soil treatment termiticide solution to a uniform consistency. Provide quantity required for application at the label volume and rate for the maximum specified concentration of termiticide, according to manufacturer's EPA-Registered Label, to the following so that a continuous horizontal and vertical termiticidal barrier or treated zone is established around and under building construction. Distribute treatment evenly.
  - 1. Slabs-on-Grade: Under ground-supported slab construction, including footings, building slabs, and attached slabs as an overall treatment. Treat soil materials before concrete footings and slabs are placed.
  - 2. Foundations: Adjacent soil, including soil along the entire inside perimeter of foundation walls; along both sides of interior partition walls; around plumbing pipes and electric conduit penetrating the slab; around interior column footers, piers, and chimney bases; and along the entire outside perimeter, from grade to bottom of footing. Avoid soil washout around footings.
  - 3. Masonry: Treat voids.
  - 4. Penetrations: At expansion joints, control joints, and areas where slabs will be penetrated.
- B. Avoid disturbance of treated soil after application. Keep off treated areas until completely dry.
- C. Protect termiticide solution, dispersed in treated soils and fills, from being diluted until groundsupported slabs are installed. Use waterproof barrier according to EPA-Registered Label instructions.
- D. Post warning signs in areas of application.
- E. Reapply soil treatment solution to areas disturbed by subsequent excavation, grading, landscaping, or other construction activities following application.