

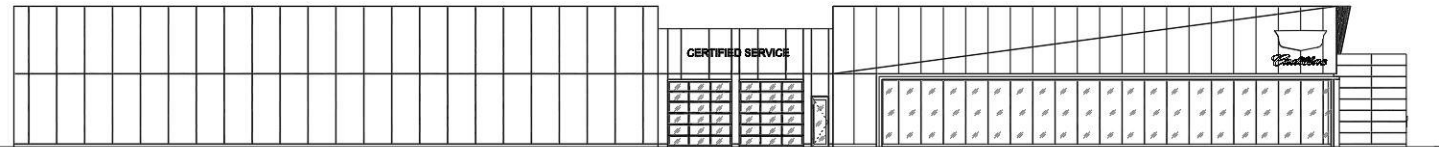
DIVISION 0 THROUGH 16

SPECIFICATIONS

for

Erdman Cadillac Facility
I-95 & Highway 520
Cocoa, Florida 32926

Ha. Project No. 22026



February 15, 2024



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GENERAL SPECIFICATIONS FOR
THE CONSTRUCTION OF
Erdman Cadillac
I-95 & S.R. 520
February 15, 2024
Ha. Project No. 22026

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SECTION 00020j
INVITATION TO BID

0.1 INVITATION

- A. DATE: February 15, 2024
B. TO: Invited Bidders
C. FROM: Erdman Auto Group

0.2 PROJECT

- A. TITLE **Erdman Cadillac**
4750 Highway 520
Cocoa, Florida 32926

THE OWNER REQUESTS THAT PLAN ROOMS ARE NOT TO BE GIVEN THE BIDDING DOCUMENTS, NOR CONTACTED CONCERNING THIS PROJECT.

- B. ARCHITECT: Hartmann Architecture, Inc.
4427 W. Kennedy Blvd. / Suite 250
Tampa, Florida 33609
Contact: Richard Hartmann, AIA
Architect-of-Record
Phone: (813) 690-9800
Email: Richard@hartmannarchitecture.com
Contact: Rob Kasza, Project Manager
Phone: (813) 390-9922
Email: rob@hartmannarchitecture.com

- C. DESCRIPTION: Summary of Work

This Project consists of a + 19,000 SF, single-story, Cadillac Automotive Dealership, constructed of Concrete Tilt-Panels, steel bar joists, metal decking, poly-iso board insulation and a TPO membrane roofing system, along with interior metal stud partitions and GWB, HVAC, plumbing, lighting, and power. The entire facility will be equipped with an Automatic Fire Sprinkler System. The facility has a Service Department with Tech support spaces, a Parts Department with an upper Mezzanine Level, a 2-Lane Service Reception Drive, a Showroom and Offices, a customer Lounge and Restroom facilities. There is also an onsite Dumpster Enclosure, and associated sitework, site lighting and landscaping.

- D. OWNER-FURNISHED ITEMS: The Owner will furnish/install the following items via their Vendors, but the coordination and scheduling of the Vendors work is the responsibility of the GC.

- a) Appliances (Refrigerator, Microwave Oven, Vending Machine, etc.)
b) Security System (GC provides back boxes and stub up conduits).
c) Telephone System and wiring (GC provides site conduits and stub up conduits).
d) IT Data System and wiring (GC provides back boxes and stub up conduits).

0.3 BIDDER QUALIFICATIONS

- A. Bidders have been pre-selected by the Owner. The Owner will be accepting Bids only from Invited Bidders.
- C. Bidders are requested to inform Architect within ten (10) days of Date of Invitation to Bid whether they wish to bid.

0.4 BIDDING CONDITIONS

- A. Type of Bid: Stipulated sum. Bids shall be valid for 30 days from the time of Bid.
- B. Location of Bid Receiver: Email Bids to Tracy Howard at thoward@mikeerdmanmotors.com. The Bidder is required to call Tracy Howard at (321) 453-1313 ext. 2218 to confirm their Bid was received after emailing it.
- C. Bid Time and Date: **Thursday, March 21, 2023 @ 4:00 pm (Eastern Time)**

The following items are to be submitted to the email above within two (2) business days (by Monday, March 25th) of Bid Date/ Time, if not included with Bid Form 00300:

- 1) Supplemental Bid Form 00301j.
- D. Contract Form: AIA Owner-Contractor Agreement A101/2020, referencing the AIA A201/2020 General Conditions will serve as the Agreement for the Project. Monthly payments will be made based on the progress of the work with a 10% Retainage, using AIA Forms G702/703.
- E. Performance Bond: A Performance and Material Payment Bond: **Not required.**
- F. Bid Opening: Private.
- G. Bid Security: **Not required.**
- H. Bid Copies: The complete set of Bid Documents will be provided to each Bidding General Contractor via an email to a **DropBox Link**.
- I. The Owner reserves the right to reject or accept any or all Bids, or with the coordination of the General Contractor, to enter into separate negotiated subcontracts. The Owner reserves the right to waive any alleged breach of technicality.
- J. The Owner reserves the right to modify the Contract Documents and re-bid the project, if necessary, to meet the Owner's budgetary requirements.
- K. Anticipated Construction Schedule: The GC will commit to a completion date and submit the Calendar Days for construction on the Bid Form.

0.5 DOCUMENTS

- A. No hard copy paper documents will be issued.

- B. Any Addenda or RFI Responses issued by the Architect will be provided to the Bidders via email with confirmation receipt requested. RFI's are to be fully grouped together as one WORD Document. The Architect will issue responses to the RFI's to the Bidding General Contractors. The RFI Responses will subsequently be incorporated into the Bid Documents via an Addendum.
- C. All Sub-Contractors are required to review and will be bound to Division 1 requirements.
- D. All Sub-Contractors will be bound to all references made to their trades throughout the entire set of Contract Documents. They must review all Specification Sections and Drawings which may contain cross reference coordination notes that may not be referenced on their specific Specification Sections or Drawings.
- E. **The Owner does not allow the use of Plan Rooms during the Bidding process.** All subcontractors should be by invitation only from the GC.

0.6 PRE-BID CONFERENCE

- A. A Pre-Bid Telephone Conference Call will be conducted.
The date for the Pre-Bid Conference Call is tentatively set for Wednesday, March 13th at 10:30 am (EST). It is mandatory that each GC have a representative involved in the Pre-Bid Conference. Call-in info will be issued ahead of the Conference Call.

The Architect will be in attendance, with the Owner's Representative.

The Architect will issue an Agenda for the Pre-Bid Conference several days prior to the Pre-Bid Conference.

The Architect will take notes during the Pre-Bid Conference and will issue them within 24 to 48 hours after the Pre-Bid Conference.

- B. At the time of the Pre-Bid Conference, prospective Bidders and their estimators can discuss with representatives of the Owner and the Architect any questions they may have regarding the project.

0.7 QUESTIONS

- A. The Project RFI's are to be sent only by the Invited General Contractors; they are to be in a WORD Documents and will be accepted via email to:
Richard Hartmann, AIA richard@hartmannarchitecture.com
Rob Kasza, Project Manager rob@hartmannarchitecture.com
- B. Questions and answers will be distributed to all Invited General Bidders via email by Hartmann Architecture, Inc. The deadline for all questions & RFI's will be 4 pm (EST), on **Monday, March 18th, 2024.**

End of Invitation to Bid

SECTION 00100j

TO BIDDERS

1. INSTRUCTIONS TO BIDDERS, AIA Document A701 dated 2020, is hereby referred to and made a part hereof as fully and to the same extent as if copied at length herein. A complete copy may be purchased from the American Institute of Architects, 1735 New York Avenue, NW, Washington, DC 20006, or from your local AIA Chapter Office.

2. **MEMO TO BIDDERS**
 - a. During the bid process, the Invited Contractors shall be diligent in reviewing the Drawings and Project Manual to look for issues, including but not limited to design discrepancies, oversights, errors, missing details, etc. and utilize the RFI process with the Architect to correct and respond before the Bid is submitted. Any such issues not brought up in the RFI process during bid, shall not become a change order during construction.

 - b. The Owner requests that Invited Contractors include a **Bid Summary Sheet** as the cover sheet on the Bid Documents when submitted, to provide cost-saving recommendations to the Owner. Examples of recommendations are a change in construction method, or a change in equipment, or a change in finish detail, etc., which will provide substantial cost savings to the Owner on the project. The Memo shall list the recommendations and the associated price deducted from the base bid should the Owner elect to proceed with a recommendation. The **Bid Summary Sheet** is also the avenue by which the Invited Contractor shall provide any other information contractor believes the Owner should know or consider regarding the project.

END OF SECTION

SECTION 00200

INFORMATION AVAILABLE TO BIDDERS

0.1 GEOTECHNICAL REPORT

- A. The Owner has contracted with the firm of Universal Engineering Sciences, LLC for determination of geotechnical data on the Project site.
- B. The report of this investigation titled Mike Erdman Cadillac – Subsurface Exploration Report dated February 14, 2024 is included and follows this page.

0.2 DISCLAIMER

- A. The Owner and the Architect disclaim any liability for use of or interpretation of data from the reports on the Project.

END OF SECTION



UNIVERSAL ENGINEERING SCIENCES

SUBSURFACE EXPLORATION

Proposed Showroom & Services Buildings
Mike Erdman Cadillac, SR 520
Cocoa, Brevard County, Florida
Universal Project No. 0330.2400021.0000

February 14, 2024

PREPARED FOR:

Mike Erdman Cadillac
4650 Highway 520
Cocoa, Florida 32926

PREPARED BY:

Universal Engineering Sciences, LLC.
820 Brevard Avenue
Rockledge, Florida 32955
(321) 638-0808

Consultants in: Geotechnical Engineering • Environmental Sciences • Construction Materials Testing • Threshold Inspection
Offices in: Orlando • Daytona Beach • Fort Myers • Gainesville • Jacksonville • Ocala • Palm Coast • Rockledge • Sarasota •
Miami • Panama City • Pensacola • Fort Pierce • Tampa • West Palm Beach • Atlanta, GA • Tifton, GA

February 14, 2024

Mike Erdman Cadillac
4650 Highway 520
Cocoa, Florida 32926

Attention: Ms. Tracy Howard

Reference: **Subsurface Exploration**
Proposed Showroom & Services Buildings
Mike Erdman Cadillac, SR 520
Cocoa, Brevard County, Florida
Universal Project No. 0330.2400021.0000

Dear Ms. Howard:

Universal Engineering Sciences, LLC. (Universal) has completed a subsurface exploration at the above referenced site in Cocoa, Brevard County, Florida. Our exploration was authorized by Mr. Michael Erdman of Mike Erdman Cadillac and was conducted as outlined in Universal's Proposal No. 0330.0124.00024. This exploration was performed in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made.

The following report presents the results of our field exploration together with a geotechnical engineering interpretation of those results with respect to the project characteristics as such were provided to us. We have included our general engineering recommendations concerning site preparation procedures and foundation design parameters and our estimates of the typical wet season high groundwater levels at the boring locations.

We appreciate the opportunity to have worked with you on this project and look forward to a continued association. Please do not hesitate to contact us if you should have any questions, or if we may further assist you as your plans proceed.

Sincerely yours,

UNIVERSAL ENGINEERING SCIENCES, LLC

Certificate of Authorization No. 549

Brad Faucett, M.S. P.E.
Regional Engineer
Florida Professional Engineer No. 33123

1 – Addressee (by e-mail)

UES DOCS #2070843

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GBA Document..... Exhibit 1

1.0 INTRODUCTION

Universal Engineering Sciences, LLC. (Universal) has completed a subsurface exploration for the proposed showroom & service buildings at the Mike Erdman Cadillac facility on SR 520 in Cocoa, Brevard County, Florida. Our exploration was authorized by Mr. Michael Erdman of Mike Erdman Cadillac and was conducted as outlined in Universal's Proposal No. 0330.0124.00024. This exploration was performed in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made.

2.0 PROJECT DESCRIPTION

Universal understands from review of a partial information submitted by the client, that the proposed project will include the construction of a series of three (3) interconnected buildings, namely: a Service/Parts Department, a Service Reception building, and a Showroom/Sales building at the Mike Erdman Cadillac facility in Cocoa, Florida. As can be seen on the attached Figure 1, these buildings will range in plan area from 1,744 square feet to 8,880 square feet. Building height will range from one to two stories. We assume that finished first floor levels of the proposed structures will be approximately 1 to 3 feet above presently existing grades.

We assume that the proposed construction will consist of a combination of reinforced concrete, masonry and steel framing. Specific structural details are not yet available; however, based on our previous work with similar structures, we assume that maximum loading conditions will be on the order of 150 kips per column, 6 kips per lineal foot for structural walls, and 150 pounds per square foot for on grade floor slabs.

The recommendations contained in this report are based on the specific assumptions set forth herein. If the building design contemplated for the proposed project is inconsistent with any of our assumptions, then the project owner should contact Universal to determine if our recommendations require revision in any manner. In order to verify that our recommendations are properly interpreted and implemented, Universal should be allowed to review the final design and specifications prior to the start of construction.

3.0 PURPOSE

The purposes of this exploration were:

- to explore and evaluate the subsurface conditions at the site with special attention to potential problems that may hinder the proposed development,
- to provide our estimates of the typical wet season high groundwater levels at the boring locations,
- to provide geotechnical engineering recommendations for site preparation procedures and foundation design parameters for the proposed buildings.

4.0 SITE DESCRIPTION

The subject site is located within Section 26, Township 24 South, Range 35 East in Brevard County, Florida. More specifically, the site is located in the northwestern quadrant of the intersection of SR 520 and I-95 in Cocoa, Florida. At the time of our recent exploration program,

the site was relatively level and had recently been cleared of vegetation, filled, and contoured. The area to the east of the site is traversed by high overhead power lines.

Please note that Universal has performed a previous subsurface exploration of this property as referenced in Project #0330.1900087.0000, Report dated August 2, 2019 when portions of the site were heavily vegetated and development plans were significantly different than currently envisioned. Several of the boring logs from this previous exploration are included in Appendix B of this report and the approximate locations of the previous borings are shown on the attached Figure 1.

4.1 SOIL SURVEY

There are three (3) primary soil types (pre-development) within the area of the project according to the Brevard County Soil Survey (BCSS), dated 1974, (updated using USDA-NCSS SSURGO and STATSGO Soil Survey). A brief description of these soils is shown in the following Table I.

TABLE I
BCSS DESIGNATED SOIL TYPES

Soil Type (Map Symbol)	Brief Description
Anclote sand (An)	Nearly level, very poorly drained sandy soil in marshy depressions in the flatwoods, in broad areas on flood plains, and in poorly defined drainage ways.
Eau Gallie fine sand (Eg)	Nearly level, poorly drained soil on broad, low ridges in the flatwoods.
Malabar sand (Ma)	Nearly level, poorly drained soil in broad low areas, in sloughs, and in poorly defined drainageways.

4.2 TOPOGRAPHY

According to information obtained from the United States Geologic Survey (USGS) Lake Poinsett, Florida quadrangle map dated 2021, ground surface elevation (pre-developmental) across the site area ranges from approximately +15 to +20 feet National Geodetic Vertical Datum (NGVD).

5.0 SCOPE OF SERVICES

The services completed by Universal for our recent subsurface exploration program were as follows:

- Drill three (3) Standard Penetration Test (SPT) borings within the proposed building footprints to depths of 25 and 30 feet below the existing land surface (bls).
- Secure samples of representative soils encountered in the soil borings for review, laboratory analysis and classification by a Geotechnical Engineer.
- Measure the existing site groundwater levels and provide an estimate of the typical wet season high groundwater levels at the recent boring locations.

- Conduct soil gradation tests on selected soil samples obtained in the field to help determine their engineering properties.
- Assess the existing soil conditions with respect to the proposed construction.
- Prepare a report that documents the results of our subsurface exploration and analysis with geotechnical engineering recommendations.

6.0 LIMITATIONS

This report has been prepared in order to aid the Client/engineer/architect in the design of the proposed Showroom & Service Buildings at the Mike Erdman Cadillac facility on SR 520, Cocoa, Brevard County, Florida. The scope is limited to the specific project and locations described herein. Our description of the project's design parameters represents our understanding of the significant aspects relevant to soil and foundation characteristics. In the event that any changes in the design or location of the structures as outlined in this report are planned, we should be informed so the changes can be reviewed and the conclusions of this report modified, if required, and approved in writing by Universal.

The recommendations submitted in this report are based upon the data obtained from the soil borings performed at the locations indicated on the Boring Location Plan and from other information as referenced. This report does not reflect any variations that may occur between the boring locations. The nature and extent of such variations may not become evident until the course of construction. If variations become evident, it will then be necessary for a re-evaluation of the recommendations of this report after performing on-site observations during the construction period and noting the characteristics of the variations.

Deleterious soils were not encountered at any of the borehole locations; however, we cannot preclude their presence between boring locations, or within unexplored portions of the property. Therefore, this report should not be used for estimating such items as cut and fill quantities.

Borings for a typical geotechnical report are widely spaced and generally not sufficient for reliably detecting the presence of isolated, anomalous surface or subsurface conditions, or reliably estimating unsuitable or suitable material quantities. Accordingly, Universal does not recommend relying on our boring information to negate presence of anomalous materials or for estimation of material quantities unless our contracted services **specifically** include sufficient exploration for such purpose(s) and within the report we so state that the level of exploration provided should be sufficient to detect such anomalous conditions or estimate such quantities. Therefore, Universal will not be responsible for any extrapolation or use of our data by others beyond the purpose(s) for which it is applicable or intended.

All users of this report are cautioned that there was no requirement for Universal to attempt to locate any manmade buried objects or identify any other potentially hazardous conditions that may exist at the site during the course of this exploration. Therefore, no attempt was made by Universal to locate or identify such concerns. Universal cannot be responsible for any buried manmade objects or environmental hazards which may be subsequently encountered during construction that are not discussed within the text of this report. We can provide this service if requested.

For a further description of the scope and limitations of this report, please review the document attached within Exhibit 1, "Important Information about Your Geotechnical Engineering Report", prepared by GBA/The Geoprofessional Business Association.

7.0 FIELD METHODOLOGIES

7.1 STANDARD PENETRATION TEST BORINGS

The three (3) recent SPT borings, designated B1 through B3 on the attached Figure No. 1, were performed in general accordance with the procedures of ASTM D 1586 (Standard Method for Penetration Test and Split-Barrel Sampling of Soils). The SPT drilling technique involves driving a standard split-barrel sampler into the soil by a 140-pound hammer, free falling 30 inches. The number of blows required to drive the sampler 1 foot, after an initial seating of 6 inches, is designated the penetration resistance, or N-value, an index to soil strength and consistency.

The soil samples recovered from the split-barrel sampler were visually inspected and classified in general accordance with the guidelines of ASTM D 2487 (Standard Classification of Soils for Engineering Purposes [Unified Soil Classification System]).

The SPT soil borings were performed with a CME 55 truck-mounted drilling rig. The boring locations were determined in the field using a hand held GPS receiver. No survey control was provided on-site, and our boring locations should be considered only as accurate as implied by the methods of measurement used. The approximate recent boring locations are shown on the attached Figure No. 1.

8.0 LABORATORY METHODOLOGIES

8.1 PARTICLE SIZE ANALYSIS

We completed #200 sieve particle size analyses on three (3) representative soil samples. These samples were tested according to the procedures listed in ASTM D 1140 (Standard Test Method for Amount of Material in Soils Finer than the No. 200 Sieve). The percentage of materials passing the #200 sieve in each tested sample is shown on the appropriate boring log (attached).

9.0 SOIL STRATIGRAPHY

The results of our field exploration and laboratory analysis, together with pertinent information obtained from the recent SPT borings, such as soil profiles, penetration resistance and stabilized groundwater levels are shown on the boring logs included in Appendix A. The Key to Boring Logs, Soil Classification Chart is also included in Appendix A. The soil profiles were prepared from field logs after the recovered soil samples were examined by a Geotechnical Engineer.

The stratification lines shown on the boring logs represent the approximate boundaries between soil types, and may not depict exact subsurface soil conditions. The actual soil boundaries may be more transitional than depicted. A generalized profile of the soils encountered at our recent boring locations is presented in the following Table II. For more detailed soil profiles, please refer to the attached boring logs.

**TABLE II
 GENERALIZED SOIL PROFILE**

Depth Encountered (feet, bls)	Approximate Thickness (feet)	Soil Description
Surface	4 to 7	Fill soils consisting of fine sands with varying amounts of silt, clay, broken shell, and clay lumps [SC, SP-SM], medium dense.
4 to 7	4 to 8	Interlayered fine sands with silt [SP-SM], fine sands [SP], and occasional cemented rock layers, loose to medium dense.
9 to 12	10 to 21	Clayey fine sand [SC], loose.
22	3+	Fine sand with silt, broken shell, and occasional cemented rock layers [SP-SM], loose to medium dense. Stratum is absent within the drilled depths of boring location B3.

NOTE: [] denotes Unified Soil Classification system designation.
 + indicates strata encountered at boring termination, total thickness undetermined.

10.0 GROUNDWATER CONDITIONS

10.1 EXISTING GROUNDWATER CONDITIONS

We measured the water levels in the recent SPT boreholes on February 7, 2024 after the groundwater was allowed to stabilize. The groundwater levels are shown on the attached boring logs. The groundwater level depths ranged from 6.8 feet bls at boring location B1 to 7.8 feet bls at boring location B3. Fluctuations in groundwater levels should be anticipated throughout the year, primarily due to seasonal variations in rainfall, surface runoff, and other factors that may vary from the time the borings were conducted.

10.2 TYPICAL WET SEASON HIGH GROUNDWATER LEVELS

The typical wet season high groundwater level is defined as the highest groundwater level sustained for a period of 2 to 4 weeks during the "wet" season of the year, for existing site conditions, in a year with average normal rainfall amounts. Based on historical data, the rainy season in Brevard County, Florida is between June and October of the year. In order to estimate the wet season high water level at the boring locations, many factors are examined, including the following:

- a. Measured groundwater level
- b. Drainage characteristics of existing soil types
- c. Season of the year (wet/dry season)
- d. Current & historical rainfall data (recent and year-to-date)
- e. Natural relief points (such as lakes, rivers, swamp areas, etc.)
- f. Man-made drainage systems (ditches, canals, etc.)
- g. Distances to relief points and man-made drainage systems
- h. On-site types of vegetation

i. Area topography (ground surface elevations)

Groundwater level readings were taken on February 7, 2024. According to data from the National Weather Service, the total rainfall in the previous month of January for Central Brevard County was 5.5 inches, approximately 2.9 inches above the normal levels for January. Total precipitation in 2024 as of February 7th was approximately 5.8 inches, roughly 2.6 inches above the normal levels for this time period. Rainfall for calendar year 2023 was 58.7 inches, about 8 inches above normal levels.

Based on this information and factors listed above, we estimate that the typical wet season high groundwater levels at the boring locations will be approximately ½ foot above the existing measured levels. Please note, however, that peak stage elevations immediately following various intense storm events, may be somewhat higher than the estimated typical wet season levels.

Please note that due to the silt/clay content of the near surface soils at this site, we strongly suspect that there may be occasional isolated pockets of “perched” groundwater within the project area, particularly after periods of prolonged wet weather. Such temporary perched water table levels may be higher than the estimated wet season groundwater levels indicated above.

11.0 LABORATORY RESULTS

11.1 PARTICLE SIZE ANALYSIS

The soil samples submitted for analysis were classified as fine sand with silt [SP-SM] and clayey fine sand [SC]. The percentage of soil particles passing the #200 sieve size in each sample tested is shown on the boring logs at the approximate depth sampled.

12.0 PROPOSED BUILDINGS

12.1 ANALYSIS

Based upon the results of the soil borings, the existing fill soils within the proposed building areas have a generally medium dense consistency. The mass grading fill soils at this site appear to have received significant compactive efforts. This has helped to create a soil mat capable of dissipating the building loads over any remaining loose strata at depth.

The only remaining concern would be the densification of any soil pockets that are disturbed during construction activities. This could be accomplished by re-compacting such pockets with vibratory plates or rollers to a density of at least 95% of the modified Proctor test (ASTM D-1557).

The following recommendations are made based upon a review of the attached soil test data, our understanding of the proposed construction, and experience with similar projects and subsurface conditions. If the structural loadings, building locations or grading plans change from those discussed previously, we request the opportunity to review and possibly amend our recommendations with respect to those changes.

12.2 RECOMMENDATIONS

Provided our suggested site preparation procedures are followed, we recommend designing conventional, shallow spread footings foundations for a maximum allowable soil-contact pressure of 2,500 pounds per square foot (psf). Even though computed soil-contact pressures may not warrant it, strip and square footings should have minimum widths of at least 18 and 24 inches, respectively to prevent "shear punch" deformations. The base of all footings should be at least 18 inches below finished grade elevation, with the exception of a thickened-edge slab foundation system for which a minimum depth of 14 inches is acceptable.

Assuming any loosened pockets are densified and the footings are designed according to our recommendations, we estimate maximum total vertical settlements of the proposed structures will be less than 1 inch and maximum differential settlements will be less than ½ inch. Almost all of the expected settlement will take place as soon as the soil fill and structural loads have been applied to the densified existing sandy soils.

We recommend using a sheet vapor barrier, such as visqueen, beneath the building slab-on-grade to help control moisture migration through the slab. Floor slabs can be supported upon the compacted fill and should be structurally isolated from other foundations elements or adequately reinforced to prevent distress due to differential movements.

We recommend that the project floor slabs be designed using an assumed modulus of subgrade reaction of $k = 150$ pounds per cubic inch (pci). However, in no case should the floor slabs have a thickness of less than 6 inches where heavy loads are anticipated. In lightly loaded pedestrian walk areas, we recommend a minimum thickness of at least 4 inches be maintained.

12.3 SITE PREPARATION PROCEDURES

The following is a list of our recommended site preparation procedures to prepare the site for the proposed construction.

1. Strip the footprints of the proposed buildings, plus a minimum margin of at least 5 feet beyond foundation lines, of any remaining vegetation, organic topsoils, root mats, debris, etc. Any collapsible or leak prone utilities which may be encountered during this work should be completely removed from within the location of the proposed structures.

It has been our experience that the subsoils adjacent to previously developed areas sometimes contain pockets of buried rubble, muck, debris or other deleterious materials. Therefore, we strongly recommend that the stripped surfaces be observed and probed by representatives of Universal. Any deleterious matter remaining should be removed and replaced with clean fine sands [SP].

2. The subsurface soils beneath the proposed building footprints, including the 5 feet margin, should be densified to at least 95 percent of the Modified Proctor test maximum dry density (ASTM D 1557, Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³))) to at least 12 inches below the stripped surface.
3. If vibratory equipment is used for proof rolling and to compact fill, then we recommend using vibratory rollers weighing less than 1 ton within 20 feet of existing structures, less than 2 tons within distances of 20 to 40 feet, less than 6 tons between 40 to 100 feet, and up to 10

tons beyond 100 feet. The use of heavier vibratory equipment may damage existing nearby structures. Otherwise, static rollers weighing more than 5 tons should be used.

4. Proof-roll the exposed subsurface soils under the observation of Universal, to locate any unforeseen soft areas of unsuitable soils, and to increase the density of the shallow loose fine sand soils. Each pass should overlap the proceeding pass by roughly 30 percent to insure complete coverage. If deemed necessary by Universal, in areas that continue to "yield", remove any deleterious materials and replace with a clean, compacted sand backfill.
5. Depending on weather conditions or other factors, the addition or removal (dewatering) of water may be necessary to aid compactive efforts. Please note that portions of the near surface soils at this project contain varying amounts of silt & clay. These soil types tend to readily hold moisture and may require more compactive efforts than clean fine sand [SP] soils. Additional passes with compaction equipment or over excavation and replacement in compacted layers may be necessary if the minimum density requirements are not achieved by the recommended proof-rolling.
6. Within the building areas, fill to floor slab grade as necessary with select structural fill, placed in maximum 12 inch loose lifts. We recommend using fill soils consisting of sands with less than 10% passing the #200 sieve size [SP, SP-SM, or SP-SC]. Each lift of structural fill should be densified to at least 95 percent of the Modified Proctor test maximum dry density of the soil (ASTM D 1557) and tested for compaction and approved before the placement of subsequent lifts.
7. Footing and utility excavations and other construction activities frequently disturb compacted subsoils to various depths; therefore, compaction beneath all floor slabs and footings should be verified to a depth of 1 foot immediately prior to the placement of reinforcing steel and concrete, and should meet at least 95 percent of the Modified Proctor test maximum dry density of the soil (ASTM D 1557).
8. Field density tests should be performed by Universal at appropriate times during earthwork operations in order to verify that the compaction requirements have been satisfied. These tests should be performed after compaction in the existing soils, after placement of each lift of new structural fill, within all footing excavations, and beneath all concrete slab-on-grade locations. Compaction tests should be performed at a frequency of not less than three tests per building per each foot of compacted increment as specified herein. In addition, we recommend that at least every-other column footing be tested with at least one test per every 50 linear feet of wall footing.

13.0 SEWER AND UTILITY LINES

13.1 GENERAL RECOMMENDATIONS

We assume that the proposed sewer and other utility lines at this site may have invert elevations roughly 2 to 5 feet below existing grades. Based on the results of the soil borings and our general knowledge of the area, we suspect there may be occasional soft/deleterious pockets or cemented rock layers at this invert level. If encountered, such layers/pockets should be over excavated and replaced with approved backfill or open graded gravel.

13.2 SITE PREPARATION PROCEDURES

The following is our recommended procedure to prepare the site soils for construction of the proposed utility lines.

1. If necessary, install a dewatering system capable of maintaining a groundwater level at least 2 feet below bottom of pipe level.
2. Excavate and install the proposed utility lines. Any deleterious soils, or cemented rock layers, encountered at pipe bedding level should be examined by representatives of Universal for possible removal and replacement with approved backfill as previously discussed. All replacement soils should consist of clean fine sands [SP] compacted to at least 98 percent of the Modified Proctor test maximum dry density (ASTM D1557) with small vibratory plates or rollers.
3. Backfill to grade with approved fill [SP, SP-SM, or SP-SC] placed in 12 inch loose lifts with each lift compacted, with vibratory rollers or plates weighing less than 4 tons, to at least 98 percent of the Modified Proctor test maximum dry density (ASTM D 1557).

Backfill above and around thrust blocks should be compacted at least 98 percent of Modified Proctor test maximum dry density (ASTM D1557). For a design criteria, we recommend using an allowable passive earth pressure coefficient of $K_p=3.0$.

14.0 DEWATERING

Based on the water level conditions encountered including time of year that construction is performed, control of the groundwater may be necessary to achieve the necessary excavation, construction, backfilling and compaction requirements presented in the preceding sections. If dewatering becomes necessary and regardless of the method(s) used, we suggest drawing down the water level at least 2 feet below the bottom of the excavations to preclude "pumping" and/or compaction-related problems with the foundation and/or subgrade soils. The actual method(s) of dewatering should be determined by the contractor.

Dewatering should be accomplished with the knowledge that the permeability of soils decreases with increasing silt [ML] and/or clay [CL] content. Therefore, a silty fine sand [SM] is less permeable than a fine sand [SP]. The fine sand, fine sand with silt and silty fine sand [SP, SP-SM and SM] soil types can usually be dewatered by well pointing.

It should be noted that the typical wet season groundwater levels previously listed may be temporarily exceeded during any given year in the future. Should impediments to surface water drainage exist on the site, or should rainfall intensity and duration, or total rainfall quantities exceed the normally anticipated rainfall quantities, groundwater levels may exceed our seasonal high estimates.

We recommend positive drainage be established and maintained on the site during construction. We further recommend permanent measures be constructed to maintain positive drainage from the site throughout the life of the project. We recommend that the contract documents provide for determining the depth to the groundwater table just prior to construction, and for any required remedial dewatering.

15.0 EXCAVATIONS

Excavations should be sloped as necessary to prevent slope failure and to allow backfilling. As a minimum, temporary excavations below 4-foot depth should be sloped in accordance with OSHA regulations (29 CFR Par 1926) dated October 31, 1989. Where lateral confinement will not permit slopes to be laid back, the excavation should be shored in accordance with OSHA requirements. During excavation, excavated material should not be stockpiled at the top of the slope within a horizontal distance equal to the excavation depth. Provisions for maintaining workman safety within excavations is the sole responsibility of the contractor.

16.0 SPECIAL CONSIDERATIONS

Vibrations produced during vibratory compaction operations at the site may be significantly noticeable within 100 feet and may cause settlement distress of adjacent structures if not properly regulated. Therefore, provisions should be made to monitor these vibrations by Universal so that any necessary modifications in the compaction operations can be made in the field before potential damages occur. In addition, the conditions of the existing adjacent structures should be ascertained and documented prior to vibratory operations. Slight cosmetic damage (e.g. hairline cracks in stucco, plaster, or masonry) may occur in conjunction with compaction operations.

Please note that occasional cemented (coquina) rock layers were encountered at various depths & locations at this site, perhaps forming dense boulders and/or ledges. More extensive (or shallower) rock layers may exist at this site. Where cementation is the greatest these layers may hinder excavation with typical backhoes or similar equipment. If these rock strata are excavated as borrow materials, clumps/boulders greater than 3 inches in diameter should be either removed or broken up prior to inclusion within structural fills at the site.

17.0 CLOSURE

The soil and groundwater conditions encountered during our subsurface exploration of the project site and the results of the laboratory analysis identified no geotechnical issues that would significantly impact the proposed construction, as we currently understand it, using conventional construction practices. Standard methods of surficial stripping, excavation, proof rolling, compaction and backfilling should adequately prepare the site.

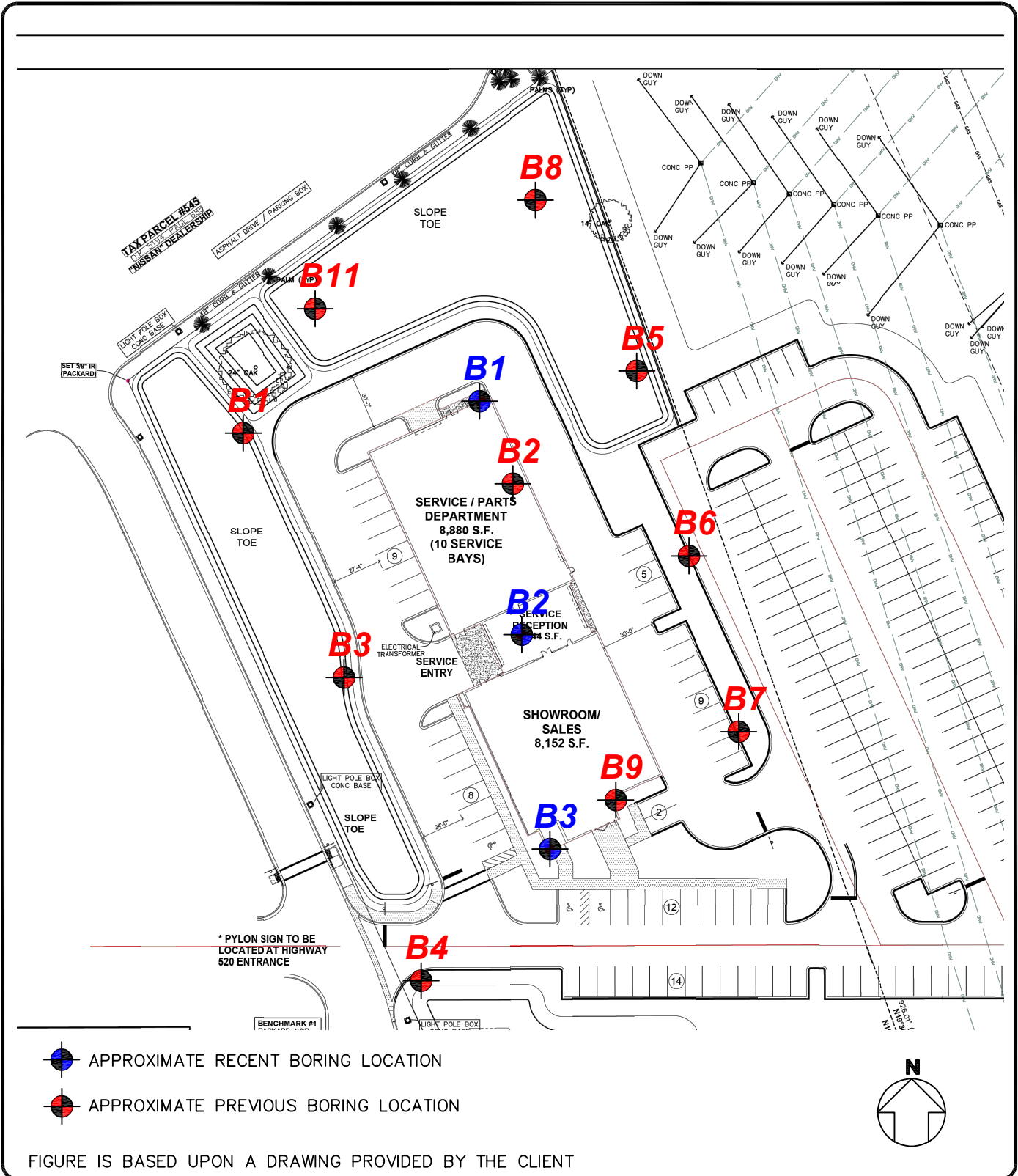
The geotechnical engineering design does not end with the advertisement of the construction documents. The design is an on-going process throughout construction. Because of our familiarity with the site conditions and the intent of the engineering design, we are most qualified to address site problems or construction changes, which may arise during construction, in a timely and cost-effective manner.

We recommend the owner retain the Universal Rockledge office to provide inspection services during the site preparation procedures for confirmation of the adequacy of the earthwork operations. Field tests and observations include verification of foundation subgrades by monitoring proof-rolling operations and performing quality assurance tests of the placement of compacted structural fill courses.

* * * * *



FIGURES






-  APPROXIMATE RECENT BORING LOCATION
-  APPROXIMATE PREVIOUS BORING LOCATION

FIGURE IS BASED UPON A DRAWING PROVIDED BY THE CLIENT

 UNIVERSAL ENGINEERING SCIENCES	ERDMAN CADILLAC SHOWROOM AND SERVICE BUILDINGS SR 520 AND I-95 COCOA, FLORIDA		
	BORING LOCATION PLAN		
	DRAWN BY: AD	DATE: 2.14.2024	CHECKED BY: BF
SCALE: 1" = 80'	PROJECT NO: 0330.2400021.0000	PAGE NO: FIGURE 1	



APPENDIX A



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0330.2400021.0000

REPORT NO.:

APPENDIX: A

PROJECT: ERDMAN CADILLAC SHOWROOM AND SERVICE BUILDING
195 AND SR 520
COCOA, FLORIDA

BORING DESIGNATION: **B1**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT:
LOCATION: SEE BORING LOCATION PLAN
REMARKS:

G.S. ELEVATION (ft): DATE STARTED: 2/5/24
WATER TABLE (ft): 6.8 DATE FINISHED: 2/5/24
DATE OF READING: 2/7/2024 DRILLED BY: JL, JH
EST. W.S.W.T. (ft): TYPE OF SAMPLING:

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORG. CONT. (%)
									LL	PI		
0		7-9-12	21			clayey fine SAND with broken shell and clay lumps, grey, [SC] (fill)						
		14-11-10	21				13.5	14.6				
		4-3-4	7			fine SAND with silt, brown, [SP-SM]						
5		4-3-3	6			fine SAND, brown, [SP]						
		2-3-6	9									
		5-4-4	8									
10												
		2-2-1	3			clayey fine SAND, grey, [SC]						
15												
		2-1-3	4									
20												
		5-5-5	10			fine SAND with silt, broken shell and occasional cemented rock layers, gray, [SP-SM]						
25						BORING TERMINATED AT 25'						
30												
35												



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0330.2400021.0000

REPORT NO.:

APPENDIX: A

PROJECT: ERDMAN CADILLAC SHOWROOM AND SERVICE BUILDING
195 AND SR 520
COCOA, FLORIDA

BORING DESIGNATION: **B2**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT:
LOCATION: SEE BORING LOCATION PLAN
REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 6.9
DATE OF READING: 2/7/2024
EST. W.S.W.T. (ft):
DATE STARTED: 2/5/24
DATE FINISHED: 2/5/24
DRILLED BY: JL, JH
TYPE OF SAMPLING:

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORG. CONT. (%)
									LL	PI		
0		8-11-12	23			clayey fine SAND, trace of broken shell, brown, [SC] (fill)	18.8	15.4				
		10-9-8	17			fine SAND with silt, broken shell and clay lumps, brown, [SP-SM] (fill)						
		3-5-5	10									
5		6-5-6	11									
		3-5-6	11	▼		fine SAND, brown, [SP]						
		8-8-4	12									
10						clayey fine SAND, grey, [SC]						
		2-1-1	2									
15												
		1-2-2	4									
20						fine SAND with silt and broken shell, brown, [SP-SM]						
		3-3-3	6									
25						BORING TERMINATED AT 25'						
30												
35												



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0330.2400021.0000

REPORT NO.:

APPENDIX: A

PROJECT: ERDMAN CADILLAC SHOWROOM AND SERVICE BUILDING
195 AND SR 520
COCOA, FLORIDA

BORING DESIGNATION: **B3**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT:
LOCATION: SEE BORING LOCATION PLAN
REMARKS:

G.S. ELEVATION (ft): DATE STARTED: 2/5/24
WATER TABLE (ft): 7.8 DATE FINISHED: 2/5/24
DATE OF READING: 2/7/2024 DRILLED BY: JL, JH
EST. W.S.W.T. (ft): TYPE OF SAMPLING:

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORG. CONT. (%)
									LL	PI		
0												
		3-3-5	8			fine SAND with silt, broken shell and clay lumps, brown, [SP-SM] (fill)						
		12-13-15	28									
		9-10-12	22									
5		14-16-14	30			fine SAND, grey, [SP]						
		6-7-8	15	▼		fine SAND with silt and occasional cemented rock layers, brown, [SP-SM]	5.3	17.0				
		5-2-2	4			clayey fine SAND, grey, [SC]						
10												
		1-2-2	4									
15												
		1-2-3	5									
20												
		1-2-2	4									
25												
		3-2-2	4									
30						BORING TERMINATED AT 30'						
35												

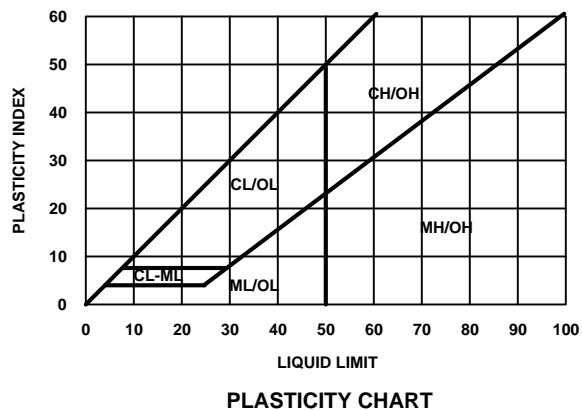
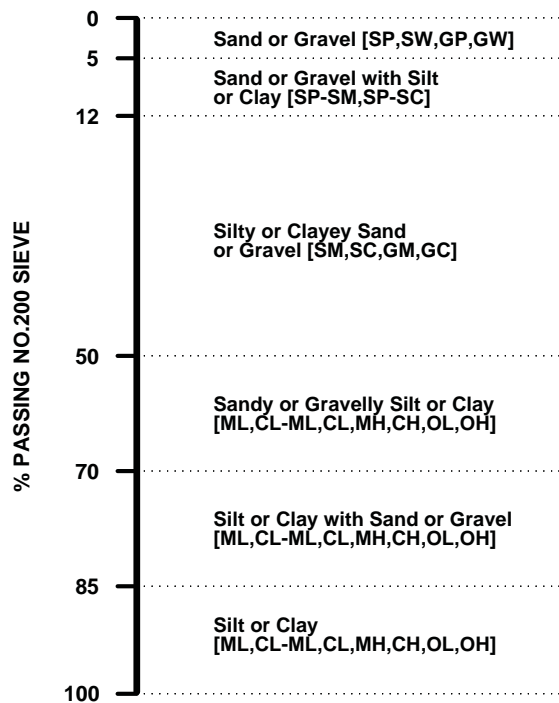
BL3

KEY TO BORING LOGS

SOIL CLASSIFICATION CHART*



**UNIVERSAL
ENGINEERING
SCIENCES, INC.**



GROUP NAME AND SYMBOL

COARSE GRAINED SOILS

	WELL-GRADED SANDS [SW]		WELL-GRADED GRAVELS [GW]
	POORLY-GRADED SANDS [SP]		POORLY-GRADED GRAVELS [GP]
	POORLY-GRADED SANDS WITH SILT [SP-SM]		POORLY-GRADED GRAVELS WITH SILT [GP-GM]
	POORLY-GRADED SANDS WITH CLAY [SP-SC]		POORLY-GRADED GRAVELS WITH CLAY [GP-GC]
	SILTY SANDS [SM]		SILTY GRAVELS [GM]
	CLAYEY SANDS [SC]		CLAYEY GRAVELS [GC]
	SILTY CLAYEY SANDS [SC-SM]		

FINE GRAINED SOILS

	INORGANIC SILTS SLIGHT PLASTICITY [ML]
	INORGANIC SILTY CLAY LOW PLASTICITY [CL-ML]
	INORGANIC CLAYS LOW TO MEDIUM PLASTICITY [CL]
	INORGANIC SILTS HIGH PLASTICITY [MH]
	INORGANIC CLAYS HIGH PLASTICITY [CH]

HIGHLY ORGANIC SOILS

	ORGANIC SILTS/CLAYS LOW PLASTICITY [OL]**
	ORGANIC SILTS/CLAYS MEDIUM TO HIGH PLASTICITY [OH]**
	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS [PT]**

RELATIVE DENSITY

(SAND AND GRAVEL)
 VERY LOOSE - 0 to 4 Blows/ft.
 LOOSE - 5 to 10 Blows/ft.
 MEDIUM DENSE - 11 to 30 Blows/ft.
 DENSE - 31 to 50 Blows/ft.
 VERY DENSE - more than 50 Blows/ft.

CONSISTENCY

(SILT AND CLAY)

VERY SOFT - 0 to 2 Blows/ft.
 SOFT - 3 to 4 Blows/ft.
 FIRM - 5 to 8 Blows/ft.
 STIFF - 9 to 16 Blows/ft.
 VERY STIFF - 17 to 30 Blows/ft.
 HARD - more than 30 Blows/ft.

IN ACCORDANCE WITH ASTM D 2487 - UNIFIED SOIL

* CLASSIFICATION SYSTEM.

** LOCALLY MAY BE KNOWN AS MUCK.

NOTES:

8* - DENOTES DYNAMIC CONE PENETROMETER (DCP) VALUE
 R - DENOTES REFUSAL TO PENETRATION
 P - DENOTES PENETRATION WITH ONLY WEIGHT OF DRIVE HAMMER
 N/E - DENOTES GROUNDWATER TABLE NOT ENCOUNTERED



APPENDIX B



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0330.1900087.0000

REPORT NO.:

APPENDIX: A

PROJECT: Fountain Property Retention & Pavements
Cocoa, Florida

BORING DESIGNATION: **B1**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT:
LOCATION: SEE EXPLORATION LOCATION PLAN
REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 0.7
DATE STARTED: 7/30/19
DATE FINISHED: 7/30/19
DATE OF READING: 7/31/19
DRILLED BY:
EST. W.S.W.T. (ft):
TYPE OF SAMPLING:

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORG. CONT. (%)
									LL	PI		
0		3-3-6	3*			fine SAND with silt and trace of roots (top soil), dark brown, [SP-SM]						
		3-5-7	5*			fine SAND, brown, [SP]						
		5-10-9	10*				3.0	20.3				
		5-8-7	8*									
		6-15-12	15*			clayey fine SAND, brown, [SC]						
5		7-12-15	12*									
		16-14-18	14*									
						* DYNAMIC CONE PENETROMETER (DCP) VALUES BORING TERMINATED AT 7'						
10												
15												
20												



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0330.1900087.0000

REPORT NO.:

APPENDIX: A

PROJECT: Fountain Property Retention & Pavements
Cocoa, Florida

BORING DESIGNATION: **B2**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT:
LOCATION: SEE EXPLORATION LOCATION PLAN
REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 4.7
DATE STARTED: 7/30/19
DATE FINISHED: 7/30/19
DATE OF READING: 7/31/19
DRILLED BY:
EST. W.S.W.T. (ft):
TYPE OF SAMPLING:

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORG. CONT. (%)
									LL	PI		
0												
		13-20-21	20*			fine SAND with silt and trace of roots (top soil), dark brown, [SP-SM]						
		9-17-20	17*									
		15-15-18	15*			fine SAND, brown, [SP]						
		15-27-31	27*									
		8-17-23	17*	▼								
5		15-20-24	20*			fine SAND with silt, dark brown, (hardpan) [SP-SM]						
		10-18-28	18*									
						* DYNAMIC CONE PENETROMETER (DCP) VALUES BORING TERMINATED AT 7'						
10												
15												
20												

BL3



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0330.1900087.0000

REPORT NO.:

APPENDIX: A

PROJECT: Fountain Property Retention & Pavements
Cocoa, Florida

BORING DESIGNATION: **B3**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT:
LOCATION: SEE EXPLORATION LOCATION PLAN
REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 4.8
DATE OF READING: 7/31/19
EST. W.S.W.T. (ft):
DATE STARTED: 7/30/19
DATE FINISHED: 7/30/19
DRILLED BY:
TYPE OF SAMPLING:

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORG. CONT. (%)
									LL	PI		
0		18-24-24	24*			fine SAND with silt and trace of roots (top soil), dark brown, [SP-SM]						
		13-18-27	18*									
		13-17-30	17*									
		10-20-22	20*			fine SAND, brown, [SP]						
		6-14-13	14*	▼								
5		8-11-14	11*				4.3	21.1				
		8-8-6	8*									
						* DYNAMIC CONE PENETROMETER (DCP) VALUES BORING TERMINATED AT 7'						
10												
15												
20												

BL3



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0330.1900087.0000

REPORT NO.:

APPENDIX: A

PROJECT: Fountain Property Retention & Pavements
Cocoa, Florida

BORING DESIGNATION: **B4**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT:
LOCATION: SEE EXPLORATION LOCATION PLAN
REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 1.8
DATE STARTED: 7/30/19
DATE FINISHED: 7/30/19
DATE OF READING: 7/31/19
EST. W.S.W.T. (ft):
DRILLED BY:
TYPE OF SAMPLING:

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORG. CONT. (%)
									LL	PI		
0						fine SAND with trace of roots, grey, [SP]						
		3-4-4	4*									
		2-6-10	6*	▼								
		3-6-7	6*									
		5-7-8	7*			fine SAND with clay, brown, [SP-SC]						
		5-5-8	5*									
5						fine SAND, brown, [SP]						
		1-2-3	2*									
						* DYNAMIC CONE PENETROMETER (DCP) VALUES BORING TERMINATED AT 6'						
10												
15												
20												

BL3



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0330.1900087.0000

REPORT NO.:

APPENDIX: A

PROJECT: Fountain Property Retention & Pavements
Cocoa, Florida

BORING DESIGNATION: **B5**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT:
LOCATION: SEE EXPLORATION LOCATION PLAN
REMARKS:

G.S. ELEVATION (ft): DATE STARTED: 7/30/19
WATER TABLE (ft): 4.4 DATE FINISHED: 7/30/19
DATE OF READING: 7/31/19 DRILLED BY:
EST. W.S.W.T. (ft): TYPE OF SAMPLING:

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORG. CONT. (%)
									LL	PI		
0		7-12-12	12*			fine SAND with silt and trace of roots (top soil), dark brown, [SP-SM]						
		3-7-9	7*			fine SAND with silt, trace of roots and clay lumps (fill), brown, [SP-SM]						
		2-6-13	6*									
		7-12-15	12*				fine SAND, grey, [SP]					
		6-7-11	7*	▼				2.7	16.9			
5		30+	R									
						* DYNAMIC CONE PENETROMETER (DCP) VALUES R - DENOTES REFUSAL TO PENETRATION WITH DYNAMIC CONE PENETROMETER. BORING TERMINATED AT 6'						
10												
15												
20												



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0330.1900087.0000

REPORT NO.:

APPENDIX: A

PROJECT: Fountain Property Retention & Pavements
Cocoa, Florida

BORING DESIGNATION: **B6**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT:
LOCATION: SEE EXPLORATION LOCATION PLAN
REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 5.6
DATE OF READING: 7/31/19
EST. W.S.W.T. (ft):
DATE STARTED: 7/30/19
DATE FINISHED: 7/30/19
DRILLED BY:
TYPE OF SAMPLING:

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORG. CONT. (%)
									LL	PI		
0		5-9-10	9*			fine SAND with silt, trace of roots and clay lumps (fill), brown, [SP-SM]						
		4-9-9	9*									
		1-7-9	7*			fine SAND, grey, [SP]						
		4-16-22	16*									
		3-9-14	9*									
5		6-30+	R	▼		fine SAND with silt, dark brown, (hardpan) [SP-SM]						
		1-16-21	16*									
		* DYNAMIC CONE PENETROMETER (DCP) VALUES R - DENOTES REFUSAL TO PENETRATION WITH DYNAMIC CONE PENETROMETER. BORING TERMINATED AT 7'										
10												
15												
20												



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0330.1900087.0000

REPORT NO.:

APPENDIX: A

PROJECT: Fountain Property Retention & Pavements
Cocoa, Florida

BORING DESIGNATION: **B7**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT:
LOCATION: SEE EXPLORATION LOCATION PLAN
REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 5.6
DATE STARTED: 7/30/19
DATE FINISHED: 7/30/19
DATE OF READING: 7/31/19
DRILLED BY:
EST. W.S.W.T. (ft):
TYPE OF SAMPLING:

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORG. CONT. (%)
									LL	PI		
0		1-7-7	7*			fine SAND with silt and trace of roots (top soil), dark brown, [SP-SM]						
		4-10-11	10*									
		3-6-6	6*									
		4-14-19	14*			fine SAND, grey, [SP]						
		6-14-17	14*									
5		18-30+	R	▼								
		5-30+	R			fine SAND with silt, dark brown, (hardpan) [SP-SM]						
						* DYNAMIC CONE PENETROMETER (DCP) VALUES R - DENOTES REFUSAL TO PENETRATION WITH DYNAMIC CONE PENETROMETER. BORING TERMINATED AT 7'						
10												
15												
20												

BL3



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0330.1900087.0000

REPORT NO.:

APPENDIX: A

PROJECT: Fountain Property Retention & Pavements
Cocoa, Florida

BORING DESIGNATION: **B8**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT:
LOCATION: SEE EXPLORATION LOCATION PLAN
REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 1.1
DATE OF READING: 7/31/19
EST. W.S.W.T. (ft):
DATE STARTED: 7/30/19
DATE FINISHED: 7/30/19
DRILLED BY:
TYPE OF SAMPLING:

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORG. CONT. (%)
									LL	PI		
0						fine SAND with silt and trace of roots (top soil), dark brown, [SP-SM]						
		3-4-6	4*			fine SAND, brown, [SP]						
		3-7-8	7*									
		6-12-15	12*									
		4-6-8	14			clayey fine SAND, brown, [SC]						
5		8-8-7	15				12.7	17.5				
		3-3-3	6									
		2-3-4	7									
10						clayey fine SAND with trace of broken shell, brown, [SC]						
		3-5-7	12									
15						* DYNAMIC CONE PENETROMETER (DCP) VALUES BORING TERMINATED AT 15'						
20												

BL3



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0330.1900087.0000

REPORT NO.:

APPENDIX: A

PROJECT: Fountain Property Retention & Pavements
Cocoa, Florida

BORING DESIGNATION: **B9**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT:
LOCATION: SEE EXPLORATION LOCATION PLAN
REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 5.4
DATE OF READING: 7/31/19
EST. W.S.W.T. (ft):
DATE STARTED: 7/30/19
DATE FINISHED: 7/30/19
DRILLED BY:
TYPE OF SAMPLING:

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORG. CONT. (%)
									LL	PI		
0						fine SAND with silt and trace of roots (top soil), dark brown, [SP-SM]						
		2-2-3	5			fine SAND, grey, [SP]						
		3-1-2	3									
		2-4-5	9				3.0	15.1				
5		6-7-6	13	▼								
		7-7-8	15			fine SAND with silt, dark brown, (hardpan) [SP-SM]						
		6-8-13	21			clayey fine SAND, grey, [SC]						
10												
		1-1-3	4									
15						BORING TERMINATED AT 15'						
20												

BL3



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0330.1900087.0000

REPORT NO.:

APPENDIX: A

PROJECT: Fountain Property Retention & Pavements
Cocoa, Florida

BORING DESIGNATION: **B11**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT:
LOCATION: SEE EXPLORATION LOCATION PLAN
REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 0.1 S.W.
DATE OF READING: 7/31/19
EST. W.S.W.T. (ft):
DATE STARTED: 7/30/19
DATE FINISHED: 7/30/19
DRILLED BY:
TYPE OF SAMPLING:

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORG. CONT. (%)
									LL	PI		
0												
		4-7-8	7*			fine SAND with silt and trace of roots (top soil), dark brown, [SP-SM]						
		2-6-11	6*			fine SAND, grey, [SP]						
		3-9-7	9*									
		10-16-15	16*									
		4-11-13	11*			fine SAND with silt, gray, [SP-SM]						
5						* DYNAMIC CONE PENETROMETER (DCP) VALUES BORING TERMINATED AT 5' S.W. - Indicates standing water						
10												
15												
20												

BL3



EXHIBIT 1

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, clients can benefit from a lowered exposure to the subsurface problems that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed below, contact your GBA-member geotechnical engineer. Active involvement in the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Geotechnical-Engineering Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. *Those who rely on a geotechnical-engineering report prepared for a different client can be seriously misled.* No one except authorized client representatives should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one – not even you – should apply this report for any purpose or project except the one originally contemplated.*

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read it *in its entirety*. Do not rely on an executive summary. Do not read selected elements only. *Read this report in full.*

You Need to Inform Your Geotechnical Engineer about Change

Your geotechnical engineer considered unique, project-specific factors when designing the study behind this report and developing the confirmation-dependent recommendations the report conveys. A few typical factors include:

- the client's goals, objectives, budget, schedule, and risk-management preferences;
- the general nature of the structure involved, its size, configuration, and performance criteria;
- the structure's location and orientation on the site; and
- other planned or existing site improvements, such as retaining walls, access roads, parking lots, and underground utilities.

Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.*

This Report May Not Be Reliable

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, that it could be unwise to rely on a geotechnical-engineering report whose reliability may have been affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If your geotechnical engineer has not indicated an "apply-by" date on the report, ask what it should be, and, in general, if you are the least bit uncertain about the continued reliability of this report, contact your geotechnical engineer before applying it.* A minor amount of additional testing or analysis – if any is required at all – could prevent major problems.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface through various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing were performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgment to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team from project start to project finish, so the individual can provide informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, *they are not final*, because the geotechnical engineer who developed them relied heavily on judgment and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* revealed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a full-time member of the design team, to:

- confer with other design-team members,
- help develop specifications,
- review pertinent elements of other design professionals' plans and specifications, and
- be on hand quickly whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction observation.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for informational purposes only*. To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report, but they may rely on the factual data relative to the specific times, locations, and depths/elevations referenced. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may

perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely*. Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures*. If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. As a general rule, *do not rely on an environmental report prepared for a different client, site, or project, or that is more than six months old*.

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, none of the engineer's services were designed, conducted, or intended to prevent uncontrolled migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, *proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration*. Confront the risk of moisture infiltration by including building-envelope or mold specialists on the design team. *Geotechnical engineers are not building-envelope or mold specialists*.



Telephone: 301/565-2733

e-mail: info@geoprofessional.org www.geoprofessional.org

SECTION 00300

BID FORM FOR ERDMAN CADILLAC

1. TO: Mike Erdman, President
2. FROM: Bidder's full company name _____
Bidder's street address _____
Bidder's city, state, and zip code _____
Bidder's area code and phone number _____
3. PROJECT: **Erdman Cadillac Building + Site Work**
4. ARCHITECT: Hartmann Architecture, Inc.
4427 W. Kennedy Blvd. / Suite 250
Tampa, Florida 33609
Richard Hartmann, AIA (Architect-of-Record)
5. REPRESENTATION: Undersigned represents that he has examined Bidding and Contract Documents, including Addenda numbered _____ through _____ inclusive and has examined the site conditions.
6. BID AGREEMENT: Undersigned agrees to:
 - A. Hold Bid open for acceptance sixty (60) days following Bid opening. (**NOTE:** Owner is fully aware of the supply chain challenges. The bid should include any allowances added to the subcontractor bids to honor the 60-day timeframe. In fairness to all parties, we expect the selected GC for contract to be fully transparent with the Owner on "allowances" in the contract so that the team can monitor and credit unused funds. Allowances will NOT be shown in the formal bid, only in the contract between Owner and GC.
 - B. Accept the right of the Owner to reject any or all Bids, to waive formalities, and to accept Bid, which Owner considers most advantageous.
 - C. Enter into and execute the Contract, if awarded, for the Base Bid and accepted Alternate Bids.
 - D. Complete Work in accordance with the Contract Documents within the time stipulated in the Agreement.
 - E. Furnish specified Insurance.
7. BASE BID: Undersigned agrees to complete the Work for lump sum amount of:

_____ Dollars,

(Amount written in words)

\$ _____
8. ALTERNATES: **No Alternates at this time.**
9. ADDITIONAL WORK: Undersigned agrees to charge and accept payment as Contractor's overhead and profit to provide additional work and to allow credit for deductions from the work the following percentage of the costs of such additional work. The percentages to be noted below are to be all-inclusive and must

include costs for Administrative Fees, Bonds, Insurance and Handling Charges, Overhead and Profit, and Taxes.

For work by the Contractor's own forces, Extra _____ % Credit _____ %.

For work performed by subcontractors' forces, Extra _____ % Credit _____ %.

10. CONTRACT TIME: Undersigned agrees to complete Work in _____ calendar days as Contract Time.

11. The Undersigned hereby agrees to abide by all Specifications.

(Date)

(Typed Name)

(Signature)

(Name of Corporation, Partnership, or Joint Venture, and legal mailing address)

END OF SECTION

SECTION 00301j
SUPPLEMENTAL BID FORM

1. TO: Mike Erdman, President
Erdman Auto Group

2. FROM: Bidder's full company name.

Bidder's street address.

Bidder's city, state, and zip code.

Bidder's area code and phone number.

3. PROJECT: **Erdman Cadillac**

4. ARCHITECT: Hartmann Architecture, Inc.
4427 W. Kennedy Blvd. / Suite 250
Tampa, Florida 33609

Project Architect: Richard Hartmann, AIA
Project Manager: Rob Kasza

5. PROPOSED SUBCONTRACTORS: Undersigned to employ, subject to the Owner's approval, the following subcontractors (insert only one name for each item, or if the item is not to be subcontracted Bidder shall insert his own name):
 - A. Excavation, Filling, and Grading _____
 - B. Finish Grading _____
 - C. Paving _____
 - D. Landscaping & Lawn Irrigation _____
 - E. Cast-In-Place Concrete _____
 - F. Concrete Tilt Panels _____
 - G. Steel Framing Erection _____
 - H. Masonry (Dumpster Only) _____
 - I. Rough Carpentry (Metal Stud Work) _____
 - J. Finish Carpentry & Millwork _____
 - K. Doors, Frames, Window, & Hardware _____

- L. Hi Speed, Overhead & Sectional Doors _____
- M. Gypsum Board Systems _____
- N. Lath and Plaster (Stucco) _____
- O. ACM Cladding System _____
- P. Acoustical Ceilings _____
- Q. Roofing _____
- R. Painting _____
- S. Plumbing _____
- T. Mechanical _____
- U. Electrical _____
- V. Fire Protection System (Sprinklers) _____

6. WORK PERFORMED BY GENERAL CONTRACTOR'S FORCES: Undersigned proposes to perform the following portions of the Work directly with his own forces:

7. CONTRACTOR'S PERSONNEL: Undersigned proposes to employ the following individuals for the entire duration of the Work, in the positions indicated and further agrees not to remove them from the Project nor replace them except as provided for in the General Conditions. Indicate where individuals will be located.

Project Manager _____

Project Superintendent _____

BUILDING

8. CONTRACT PRICE BREAKDOWN: Undersigned proposes the following breakdown of the Base Bid; included in each line item is all labor, equipment, material, and other associated costs related to the item.

A. Building Slab / Rebar.....	\$ _____
B. Concrete Tilt Panels.....	\$ _____
C. Structural Steel Framing/Erection	\$ _____
D. ACM Panels	\$ _____
E. Roofing	\$ _____
F. Metal Stud Framing	\$ _____
G. Finish Carpentry / Millwork	\$ _____
H. Insulation	\$ _____
I. Doors / Frames / Hardware.....	\$ _____
J. Hi-Speed, Overhead & Sectional Doors	\$ _____
K. Gypsum Board System	\$ _____
L. Acoustical Ceilings.....	\$ _____
M. Carpet / VCT / Base	\$ _____
N. Painting & Sealants/Caulk.....	\$ _____
O. Specialties (Fire Extinguishers & Steel Bollards).....	\$ _____
P. Plumbing (Building)	\$ _____
Q. HVAC	\$ _____
R. Electrical including EV Chargers (Building)	\$ _____
S. Fire Protection System (Sprinklers)	\$ _____
T. General Conditions	\$ _____
U. Overhead and Profit	\$ _____
SUB TOTAL	\$ _____

SITE WORK

9. CONTRACT PRICE BREAKDOWN: Undersigned proposes the following breakdown of the Base Bid; included in each line item is all labor, equipment, material, and other associated costs related to the item.

A. Site Work / Pad Prep.....	\$ _____
B. Site Paving & Concrete / Gate.....	\$ _____
C. Dumpster Enclosure (w/ Masonry & Stucco)	\$ _____
D. Site Lighting	\$ _____
D. Landscape / Irrigation	\$ _____
E. General Conditions	\$ _____
F. Overhead and Profit	\$ _____
SUB TOTAL	\$ _____

GRAND TOTAL (Site & Building)..... \$ _____

(Date)

(Typed Name)

(Signature)

Name of Corporation

End of Section

SECTION 00700

GENERAL CONDITIONS

1.00 GENERAL

1.01 THE GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION, AIA Document A201 dated 2020, is hereby referred to and made part hereof.

2.00 PRODUCTS - Not Applicable

3.00 EXECUTION - Not Applicable

END OF SECTION 00700

SECTION 01010

SUMMARY OF WORK

1.00 GENERAL

1.01 GENERAL DESCRIPTION OF WORK

This Project consists of a + 19,000 SF, single-story, Cadillac Automotive Dealership, constructed of concrete Tilt-Panels, steel bar joists, metal decking, poly-iso board insulation and a TPO membrane roofing system, along with interior metal stud partitions and GWB, HVAC, plumbing, lighting, and power. The facility will be served by an Automatic Fire Sprinkler System. The facility has a Service Department with Tech support spaces, a Parts Department with an upper Mezzanine Level, a 2-Lane Service Reception Drive, a Showroom and Offices, a Customer Lounge and Restroom facilities. There is also an onsite Dumpster Enclosure, and associated site work, site lighting and landscaping.

2.00 PRODUCTS - Not Applicable

3.00 EXECUTION - Not Applicable

END OF SECTION 01010

SECTION 01028
CHANGE ORDER PROCEDURES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Submittals.
- B. Documentation of change in Contract Sum/Price and Contract Time.
- C. Change procedures.
- D. Construction Change Authorization.
- E. Stipulated Sum change order.
- F. Unit price change order.
- G. Time and material change order.
- H. Execution of change orders.
- I. Correlation of Contractor submittals.

1.2 RELATED SECTIONS

- A. Document 00700 - General Conditions: Governing requirements for changes in the Work, in Contract Sum/Price, and Contract Time.

1.3 SUBMITTALS

- A. Submit the name of the individual authorized to receive change documents and be responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.
- B. Change Order Forms: AIA G701 Change Order.

1.4 DOCUMENTATION OF CHANGE IN CONTRACT SUM/PRICE AND CONTRACT TIME

- A. Maintain detailed records of work done on a time and material basis. Provide full information required for evaluation of proposed changes, and to substantiate costs of changes in the Work.
- B. Document each quotation for a change in cost or time with sufficient data to allow evaluation of the quotation.
- C. Provide additional data to support computations:
 - 1. Quantities of products, labor, and equipment.
 - 2. Taxes, insurance, and bonds.
 - 3. Overhead and profit.
 - 4. Justification for any change in Contract Time.
 - 5. Credit for deletions from Contract, similarly documented.

- D. Support each claim for additional costs, and for work done on a time and material basis, with additional information:
 - 1. Origin and date of claim.
 - 2. Dates and times work was performed, and by whom.
 - 3. Time records and wage rates paid.
 - 4. Invoices and receipts for products, equipment, and subcontracts, similarly documented.
- E. No Sub-Contractor can have a mark up greater than that provided for in the General Contractor's contract with the owner.

1.5 CHANGE PROCEDURES

- A. The Architect will advise of minor changes in the Work not involving an adjustment to Contract Sum/Price or Contract Time as authorized by AIA A201, 1987 Edition, Paragraph 7.4 by issuing supplemental instructions on AIA Form G710.
- B. The Architect may issue a Proposal Request which includes a detailed description of a proposed change with supplementary or revised Drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor will prepare and submit an estimate within ten days.
- C. The Contractor may propose a change by submitting a request for change to the Architect, describing the proposed change and its full effect on the Work, with a statement describing the reason for the change, and the effect on the Contract Sum/Price and Contract Time with full documentation and a statement describing the effect on Work by separate or other contractors. Document any requested substitutions in accordance with Section 01600.

1.6 CONSTRUCTION CHANGE AUTHORIZATION

- A. Architect may issue a document, signed by the Owner, instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
- B. The document will describe changes in the Work, and will designate a method of determining any change in Contract Sum/Price or Contract Time.
- C. Promptly execute the change in Work.

1.7 STIPULATED SUM CHANGE ORDER

- A. Based on Proposal Request and Contractor's fixed price quotation or Contractor's request for a Change Order as approved by Architect.

1.8 UNIT PRICE CHANGE ORDER

- A. For pre-determined unit prices and quantities, the Change Order will be executed on a fixed unit price basis.
- B. For unit costs or quantities of units of work which are not pre-determined, execute Work under a Construction Change Authorization.
- C. Changes in Contract Sum/Price or Contract Time will be computed as specified for Time and Material Change Order.

1.9 TIME AND MATERIAL CHANGE ORDER

- A. Submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.

- B. The Architect will determine the change allowable in Contract Sum/Price and Contract Time as provided in the Contract Documents.
- C. Maintain detailed records of work done on a Time and Material basis.
- D. Provide full information required for evaluation of proposed changes, and to substantiate costs for changes in the Work.

1.10 EXECUTION OF CHANGE ORDERS

- A. Execution of Change Orders: Architect will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.

1.11 CORRELATION OF CONTRACTOR SUBMITTALS

- A. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum/Price.
- B. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust time for other items of work affected by the change and resubmit.
- C. Promptly enter changes in Project Record Documents.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION 01028

SECTION 01030
FIELD ENGINEERING

1.00 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Owner's General Conditions and other Division 1 Specification Sections, apply to this Section.

2.00 PRODUCTS

2.01 MATERIALS

- A. The Contractor shall provide all instruments, tools and appurtenances to accurately execute the work of this Section.

3.00 EXECUTION

3.01 FIELD ENGINEERING

- A. Verify locations of survey control points prior to starting work.
- B. Protect survey control points prior to starting site work; preserve permanent reference points during construction.
- C. Promptly report to Architect the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.
- D. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Architect.
- E. All lay-out control to be by a state certified site surveyor and final sub-base elevation, finished floor elevation and corners of this build to be certified by a state certified site surveyor.
- F. Lay-out work from the established base lines, elevations and benchmarks referenced on the Drawings and provided by Owner's approved State certified Surveyor.
- G. Furnish templates, stakes and materials required.
- H. Preserve all monuments, stakes and markers.
- I. Coordinate and supervise layout of utility service lines and rough-in requirements.
- J. Verify all dimensions and conditions shown on the Drawings, Specifications and Addenda shall be verified before work is begun, and further verify at the site.
- K. Where installed work interferes with other work, the Architect will designate what work is to be removed and replaced.

3.02 INTENT OF PLANS AND SPECIFICATIONS

- A. The Contract Documents are complementary, and what is called for by any single document shall be as binding as if called for by all. Anything not expressly set forth in either, but which is reasonably implied, shall be furnished and performed the same as if it were both shown and mentioned. It is the intention of the documents to include all labor and materials, equipment, and transportation necessary to complete the work shown and indicated by the Drawings or called for in the Specifications, in accordance with the best practice prevailing for the work of the various kinds. Material or work described in words which so applied have a well known trade or technical meaning shall be held to refer to such recognized standards. The contractor will be required to furnish and install such work and material as may be necessary to furnish a proper and suitable preparation, support or finish for the work which is shown or specified, whether or not same is specifically mentioned in the Specifications or shown on the Drawings, and further, Contractor will be required to make plural and complete work which is shown or specified in the singular.
- B. Except where specifically noted or indicated otherwise, all mechanical and electrical work shall be concealed within the building construction, and within the limits of finished surfaces established on the Architectural Drawings. Where exposed mechanical and electrical work is permitted by the Architect, same shall be neatly arranged, racked and aligned to the Architect's satisfaction.
- C. Should Drawings conflict one with another or with the Specifications, the better quality or greater quantity of work or materials shall be included in the proposal, and unless otherwise ordered in writing, shall be performed or furnished.
- D. The Architect shall resolve all questions that may arise in relation to the intent of the final permitted Specifications and Drawings. Any explanations or interpretations of the intent of the Specifications and Drawings requested by the Contractor shall be referred to the Architect, who will answer in writing with a copy to the Owner.
- E. In these Specifications the different classes of work and materials are grouped generally in Divisions that correspond to the C.S.I. MASTERFORMAT and the A.I.A. MASTERSPEC formats. This is done for convenience of reference only and is not intended to control the Contractor in dividing the work among sub-contractors or to limit the work to be done under any Division to the requirements of the Division.

3.03 WORK BEYOND CONTRACT LIMIT

- A. The "Contract Limit" is generally noted on the Site Plan.
- B. Any work required beyond this limit for the installation of work under the contract such as new curbs, sidewalks, paving, utility services, drainage structures or other appurtenances shall be accomplished in accordance with the governing authorities having jurisdiction over the work.

END OF SECTION 01030

SECTION 01042

MECHANICAL AND ELECTRICAL COORDINATION

PART 1 - GENERAL

1.1 REQUIREMENTS

- A. Provide necessary work and services required for the complete installation of heating, ventilating, air conditioning, plumbing, and electrical systems as shown on the Drawings. For convenience, Drawings showing primarily H.V.A.C. have been numbered with an "M", Drawings showing primarily electrical have been numbered with an "E" and Drawings showing primarily plumbing have been numbered with a "P".
- B. Make installations in a manner that complies with applicable codes and laws. Where the requirements of Contract Documents exceed code requirements, comply with the Contract Documents.
- C. Perform electrical Work in accordance with the latest edition of the National Electrical Code as minimum standards of quality and safety.
- D. All contract drawings are applicable to these subcontractors. The General Contractor is responsible for trade coordination. Any conflicts or omissions within the drawing set and/or as recognized by the various trades must be brought to the Owner's and Architect's attention prior to contract execution.

1.2 RELATED SECTIONS

- A. Section 01200 - Project Meetings.
- B. Section 01300 - Submittals.
- C. Section 01600 - Material and Equipment: Product options and substitutions.
- D. Section 01650 - Starting of Systems.
- E. Section 01700 - Contract Closeout.
- F. Division 15 - Mechanical.
- G. Division 16 - Electrical.

1.3 CONTRACT DRAWINGS

- A. The Drawings are schematic in nature but indicate how the various components are integrated with other parts of the building. Determine exact locations by job measurement, by checking the requirements of other trades, and by review of Contract Documents.
- B. The Drawings indicate general routing of the various parts of the systems, but do not indicate all sizes, fittings, offsets, and run outs, which are required. Provide correct sizes, fittings, offsets, and run outs required to fit the system into spaces allocated to them. Locate all light fixtures, vents, and supply grilles to conform to the ceiling grid system. Examine the Drawings to become familiar with this requirement.

1.4 COORDINATION SUBMITTALS

- A. Conform to the requirements of Section 01300 - Submittals.
- B. Review shop drawings, product data, and samples for compliance with Contract Documents and for coordination among work of all sections of the Project Manual. Transmit to Contractor for review, then transmit to Architect.
- C. Check field dimensions and clearances and relationship to available space and anchors.
- D. Check compatibility with equipment and Work of other sections, electrical characteristics, and operational control requirements.
- E. Check motor voltages and control characteristics.
- F. Coordinate controls, interlocks, wiring of pneumatic switches, and relays.
- G. Coordinate wiring and control diagrams.
- H. Review the effect of any changes on work of other sections.
- I. Equipment and material submittals shall show sufficient data to indicate complete compliance with Contract Documents as follows:
 - 1. Proper sizes and capabilities.
 - 2. Ability to fit in the available space in a manner that will allow proper service.
 - 3. Construction methods, materials, and finishes.
 - 4. List of accessories.
- J. Product data shall include the contract item designation, building, and proposed model number.
- K. If proposed air devices are different than models specified, indicate the specified model and beside it the proposed model for each type of device. Do not list quantities.
- L. For any item to be installed in or on a finished surface (such as tee bar, acoustical ceiling, plaster wall) certify that applicable Contract Documents have been checked and that the item submitted is compatible with the surface finish on which it is to be installed.
- M. All Submittals shall be bound into three ring binders with hard plastic covers, with a table of contents listing all items in that specific submittal. Loose catalog sheets or drawings will not be acceptable. A separate submittal will be required for each type of equipment, e.g., lighting fixtures, switchgear, lighting panels, clock system, mechanical equipment, plumbing items, and ductwork accessories, each in a separate brochure. Miscellaneous apparatuses such as transformers, contactors, time switches, and safety switches may be contained in one submittal.
- N. Auxiliary system submittals shall contain sufficient information to show conformance with the specifications and shall include a description of the operation of each system to aid the consultant in the evaluation of each submittal.
- O. Verify and coordinate maintenance of Record Documents.

1.5 COORDINATION DOCUMENTS

- A. Shop Drawings: Sheet metal, piping, mechanical, and electrical fabrication Shop Drawings shall show equipment, ductwork, and piping, including piping in plumbing chases, sized, and drawn in

exact location to be installed. Produce Drawings at 1/4-inch scale with all ductwork and piping sized accordingly. Ductwork and piping larger than 3 inches shall be shown with double lines.

B. Coordination Drawings:

1. Coordination Drawings (**responsibility of the GC**) are Drawings which indicate relationships between the various systems and other components of the building such as beams, columns, ceilings, and walls. They shall be drawn to scale and shall include plans, elevations, sections, and other details as required to clearly define the relationships of the various components. Indicate ducts, conduits, sprinkler systems, light fixtures, piping, and miscellaneous equipment on one Drawing for each floor or level. Refer to Mechanical and Electrical Specifications for additional requirements.
2. Prepare coordination drawings to organize installation of Products for efficient use of available space, for proper sequence of installation, and to identify potential conflicts.
3. Prepare a master schedule to identify responsibilities under each section of Divisions 1 through 16 of the Specifications for activities which directly relate to this work, including submittals and temporary utilities. Identify electrical power characteristics and control wiring required for each item of equipment.
4. Maintain documents for the duration of the Work, recording changes due to site instructions, modifications, or adjustments.
5. After Architect review of original and revised documents, reproduce and distribute copies to concerned parties.

C. Interference Drawings:

1. Interference Drawings (**responsibility of the GC**) are supplementary to Coordination Drawings and indicate conflict between the various systems and other components of the building such as beams, columns, and walls. They shall be drawn to large scale and shall include plans, elevations, sections, and other details as required to clearly define the interference and to indicate the Contractor's proposed solution.
2. Submit Drawings for approval whenever job measurements and an analysis of the Drawings and specifications by the Contractor indicate that the various systems cannot be installed without significant deviation from the intent of the Contract. When such an interference is encountered, Work shall cease in the general areas of the conflict until a solution to the question has been approved by the Architect.

1.6 OPERATING MANUALS, SERVICE DATA, AND WARRANTIES

- A. Upon completion of the project, provide four copies of the service manual for each type unit of equipment. Each manual shall contain complete operation instructions and information required for performing periodic minor maintenance on the equipment. Include the following information:
 1. Identification of each major part of the unit by the manufacturer's part number.
 2. Wiring diagrams for electrical items and components.
 3. List of necessary service parts and equipment for maintenance.
 4. Separate spare parts list stating the estimated quantities of spare parts normally required to service the equipment for a period of one year.
 5. Manufacturer's catalogs containing optional accessory items available for the equipment.
- B. Warranties: In addition to the one-year warranty specified in the Conditions of the Contract, assume all responsibility for special guarantees which may be required concerning installation, operation or performance of equipment, materials, and systems provided by a distributor, manufacturer or subcontractor.
- C. Owner's Instructions: At the completion of the Project, arrange and conduct instructional classes on the mechanical, electrical, and plumbing systems for the Owner's operating personnel. The instruction shall be categorized into layout and orientation, operation, and maintenance of each system.

1.7 MANUFACTURER'S DIRECTIONS AND SUPERVISION

- A. Follow manufacturer's directions for installation, testing, and operation of all apparatuses and equipment provided.
- B. Where supervision by a manufacturer is required in the specification, pay all costs, and follow all instructions and recommendations of the manufacturer, who shall supervise the installation, connection, startup adjustment, instruction of the Owner, and final tests of equipment and systems. Where two or more manufacturer's equipment is interrelated, coordinate the Work and supervision.
- C. Provide a letter from the manufacturers whose supervision is required stating that they have supervised the installation, and their equipment or system is operating satisfactorily in detail and in every respect and that the Owner's representative has been instructed in the operation and maintenance.

1.8 REQUIREMENTS FOR EQUIPMENT

- A. Provide equipment with necessary parts and accessories even though the parts and accessories are not specifically mentioned herein.
- B. Provide a factory applied finish on all exterior surfaces. Touch up or refinish items which have the finish marred, before final acceptance.
- C. Rotating parts shall be in static and dynamic balance.
- D. Electrical materials shall bear the stamp of approval of the Underwriter's Laboratory.
- E. Noise: Eliminate any abnormal noises, which are not an inherent part of the systems as designed. Abnormal buzzing and rattling of equipment, piping, ducts, and air devices and squeaks in rotating equipment components will not be acceptable.

1.9 PROTECTION OF EQUIPMENT

- A. Do not deliver equipment to the jobsite until progress of construction has reached the stage where equipment is actually needed, or until equipment can be stored inside a building to protect equipment from the weather. Equipment allowed to stand in weather will be rejected, and new equipment of a like kind shall be used.
- B. Adequately protect equipment from damage after delivery to job site. Cover with heavy drop cloths as required to protect from plaster, dirt, paint, water, adverse weather conditions, and physical damage.
- C. Equipment which has been damaged by construction activities will be rejected, and new equipment of a like kind shall be used.
- D. At the time of Substantial Completion, equipment shall be clean.

1.10 COORDINATION

- A. Coordinate the mechanical and electrical Work with that of other trades in order that the various components of the systems shall be installed at the proper time, shall fit the available space, and shall allow proper service access to those requiring maintenance, including equipment specified in other Divisions.
- B. Coordinate progress schedules, including dates for submittals and for delivery of products.

- C. Conduct conferences among Subcontractors and others concerned with the Work, to establish and maintain coordination and schedules, and to resolve coordination matters in dispute.
- D. Participate in progress meetings. Report on progress of Work to be adjusted under coordination requirements, and any required changes in schedules. Transmit minutes of meetings and reports to concerned parties.
- E. Remove and relocate items which are installed without regard to proper access as directed by the Architect, at no additional cost to the Owner.
- F. Provide materials with trim to match and fit properly with the types of adjacent ceiling, wall, and floor finishes installed. Model numbers in specifications or scheduled on Drawings are not intended to designate the required trim.
- G. Provide mechanical equipment with electrical characteristics compatible with that shown on Electrical Drawings and described in Electrical Division of the specifications.
- H. Prior to the fabrication of ductwork or the installation of devices in the ceilings, review the Drawings to ascertain that the locations of devices in the ceilings create a pattern which is compatible with the reflected ceiling plan and the spacing of the various ceiling mounted devices.
- I. In certain instances, the Architect may require relocation of outlets and switches. Where relocation is within 3 feet of the location shown in the Drawings, and when Contractor is informed of necessary relocation before Work is begun on this portion of the job, no extra compensation will be allowed.

1.11 EQUIPMENT START-UP

- A. Verify utilities, connections and controls are complete and equipment is in operable condition as required by Divisions 15 and 16.
- B. Observe startup and adjustments; record time and date of start-up, and results.
- C. Observe equipment demonstrations in the company of the Owner's representative; record times and additional information required for Operation and Maintenance Manuals.

1.12 INSPECTION AND ACCEPTANCE OF EQUIPMENT

- A. Prior to inspection, verify that equipment is tested and operational, and clean.
- B. Assist Architect with inspection. Prepare list of items to be completed and corrected.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION 01042

SECTION 01045
CUTTING AND PATCHING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Requirements and limitations for cutting and patching of Work.

1.2 RELATED SECTIONS

- A. Section 01010 - Summary of Work.
- B. Section 01300 - Submittals.
- C. Section 01610 - Materials and Equipment: Product Options and Substitutions.
- D. Individual Product Specification Sections:
 - 1. Cutting and patching incidental to work of the Section.
 - 2. Advance notification to other Sections of openings required in work of those Sections.
 - 3. Limitations on cutting structural members.

1.3 SUBMITTALS

- A. Submit written request in advance of cutting or alteration which affects:
 - 1. Structural integrity of any element of Project.
 - 2. Integrity of weather-exposed or moisture-resistant element.
 - 3. Efficiency, maintenance, or safety of any operational element.
 - 4. Visual qualities of sight exposed elements.
 - 5. Work of Owner or separate contractor.
- B. Include in request:
 - 1. Identification of Project.
 - 2. Location and description of affected work.
 - 3. Necessity for cutting or alteration.
 - 4. Description of proposed work, and products to be used.
 - 5. Alternatives to cutting and patching.
 - 6. Effect on work of Owner or separate contractor.
 - 7. Written permission of affected separate contractor.
 - 8. Date and time work will be executed.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Primary Products: Those required for original installation.
- B. Product Substitution: For any proposed change in materials, submit request for substitution under provisions of Section 01600.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Inspect existing conditions prior to commencing Work, including elements subject to damage or movement during cutting and patching.
- B. After uncovering existing work, inspect conditions affecting performance of work.
- C. Beginning of cutting or patching means acceptance of existing conditions.

3.2 PREPARATION

- A. Provide temporary supports to ensure structural integrity of the Work. Provide devices and methods to protect other portions of the Project from damage.
- B. Provide protection from elements for areas which may be exposed by uncovering work.
- C. Maintain excavations free of water.

3.3 CUTTING AND PATCHING

- A. Execute cutting, fitting, and patching including excavation and fill to complete work.
- B. Fit products together, to integrate with other work.
- C. Uncover work to install ill-timed work.
- D. Remove and replace defective or non-conforming work.
- E. Remove samples of installed work for testing when requested.
- F. Provide openings in the work for penetration of mechanical and electrical work.

3.4 PERFORMANCE

- A. Execute work by methods to avoid damage to other Work, and which will provide appropriate surfaces to receive patching and finishing.
- B. Employ original installer to perform cutting and patching for weather exposed and moisture resistant elements, and sight-exposed surfaces.
- C. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
- D. Restore work with new products in accordance with requirements of Contract Documents.
- E. Fit work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- F. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material to full thickness of the penetrated element.
- G. Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish the entire unit.

END OF SECTION 01045

SECTION 01090

REFERENCE STANDARDS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Quality assurance.
- B. Schedule of references.

1.2 RELATED SECTIONS

- A. Document 00800 - General Conditions: Reference Standards.

1.3 QUALITY ASSURANCE

- A. For products or workmanship specified by association, trade, or Federal Standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on date of Contract Documents.
- C. Obtain copies of standards when required by Contract Documents.
- D. Maintain copy at jobsite during submittals, planning, and progress of the specific work, until Substantial Completion.
- E. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.
- F. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.4 SCHEDULE OF REFERENCES

AA	Aluminum Association 818 Connecticut Avenue, N.W. Washington, DC 20006
AABC	Associated Air Balance Council 1000 Vermont Avenue, N.W. Washington, DC 20005
AASHTO	American Association of State Highway and Transportation Officials 444 North Capitol Street, N.W. Washington, DC 20001
ACI	American Concrete Institute Box 19150 Redford Station Detroit, MI 48219
ADC	Air Diffusion Council 230 North Michigan Avenue Chicago, IL 60601

AGC	Associated General Contractors of America 1957 E Street, N.W. Washington, DC 20006
AI	Asphalt Institute Asphalt Institute Building College Park, MD 20740
AIA	American Institute of Architects 1735 New York Avenue, N.W. Washington, DC 20006
AISC	American Institute of Steel Construction 400 North Michigan Avenue Eighth Floor Chicago, IL 60611
AISI	American Iron and Steel Institute 1000 16th Street, N.W. Washington, DC 20036
AITC	American Institute of Timber Construction 333 W. Hampden Avenue Englewood, CO 80110
AMCA	Air Movement and Control Association 30 West University Drive Arlington Heights, IL 60004
ANSI	American National Standards Institute 1430 Broadway New York, NY 10018
APA	American Plywood Association Box 11700 Tacoma, WA 98411
ARI	Air-Conditioning and Refrigeration Institute 1501 Wilson Boulevard Arlington, VA 22209
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers 1791 Tullie Circle, N.E. Atlanta, GA 30329
ASME	American Society of Mechanical Engineers 345 East 47th Street New York, NY 10017
ASPA	American Sod Producers Association 4415 West Harrison Street Hillside, IL 60162
ASTM	American Society for Testing and Materials 1916 Race Street Philadelphia, PA 19103

AWI	Architectural Woodwork Institute 2310 South Walter Reed Drive Arlington, VA 22206
AWPA	American Wood-Preservers' Association 7735 Old Georgetown Road Bethesda, MD 20014
AWS	American Welding Society 550 LeJeune Road, N.W. Miami, FL 33135
AWWA	American Water Works Association 6666 West Quincy Avenue Denver, CO 80235
BIA	Brick Institute of America 11490 Commerce Park Drive Reston, VA 22091
CDA	Copper Development Association 57th Floor, Chrysler Building 405 Lexington Avenue New York, NY 10174
CLFMI	Chain Link Fence Manufacturers Institute 1101 Connecticut Avenue, N.W. Washington, DC 20036
CRSI	Concrete Reinforcing Steel Institute 933 Plum Grove Road Schaumburg, IL 60195
DHI	Door and Hardware Institute 7711 Old Springhouse Road McLean, VA 22102
EJCDC	Engineers' Joint Contract Documents Committee American Consulting Engineers Council 1015 15th Street, N.W. Washington, DC 20005
EJMA	Expansion Joint Manufacturers Association 25 North Broadway Tarrytown, NY 10591
FGMA	Flat Glass Marketing Association 3310 Harrison White Lakes Professional Building Topeka, KS 66611
FM	Factory Mutual System 1151 Boston-Providence Turnpike P.O. Box 688 Norwood, MA 02062

FS	Federal Specification General Services Administration Specifications and Consumer Information Distribution Section (WFSIS) Washington Navy Yard, Bldg. 197 Washington, DC 20407
GA	Gypsum Association 1603 Orrington Avenue Evanston, IL 60201
ICBO	International Conference of Building Officials 5360 S. Workman Mill Road Whittier, CA 90601
IEEE	Institute of Electrical and Electronics Engineers 345 East 47th Street New York, NY 10017
IMIAC	International Masonry Industry All-Weather Council International Masonry Institute 815 15th Street, N.W. Washington, DC 20005
MBMA	Metal Building Manufacturer's Association 1230 Keith Building Cleveland, OH 44115
MFMA	Maple Flooring Manufacturers Association 60 Rivere Drive Northbrook, IL 60062
MIL	Military Specification Naval Publications and Forms Center 5801 Tabor Avenue Philadelphia, PA 19120
ML/SFA	Metal Lath/Steel Framing Association 221 North LaSalle Street Chicago, IL 60601
NAAMM	National Association of Architectural Metal Manufacturers 221 North LaSalle Street Chicago, IL 60601
NCMA	National Concrete Masonry Association P.O. Box 781 Herndon, VA 22070
NEBB	National Environmental Balancing Bureau 8224 Old Courthouse Road Vienna, VA 22180
NEMA	National Electrical Manufacturers' Association 2101 'L' Street, N.W. Washington, DC 20037

NFPA	National Fire Protection Association Battery March Park Quincy, MA 02269
NFPA	National Forest Products Association 1619 Massachusetts Avenue, N.W. Washington, DC 20036
NSWMA	National Solid Wastes Management Association 1730 Rhode Island Ave., N.W. Washington, DC 20036
NTMA	National Terrazzo and Mosaic Association 3166 Des Plaines Avenue Des Plaines, IL 60018
NWMA	National Woodwork Manufacturers Association 205 W. Touhy Avenue Park Ridge, IL 60068
PCA	Portland Cement Association 5420 Old Orchard Road Skokie, IL 60077
PCI	Prestressed Concrete Institute 201 North Wells Street Chicago, IL 60606
PS	Product Standard U. S. Department of Commerce Washington, DC 20203
RIS	Redwood Inspection Service One Lombard Street San Francisco, CA 94111
RCSHSB	Red Cedar Shingle and Handsplit Shake Bureau 515 116th Avenue Bellevue, WA 98004
SDI	Steel Deck Institute P.O. Box 9506 Canton, OH 44711
SDI	Steel Door Institute 712 Lakewood Center North 14600 Detroit Avenue Cleveland, OH 44107
SIGMA	Sealed Insulating Glass Manufacturers Association 111 East Wacker Drive Chicago, IL 60601
SJI	Steel Joist Institute 1205 48th Avenue North Suite A Myrtle Beach, SC 29577

SMACNA	Sheet Metal and Air Conditioning Contractors' National Association 8224 Old Court House Road Vienna, VA 22180
SSPC	Steel Structures Painting Council 4400 Fifth Avenue Pittsburgh, PA 15213
TCA	Tile Council of America, Inc. Box 326 Princeton, NJ 08540
UL	Underwriters' Laboratories, Inc. 333 Pfingston Road Northbrook, IL 60062
WCLIB	West Coast Lumber Inspection Bureau 6980 S.W. Varns Road Box 23145 Portland, OR 97223
WWPA	Western Wood Products Association 1500 Yeon Building Portland, OR 97204

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION 01090

SECTION 01300

SUBMITTALS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Submittal procedures.
- B. Construction progress schedules.
- C. Proposed products list.
- D. Shop drawings.
- E. Product data.
- F. Samples.
- G. Manufacturers' instructions.
- H. Manufacturers' certificates.

1.2 RELATED SECTIONS

- A. Section 01400 - Quality Control: Manufacturers' field services and reports.
- B. Section 01700 - Contract Closeout: Contract warranty and manufacturer's certificates closeout submittals.

1.3 SUBMITTAL PROCEDURES

- A. Transmit each submittal with AIA Form G810 or Architect accepted form.
- B. Sequentially number the transmittal forms. Re-submittals are to have original number with an alphabetic suffix.
- C. Identify Project, Contractor, Subcontractor, or supplier; pertinent Drawing sheet and detail number(s), and specification Section number, as appropriate.
- D. Apply Contractor's stamp, signed or initialed certifying that review, verification of Products required, field dimensions, adjacent construction Work, and coordination of information, is in accordance with the requirements of the Work and Contract Documents.
- E. Schedule submittals to expedite the Project and deliver to Architect at business address. Coordinate submission of related items.
- F. Identify variations from Contract Documents and Product or system limitations, which may be detrimental to successful performance of the completed Work.
- G. Provide space for Contractor and Architect review stamps.
- H. Revise and resubmit submittals as required, identify all changes made since previous submittal.

- I. Distribute copies of reviewed submittals to concerned parties. Instruct parties to promptly report any inability to comply with provisions.

1.4 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit initial progress schedule in duplicate within 15 days after date of Owner-Contractor Agreement for Architect review.
- B. Revise and resubmit as required.
- C. Submit revised schedules with each Application for Payment, identifying changes since previous version.
- D. Submit a computer-generated horizontal bar chart with separate lines for each major section of work or operation, identifying the first workday of each week.
- E. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate the early and late start, early and late finish, float dates, and duration.
- F. Indicate estimated percentage of completion for each item of Work at each submission.
- G. Indicate submittal dates required for shop drawings, product data, samples, and product delivery dates, including those furnished by Owner and under Allowances.

1.5 PROPOSED PRODUCTS LIST

- A. Within 15 days after date of the Owner-Contractor Agreement submit complete list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
- B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

1.6 SHOP DRAWINGS

- A. Submit in the form of one reproducible transparency and five opaque reproductions or provide a minimum of six 8½x11 copies to the Architects Office. A minimum of two will be returned.
- B. After review, reproduce and distribute in accordance with Article on Procedures above and for Record Documents described in Section 01700 - Contract Closeout.
- C. Allow 7 working days for Architect to review submittal. Allow additional 7 working days if the Architect will be forwarding submittal to his consultant for review. Submittal should be far enough in advance to allow for this and any re-submittal and review which may be required without delay of project.

1.7 PRODUCT DATA

- A. Submit the number of copies which the Contractor requires, plus three copies which will be retained by the Architect.
- B. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information unique to this Project.
- C. Flag any products that are substitutions or otherwise different from that specified.

- D. After review, distribute in accordance with Article on Procedures above and provide copies for Record Documents described in Section 01700 - Contract Closeout.

1.8 SAMPLES

- A. Submit samples to illustrate functional and aesthetic characteristics of the Product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
- B. Submit samples of finishes from the full range of manufacturers' standard colors, or in custom colors selected if so specified, textures, and patterns for Architect's selection.
- C. Include identification on each sample, with full Project information. If a specified product is found marked in documentation (i.e. floor tile marked F-3 in Finish Schedule), mark sample with schedule mark.
- D. Submit the number of samples specified in individual specification (no less than 3) Sections; one of which will be retained by Architect.
- E. Reviewed samples which may be used in the Work are indicated in individual specification Sections.
- F. Flag any products that are substitutions or otherwise different from that specified

1.9 MANUFACTURER'S INSTRUCTIONS

- A. When specified in individual specification Sections, submit manufacturers' printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, in quantities specified for Product Data.
- B. Identify conflicts between manufacturers' instructions and Contract Documents.

1.10 MANUFACTURER'S CERTIFICATES

- A. When specified in individual specification Sections, submit manufacturers' certificate to Architect for review, in quantities specified for Product Data.
- B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference date, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or Product but must be acceptable to Architect.

1.11 LONG LEAD ITEMS

- A. All long lead items will be identified at the Pre-Construction Conference. These items will be flagged and expedited by all parties.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

END OF SECTION 01300

SECTION 01400
QUALITY CONTROL

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Quality assurance and control of installation.
- B. References.
- C. Field samples.
- D. Mock-up.
- E. Inspection and testing laboratory services.
- F. Manufacturers' field services and reports.

1.2 RELATED SECTIONS

- A. Section 01090 - Reference Standards.
- B. Section 01300 - Submittals: Submission of Manufacturers' Instructions and Certificates.
- C. Section 01410 - Testing Laboratory Services.
- D. Section 01600 - Material and Equipment: Requirements for material and product quality.
- E. Not Used.

1.3 QUALITY ASSURANCE/CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply fully with manufacturers' instructions, including each step in the sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding with the Work.
- D. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform work by persons qualified to produce workmanship of specified quality.
- F. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

1.4 REFERENCES

- A. Conform to reference standard by date of issue current on date of Contract Documents.
- B. Obtain copies of standards when required by Contract Documents.

- C. Should specified reference standards conflict with Contract Documents, request clarification for Architect before proceeding with the Work.
- D. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.5 FIELD SAMPLES

- A. Install field samples at the site as required by individual Specifications Sections for review.
- B. Acceptable samples represent a quality level for the Work.
- C. Where field sample is specified in individual Sections to be removed, clear area after field sample has been accepted by Architect.
- D. Block and brace field samples as required for safety.
- E. Field samples that may be incorporated into the Work are identified in individual sections.

1.6 NOT USED

1.7 MANUFACTURERS' FIELD SERVICES AND REPORTS

- A. Submit qualifications of observer to Architect 30 days in advance of required observations. Observer shall be subject to approval of Architect and Owner.
- B. When specified in individual specification Sections, require material or Product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, and start-up of equipment as applicable, and to initiate instructions when necessary.
- C. Individuals to report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.
- D. Submit report in duplicate within 30 days of observation to Architect for review.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used.

END OF SECTION 01400

SECTION 01500

TEMPORARY FACILITIES AND CONTROLS

1.00 GENERAL

1.01 RELATED SECTIONS

Section 01710 Cleaning

1.02 RELATED DOCUMENTS

- A. Drawings and General provisions of the Contract, including Owner's General Conditions and other Division 1 Specification Sections, apply to this Section.

2.00 PRODUCTS

Not Applicable

3.00 EXECUTION

3.01 SAFETY

- A. Comply with applicable provisions and standards of the Occupational Safety and Health Act of 1980 and any other applicable statute, standard, regulation, or code.

3.02 SCAFFOLDING AND HOISTING

- A. Provide all ladders and furnish and install all materials required for all scaffolding, staging, platforms, temporary floorings and railings, in compliance with all local and state laws governing same. The Contractor shall be held responsible for the maintenance, cleaning and removal of all scaffolding and equipment erected.

3.03 ELECTRICAL SERVICE

- A. Provide temporary electrical service, including extensions and connections necessary for construction trailer and for construction work. Pay costs of installing and maintaining service for duration of project. Pay costs associated with use of permanent electrical system until Date of Final Completion, except as otherwise indicated below.

3.04 TEMPORARY LIGHTING

- A. Provide the following minimum light levels for construction purposes.
1. General construction and safety lighting: 5 footcandles.
 2. Finishing work and testing: 25 footcandles.

3.05 TEMPORARY HEAT AND VENTILATION

- A. Provide temporary heat in enclosed spaces to provide minimum temperatures of 40 degrees F. until finishing work begins; then maintain temperatures at levels indicated in specification sections.

- B. Provide ventilation to prevent accumulation of dust, fumes or gases, to properly cure materials and disperse humidity.
- C. Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control. If Owner authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of 8 at each return air grille in system and remove at end of construction.

3.06 TELEPHONE SERVICE

- A. Provide temporary telephone service to temporary offices with separate lines for a facsimile machine and answering machine for duration of project. Pay costs for installation and for local service.

3.07 WATER SERVICE

- A. Provide temporary water for construction purposes, including extensions and connections necessary for work. Pay costs of installing and maintaining service for duration of project. Pay costs associated with use of permanent water system until Date of Final Completion.

3.08 SANITARY TOILET FACILITIES

- A. Provide and maintain temporary toilet facilities for construction personnel. Permanent new facilities may not be used by personnel.

3.09 FIRE PROTECTION

- A. Provide one 20-pound, ABC type fire extinguisher for each 5,000 s.f. of floor area during the entire construction period.

3.10 TRASH REMOVAL

- A. Keep the premises always clean and remove all rubbish and debris in containers at the end of each working day in accordance with Section 01710.

3.11 TEMPORARY ENCLOSURES AND PROTECTION

- A. Furnish and maintain all temporary stairs, ramps, barricades, enclosures, railings, shoring, bracing and staging in conformance with O.S.H.A. requirements.

3.12 COMPLETION OF WORK

- A. At completion of work, or at time of permanent utility connections, as applicable, remove temporary facilities, including connections and debris resulting from temporary installation.

3.13 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.

3.14 JOB SITE OFFICE

- A. Provide an air-conditioned job site office in a separate self-contained unit (job site trailer). The unit is to be large enough to contain a plans table sized to allow viewing of plans when fully open, a conference table to accommodate the seating of a minimum of 8 participants and the equipment listed below. This equipment is to be considered required:
1. Copy machine
 2. Computer with high-speed internet connection and printer
 3. Telephone with speaker and teleconference capability
 4. Hard Hats for Owner and Visiting Professionals
 5. Drinking Water
 6. First Aid Kit
 7. Fire Extinguisher
 8. A complete set of the latest approved Permit Drawings.
 9. A complete set of Shop Drawings / Submittals

END OF SECTION 01500

SECTION 01600

SUBSTITUTIONS

1.00 GENERAL

1.01 RELATED SECTIONS

- A. Section 01300 Submittals

1.02 RELATED DOCUMENTS

- A. General Conditions and other Division 1 Specification Sections, apply to all work specified in this Section.

1.03 REQUEST FOR SUBSTITUTION

- A. If the Contractor desires to use materials or products of manufacturers different from those indicated in the final Owner approved Documents, the contractor shall make written application as described herein. The burden of proving the equality of the proposed substitution rests on the Contractor. To be acceptable, the proposed substitution shall meet or exceed all expressed requirements of the Contract Documents and shall be submitted upon the Contractor's letterhead.
1. Submit to the Architect through the General Contractor at the earliest date possible to afford the Architect ample time to process the request.
 2. Submit copies of shop drawings, product data or samples as required in Section 01300. The Architect will consider reports from reputable independent testing laboratories, verified experience records from previous users and other written information valid in the circumstances.
 3. Completely and clearly indicate in what respects the materials or products differ from those indicated in the Contract Documents.
 4. Include the manufacturers printed recommendations clearly describing the installation use and care, as applicable, of the proposed substitutions.
 5. Include a complete schedule of changes in the Contract Documents, if any, which must be made to permit the use of the proposed substitutions.
 6. Provide proof of Florida Product Approval (or similar acceptable alternative) when proposing substitutes for items, products or systems requiring such approvals.
- B. A request constitutes a representation that the Contractor:
1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
 2. Will provide the same warranty for the Substitution as for the specified product.
 3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.
 4. Waives claims for additional costs or time extension which may subsequently become apparent.
 5. Will reimburse Owner for review or redesign services associated with re-approval by the authorities.
 6. Will reimburse Owner for review or redesign services required to allow proper installation of the substitution.

2.00 PRODUCTS - Not Applicable

3.00 EXECUTION - Not Applicable

END OF SECTION 01600

SECTION 01610

MATERIAL AND EQUIPMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Products.
- B. Transportation and handling.
- C. Storage and protection.
- D. Product options.
- E. Substitutions.

1.2 RELATED SECTIONS

- A. Section 01600 - Substitutions
- B. Section 01400 - Quality Control: Product quality monitoring.

1.3 PRODUCTS

- A. Products: Means new material, machinery, components, equipment, fixtures, and systems forming the Work. Does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components required for reuse.
- B. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.
- C. Provide interchangeable components of the same manufacturer, for similar components.

1.4 VERIFICATION OF NON-CONTAMINATION

- A. For each of the following materials provided, submit a letter from the manufacturer certifying that products are totally free of all forms of polychlorinated biphenyl (PCB) or asbestos, including actinolite, amosite, anthophyllite, chrysotile, crocidolite, and tremolite.
 - 1. Low density fill.
 - 2. Fireproofing.
 - 3. Damp proofing.
 - 4. Waterproofing.
 - 5. Sealants.
 - 6. Prefabricated wall panels or siding.

7. Vinyl composition flooring.
8. Mechanical cooling tower liners.
9. Mechanical insulation.
10. Electrical isolators.
11. Other products indicated in the specification.

1.5 TRANSPORTATION AND HANDLING

- A. Transport and handle products in accordance with manufacturer's instructions.
- B. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

1.6 STORAGE AND PROTECTION

- A. Store and protect products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive products in weather-tight, climate-controlled enclosures.
- B. For exterior storage of fabricated products, place on sloped supports, above ground.
- C. Provide off-site storage and protection when a site does not permit on-site storage or protection.
- D. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation.
- E. Store loose granular materials on solid flat surfaces in a well-drained area. Provide mixing with foreign matter.
- F. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- G. Arrange storage of products to permit access for inspection. Periodically inspect to ensure products are undamaged and are maintained under specified conditions.

1.7 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: Products of manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

1.8 SUBSTITUTIONS

- A. Instructions to Bidders specify time restrictions for submitting requests for Substitutions during the bidding period to requirements specified in this Section.

- B. Architect will consider requests for Substitutions within 15 days after the date of Owner-Contractor Agreement.
- C. Substitutions may be considered when a product becomes unavailable through no fault (or lack of proper planning) on the part of the Contractor.
- D. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents and Florida Product Approval where applicable.
- E. A request constitutes a representation that the Contractor:
 - 1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
 - 2. Will provide the same warranty for the Substitution as for the specified product.
 - 3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.
 - 4. Waives claims for additional costs or time extension which may subsequently become apparent.
 - 5. Will reimburse Owner for review or redesign services associated with re-approval by authorities.
 - 6. Will reimburse Owner for review or redesign services required to allow proper installation of the substitution.
- F. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.
- G. Substitution Submittal Procedure:
 - 1. Submit three copies of the request for Substitution for consideration. Limit each request to one proposed Substitution.
 - 2. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence.
 - 3. The Architect will notify the Contractor, in writing, of decision to accept or reject request.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not used

END OF SECTION 01610

SECTION 01650

STARTING OF SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Starting systems.
- B. Demonstration and instructions.
- C. Testing, adjusting, and balancing.

1.2 RELATED SECTIONS

- A. Section 01400 - Quality Control: Manufacturers field reports.
- B. Section 01700 - Contract Closeout: System operation and maintenance data and extra materials.
- C. Division 15 - Testing, Adjusting, and Balancing.

1.3 STARTING SYSTEMS

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Notify Architect and Owner seven days prior to start-up of each item.
- C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, or for other conditions which may cause damage.
- D. Verify that tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- E. Verify wiring and support components for equipment are complete and tested.
- F. Execute start-up under supervision of applicable [manufacturer's representative] [Contractors' personnel] in accordance with manufacturers' instructions.
- G. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.
- H. Submit a written report in accordance with Section 01400 that equipment or system has been properly installed and is functioning correctly.

1.4 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of Products to Owner's personnel two weeks prior to date of Substantial Completion.
- B. Demonstrate Project equipment in a location to be determined by Owner, and instructed by a manufacturers' representative who is knowledgeable about the Project.
- C. For equipment or systems requiring seasonal operation, perform demonstrations for other seasons within twelvemonths.

- D. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owners' personnel in detail to explain all aspects of operation and maintenance.
- E. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed time, at Project location.
- F. Prepare and insert additional data in operations and maintenance manuals when the need for additional data becomes apparent during instruction.

1.5 TESTING, ADJUSTING, AND BALANCING

- A. The Owner may, employ, and pay for services of an independent firm to perform testing whom may recommend adjusting, and balancing.
- B. The HVAC contractor shall provide test and balance service and produce a report to be submitted to Architect indicating observations and results of tests and indicating compliance or non-compliance with the requirements of the Contract Documents. The report must be approved by the Mechanical Engineer prior to 100% completion payment on pay application (retention not to be considered).

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION 01650

SECTION 01700
PROJECT CLOSEOUT

1.00 GENERAL

1.01 RELATED DOCUMENTS

- A. General provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to all work specified in this Section.

2.00 PRODUCTS

2.01 As referenced herein.

3.00 EXECUTION

3.01 CLEAN UP

- A. Clean entire project at the end of the job in accordance to accomplish the following:

1. Remove stains from glass and metal, clean and polish same.
2. Clean and polish all hardware and fixtures.
3. Clean and polish all tile work and finishes.
4. Clean and polish all paint, trim, and floors.
5. Clean exterior of all debris and refuse.
6. Clean and or change all lamps.
7. Change all air filters.

3.02 OPERATING INSTRUCTIONS/MAINTENANCE MANUALS

- A. The Contractor shall provide to the Owner three (3) bound copies of Operating Instructions, line diagrams, color code, etc. for all equipment. These instructions shall include a complete description of all equipment, diagrams indicating the connections, oiling requirements, type of oil and grease to be used, and the method to be used in the operation of equipment. Maintenance instructions and warranties shall also be included.
- B. Final acceptance of the project shall be contingent upon receipt by the Owner from the Contractor of the following information not later than 30 days after Date of Substantial Completion.
1. Cuts and brochures of all installed equipment (including Owner provided) with manufacturer's operation and maintenance manuals.
 2. List of all suppliers and subcontractors including addresses and telephone numbers and who is to be contacted in case of malfunction while equipment is under warranty or guarantee.
- C. Operating, Maintenance Instructions: Arrange for each installer of product/services requiring continuing maintenance (by Owner) or operation to meet with Owner's personnel at project site to provide basic instructions needed for proper operation and maintenance of entire work. Include instructions by manufacturer's representatives where installer is not expert in required procedures.

- D. Review maintenance manuals, record documents, tools, spare parts and materials, lubricants, fuels identification system, control sequences, hazards, cleaning and similar procedures and facilities.
- E. For operational equipment demonstrate start up, shut down, emergency operations, noise and vibration adjustments, safety, economy and efficiency adjustments, and similar operations.
- F. Listing of Instructions: specifically, but not by way of limitation, provide instructions to Owner's personnel on categories of work listed below.
 - 1. Mechanical/Electrical work.
 - 2. Roofing, flashing, joint sealers, and similar elements of work.
 - 3. Finish flooring.
 - 4. Elevator operation and maintenance.

3.03 WARRANTIES

- A. Provide to the Owner three (3) copies of warranties, guarantees and service contracts. Include in maintenance manuals.
- B. Effective date of warranties guarantees, and service contracts shall be Date of Substantial Completion of the Project by the Owner.
- C. Warranty shall be written in the form for the Contractor's work and the work of each subcontractor.

3.04 CERTIFICATE OF OCCUPANCY

- A. Furnish to the Owner, the final certificate of occupancy, or its equivalent, covering the Project issued by the building department having jurisdiction, or a certified copy of such certificate, prior to the delivery of possession of the premises.
- B. Furnish certificates from local governmental agencies that the construction has been inspected as required by law or ordinances and that the building is accepted by the following:
 - 1. Local Building Inspector
 - 2. Local Plumbing Inspector
 - 3. Local Fire Marshal
 - 4. Local Electrical Inspector

3.05 AS-BUILT RECORD PRINTS

- A. Provide to the Architect one (1) complete set of blue-line drawings and specifications which have been revised (marked up) to clearly indicate all changes to the documents which were made during the construction of the project either by instruction from the Architect/Owner or to accommodate field conditions.

3.06 RELEASE OF LIENS

- A. Neither the final payment nor any part of the retained percentage shall become due until the Contractor delivers to the Owner a complete release of all Liens arising out of this Contract. The Contractor may, if any subcontractor refuses to furnish a release, furnish a bond satisfactory to the Owner to indemnify the Owner against any Lien. If any Lien remains unsatisfied after all payments are made, the Contractor shall refund to the Owner all monies that the latter may be compelled to pay in discharging such a lien, including all costs and a reasonable attorney's fee.

3.07 KEYS

- A. Keys shall be delivered to the Owner with key tags indicating the number and/or description of door or room each key is intended to fit. The Contractor shall prepare and furnish with the keys an itemized key schedule listing the door or room number of key, and number of keys being delivered for each door or lock.
- B. The Contractor shall secure from the Owner or his designated agent a signed receipt in triplicate acknowledging receipt of keys and key schedule. The Contractor shall retain one (1) copy of this and forward two (2) copies of the receipt to Architect.
- C. Provide Dual Master with secondary keying. General Contractor to meet with owner to establish exact keying requirements.

3.08 EQUIPMENT

- A. Coordinate demonstrations and trial runs of equipment for Owner and complete such demonstrations prior to final acceptance.

3.09 PUNCH LIST

- A. Provide a letter certifying that all items on the "Punch List" have been completed or corrected.

3.10 SUBCONTRACTORS LIST

- A. Provide list of Subcontractors with addresses, telephone numbers, and name of the responsible person who worked on the job.

3.11 FINISH SCHEDULE

- A. Provide a detailed Finish Schedule to include a listing of all materials used for the project that will list manufacturer, model #, type, color, etc.

3.12 EXTRA MATERIAL

- A. Provide (1) one full container for all finish material, including but limited to tile, paint, Acoustic Ceiling Tiles, and as called for in individual specification sections.

END OF SECTION 01700

SECTION 01710

CLEANING

1.00 GENERAL

1.01 RELATED SECTIONS

Section 01500	Temporary Facilities and Controls
Section 01700	Project Closeout

1.02 RELATED DOCUMENTS

- A. Drawings and General provisions of the Contract, including Owner's General Conditions and other Division 1 Specification Sections, apply to all work specified in this Section.

1.03 GENERAL REQUIREMENTS

- A. Contractor shall always keep the Project site free from accumulation of waste materials and rubbish during the construction period. At completion of the Work, the Contractor shall remove all waste materials and rubbish from and about the Project, as well as his tools, construction equipment, machinery and surplus materials, except those specifically required by the Contract Documents to be left for the Owner's use.
- B. If Contractor fails to keep project clean or to clean up prior to Date of Substantial Completion, the Owner may do so as provided in Paragraph 3.4 of the General Conditions and the cost thereof will be charged to the Contractor.

1.04 SAFETY REQUIREMENTS

- A. Store volatile waste in covered metal containers. Remove from project site daily.
1. Allow no volatile wastes to accumulate on volatile substances.
 2. Provide adequate ventilation during use of volatile substances.
- B. Comply with local anti-pollution laws. Do not burn waste materials and rubbish on the project site.
- C. Do not dispose of volatile wastes such as mineral spirits, oil or paint thinner on the project site.
- D. Dispose of no waste or cleaning materials, which contain materials harmful to plant growth on project site. Clean up materials, which accidentally spill as quickly as possible.

- E. Clean disturbed areas of project site of debris.
 - 1. Pressure wash or broom clean paved and concrete surfaces. Remove oil and similar deleterious substances.
 - 2. Remove debris from grassed and landscaped areas, if contaminated, in the most expeditious manner.
 - 3. The building will be professionally cleaned after punch list completion.
- F. Replace air conditioning filter(s) after completion of the Punch List.
- G. Replace all lamps in operation before and during drywall installation. Clean all lamps not replaced. Clean all light reflectors and lenses.
- A. Clean entire project at the end of the job in accordance to accomplish the following:
 - 1. Remove stains from glass and metal, clean and polish same.
 - 2. Clean and polish all hardware and fixtures.
 - 3. Clean and polish all tile work and finishes.
 - 4. Clean and polish all paint, trim, and floors.
 - 5. Clean exterior of all debris and refuse.
 - 6. Strip and wax all VCT flooring, except in IT Room..

END OF SECTION 01710

SECTION 02220
SITE PREPARATION, EXCAVATION AND EARTHWORK FOR FOUNDATIONS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. All requirements of Division 0 and Division 1 forms a part of this section.
- A. A subsurface investigation and soils report have been completed for this project. All work in this section shall comply with the soils report.

1.02 REQUIREMENTS OF REGULATORY AGENCIES

- A. Comply with federal, state, local, and other duly constituted authorities in matters pertaining to:
 - 1. Permitting
 - 2. Disposal of and hauling of waste material
 - 3. Safety precautions
 - 4. Barricades
 - 5. Protection of environmental matters

1.03 SCOPE OF WORK

- A. Perform all work specified herein as indicated within the grading area, i.e., that area within which earth grades are shown to be approximately 5 feet outside building perimeter. Remainder of property is to be left undisturbed, except as otherwise authorized for such purposes as spoil or stock pile areas, temporary ditches, swales and/or haul or access roads, in which case such authorized areas become part of the grading area. This work includes, but is not limited to, the following:
 - 1. Clearing and grubbing of vegetation and debris of all kinds.
 - 2. Stripping.
 - 3. Excavating to grade and subgrades.
 - 4. Excavating and backfilling for foundations.
 - 5. Providing finish load-bearing subgrades for foundations.
 - 6. Disposal of removed materials.
 - 7. Dewatering.
 - 8. Laboratory testing.
- B. Related work not specified under this subdivision.
 - 1. Excavation of backfill for utilities.
 - 2. Finish grading.

1.04 GENERAL

- A. Contractor shall obtain a copy of the soils report for use with this section.

- B. The Contractor shall examine all drawings and the specifications, consulted the records of adjacent construction and of any existing utilities, and the connections, if any, and noted all conditions and limitations which may influence the work required by this Section.
- C. Where recommendations presented in the soils report conflict with this section, the soils report shall govern.

1.05 EXISTING STRUCTURES

- A. Care shall be exercised during excavation, backfilling, and compaction work to avoid damage to existing buildings or foundations.

1.06 PROTECTION

- A. Protect trees and dispose of all removed trees including stumps and roots.
- B. Protect benchmarks, existing structures, fences, sidewalks, paving, and curbs from equipment and vehicular traffic.
- C. Protect above and below grade utilities which are to remain.
- D. Protect excavations by shoring, bracing, sheet piling, underpinning, or other methods required to prevent cave in or loose soil from falling into excavation.
- E. Notify Architect/Engineer of unexpected subsurface conditions and discontinue affected work in area until notified to resume work.
- F. Control grades in vicinity of excavations to prevent surface water running into excavated areas.
- G. Conduct earthwork operations under this division to insure against rainwash and silting of watercourses, ponds and adjoining property resulting therefrom. Should such silting occur, restore such areas to their original condition if outside the grading areas, or to lines, grades and conditions shown specified if within grading areas, all at no cost to the Owner.

PART 2 MATERIALS

2.01 FILL MATERIALS

- A. Fill material shall be as specified in the soils report or at least clean fine sand, free of rubble, organics, clay, debris and other unsuitable material. Fill should be tested and approved prior to acquisition.
- B. Source of new material and length of haul shall be the Contractor's responsibility.
- C. Drainage fill: Crushed stone or gravel so that 100% passes 1-1/2" sieve with not more than 10% passing a No. 4 sieve.

PART 3 EXECUTION

3.01 PREPARATION

- A. Identify required lines, levels, contours, and datum.
 - 1. Identify known underground utilities. Stake and flag locations.
 - 2. Identify and flag surface and aerial utilities.
 - 3. Notify companies to remove and relocate utilities as required.
 - 4. Maintain and protect existing utilities remaining which pass through work area.
- B. If required, perform remedial dewatering prior to any earthwork operations.
- C. Clear and grub site as defined in the soils report.
- D. Proof-roll the subgrade in accordance with the soils report and under the observation of the testing laboratory. Proof-rolling will help locate any zones of especially loose or soft soils not encountered in the soil test borings. Then undercut, or otherwise treat these zones as recommended by the testing lab.
- E. Testing the subgrade for compaction will be as directed by the testing laboratory and as shown on the structural drawings.

3.02 FILL

- A. Fill in areas where required shall be placed in loose lifts as directed by the soils report.
- B. In load-bearing areas, fill shall be compacted as recommended in the soils report or at least to 95% of maximum modified Proctor dry density. A moisture content within two percent (2%) points of optimum indicated by the modified Proctor test (ASTM D-1557) is recommended.
- C. Perform compliance tests within the fill as directed by the testing lab.

3.03 EXCAVATION

- A. Excavation shall conform to the dimensions and elevations shown on the drawings, but excavation lines shall be such as to provide sufficient clearance for the proper execution of the work to be installed. Allowances shall be made for work and inspections. Bottom of all excavations shall be trimmed to the levels indicated and sloping surfaces cut in steps shown on drawings. After carrying the excavation to the required depth, the Contractor shall await the inspection and testing of the bearing soil.
- B. Control of ground water, including all necessary equipment, to maintain all excavated areas in a dry condition shall be the responsibility of the Contractor.
- C. Sides of temporary excavations can be cut to maximum slope of 1:1. However, no claim may be made by the Contractor for extra work for damages resulting from slope stability failure.

- D. The bottom of foundation excavations shall be compacted after excavation to densify any soils loosened in the excavation process. Backfill soils placed adjacent to footing or walls shall be carefully compacted with a light rubber tired roller or vibratory plate compactor to avoid damaging the footings and walls. Approved sand fills placed in footing excavations above the bearing level, in trench excavations, and in other areas which are expected to provide slab support and foundation embedment constraint shall be placed in loose lifts not exceeding 6 inches and shall be compacted to a minimum of 95% of the maximum modified Proctor dry density.
- E. Test all footing cuts for compaction to a depth of 1 foot, as directed by the testing laboratory.

3.04 DEWATERING

- A. Refer to the soils report for an estimate of seasonal high ground water table.
- B. The geotechnical testing laboratory shall determine the depth of ground water just prior to construction to determine what dewatering will be required.
- C. Water control will consist of, but not necessarily be limited to, well points, sumps, and pumps, in conjunction with berms and any needed ditches. Deep wells will not be permitted.
- D. Approval by the Architect of data submitted shall not relieve the Contractor of full responsibility for adequacy of dewatering system. In the event that during the progress of the work it is determined that the dewatering system is inadequate, the Contractor shall install and operate such additional dewatering equipment and/or make such changes in the system or plan of operation as may be necessary to perform the dewatering system in an adequate manner.
- E. Groundwater shall be maintained at least 24 inches below all earthwork, foundations, and compacted surfaces, or as directed by the testing laboratory.

3.05 BACKFILL UNDER AND AROUND BUILDING AREA

- A. All debris shall be removed from excavations prior to backfilling and filling.
- B. Backfill under and around building area shall be placed in loose layers not exceeding 12" and shall be compacted as defined in the soils report or at least to a density equal to 95% of the modified Proctor maximum dry density as per ASTM D698-70.
- C. Backfill in electrical plumbing and mechanical trenches shall be compacted to previously specified density.

3.06 GRADING

- A. Grade areas to lines and elevations indicated, including adjacent transition areas. Smooth finish surface within specified tolerances. Compact and bring to uniform

levels or slopes between points where elevations are shown or between such points and existing grades.

- B. Unless shown on the drawings, slope the grade evenly to provide drainage away from the building.
- C. Complete the grading operations after the building has been finished, utilities installed, site improvements constructed, and all excavated materials, rubbish, and debris removed from the site. Leave grade for lawns and planted areas clean and at required grades.

3.07 TESTING

- A. A qualified licensed geotechnical testing laboratory shall be retained to perform all necessary quality control testing for earthwork.
- B. All testing shall comply with the project soils report.
- C. See structural drawings for a minimum testing program.
- D. Provide samples of materials proposed for fills as required. Cooperate with laboratory personnel in obtaining samples, and during quality control testing.

3.08 SPECIAL NOTES

- A. Fill material shall not be placed against walls until 7 days after grouting of masonry cells. Compaction of exterior fill and interior backfill shall not be performed until wall grout has cured 14 days.
- B. Do not use drum compactor within 6 feet of walls. Compaction within 6 feet of walls shall be accomplished with a hand operated vibratory compactor.

END OF SECTION 02220

**SECTION 03300
CAST-IN-PLACE CONCRETE**

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the contract, including General and Supplementary Conditions, and Division 1 specification sections, apply to this section.

1.02 DESCRIPTION

A. SCOPE OF WORK

1. Provide all labor, materials, equipment and services necessary to complete all cast-in-place concrete work, including formwork, reinforcing steel and all related work as shown and specified, except as specifically excluded hereinafter.
2. In addition to construction of cast-in-place concrete work, the work includes the items listed below:
 - a. Setting anchor bolts, frames, and other items indicated to be embedded in concrete
 - b. Grouting of structural steel bearing on concrete
 - c. Concrete curbs
 - d. Dowels for masonry walls
 - e. Concrete walks
 - f. Concrete pavement
 - g. Laboratory field testing services
3. Cooperate with affected personnel or contractors in setting and/or fastening sleeves, piping, inserts, conduits, hangers, ties and similar items in the forms, where such items are to be furnished and installed under other subdivisions of these specifications.

B. RELATED WORK NOT SPECIFIED UNDER THIS SUBDIVISION

1. Foundations and pads not shown on architectural, civil or structural drawings.
2. Furnishing steel frames and grating.
3. Furnishing miscellaneous steel shapes and plates embedded in concrete.
4. Furnishing anchor bolts for structural steel.
5. Furnishing piping and conduit embedded in concrete.

1.03 QUALITY ASSURANCE

A. APPLICABLE STANDARDS

1. Provide all materials and perform all work in accordance with the latest issue of ACI 301 "Standard Specifications for Structural Concrete A" and the reference specifications listed therein.

2. The applicable provisions of the latest issue of the following ACI and CRSI Standards are made a part of these specifications. Where the provisions of any reference specification conflict with those of ACI 301, the more stringent provisions govern.

<u>ACI NUMBER</u>	<u>TITLE</u>
302.1R	Guide for Concrete Floor and Slab Construction
304.R	Guide for Measuring, Mixing, Transporting and Placing Concrete
304.2R-91	Placing concrete by pumping methods.
305R	Hot Weather Concreting
308	Standard Practice for Curing Concrete
309R	Guide for Consolidation of Concrete
315	Manual of Standard Practice for Detailing Reinforced Concrete Structures
318	Building code requirements for reinforced concrete
347	Recommended Practice for Concrete Formwork
70-56	Guide for Use of Epoxy Compounds with Concrete - Committee 503 Report
75-18	Concrete committee 503 report. Cold weather concreting.

<u>CRSI NUMBER</u>	<u>TITLE</u>
63	Recommended Practice for Placing Reinforcing Bars

1.04 SUBMITTALS

1. Submit, not less than 21 days prior to placing of concrete, the following proposed concrete mix design data:
 - a. Intended usage and location for each type
 - b. Mix design for each type
 - c. Cement content in pounds per cubic yard
 - d. Coarse and fine aggregate in pounds per cubic yard
 - e. Water-cement ratio by weight
 - f. Cement type and manufacturer
 - g. Slump range
 - h. Air content range
 - i. Admixture types and manufacturers
 - j. Percent of admixtures by weight
 - k. Strength test data required to establish mix design
2. Submit complete detail and placing shop drawings for all reinforcing steel including accessories that have been reviewed and stamped by the General Contractor.
3. Refer to Section 01300 for all submittals.

PART 2 PRODUCTS

2.01 CONCRETE MATERIALS

- A. Portland Cement - ASTM C 150, Type I. Type III may be used where authorized by the Engineer.
- B. Air-Entraining Admixtures - ASTM C 260, Darax AEA, W. R. Grace & Company, SIKA AER, SIKA, MB-AE90, Master Builders, Air Mix, Euclid Chemical Corp.
- C. Water-Reducing Admixtures - ASTM C 494, Type D. WRDA-64, W.R. Grace & Company Plastiment, SIKA, Pozzolite N, Master Builders.
- D. No accelerators, retarders or admixtures containing chlorides will be permitted.
- E. Use fresh, clean and drinkable water for concrete.
- F. For normal weight concrete use coarse and fine aggregate to conform to ASTM C33.
- G. Super Plasticizer ASTM C494 Type F or G where authorized by the Engineer.
- H. Fly-ash ASTM C618 Type C618. Maximum loss on ignition shall not exceed 3% by weight. The combined weight of fly-ash shall not exceed 20 percent of the total weight of cementitious material. The fly-ash present in blended cement conforming to ASTM C595 shall be included in the calculated percentage. Do not use for architectural concrete.
- I. Ground granulated blast-furnish slag ASTM C989. the combined weight of GGBFS shall not exceed 50 percent of the total weight of cementitious material. Slag used in blended hydraulic cement conforming to ASTM C595 shall be included in the calculated percentage.

2.02 PROPORTIONING

B. CONCRETE STRENGTH

- 1. See Structural contract drawings for minimum concrete compressive strength at 28 days.

C. PROPERTIES

- 1. Provide concrete having workability and consistency so concrete can be worked readily into forms and around reinforcement without segregation or bleeding, and to provide an average compressive strength adequate to meet acceptance requirements of ACI 301.

2.03 PRODUCTION OF CONCRETE

- A. Concrete must be batched, mixed and transported in accordance with specifications for ready-mixed concrete ASTM C 94.
- B. Concrete shall be batched to produce a maximum slump of 5" with a range of 3"

to 5". Refer to 2.02B unless noted otherwise.

- C. Provide at the site, delivery tickets for each batch of concrete showing the following:
1. Batch number, volume and date
 2. Time of loading
 3. Design 28-day compressive strength
 4. Concrete type
 5. Cement content in pounds per cubic yard
 6. Water content in pounds per cubic yard
 7. Admixtures in amount per cubic yard
 8. Maximum amount of water that may be added at the job site.
- D. Restrict the addition of mix water at the job site. Do not add water without the approval of the general contractor and do not exceed slump limitations or total allowable water to cement ratio. Use cold water from the truck tank and remix to achieve consistency. The reports shall indicate how much water was added at the job site. Note on delivery ticket amount of water added and name of person authorizing.
- E. During hot weather, conform to the detailed recommendations of ACI 305.

2.04 PLACING CONCRETE

A. GENERAL

1. Inner surfaces of conveying equipment must be free of hardened concrete and foreign materials.
2. All reinforcing bars are to be tied in proper position prior to placing concrete.
3. Provide sufficient time for inspection of all preparatory work before proceeding with the placing of concrete.
4. Immediately prior to placing concrete, sprinkle semi-porous sub-grades sufficiently to eliminate suction and seal porous subgrades, except where a vapor barrier is used.
5. Deposit concrete in forms in horizontal layers continuously, no deeper than 18 inches. Horizontal cold joints will not be permitted. Fill forms completely using methods to ensure even distribution of aggregate around reinforcement and into corners of forms.

B. CONSOLIDATION

1. Consolidate concrete by vibration in accordance with the detailed recommendations of ACI 309.
2. Internal vibrators must be used in beams, girders and framed slabs and along bulkheads or slabs-on-grade to thoroughly consolidate the concrete. Do not use grossly oversized equipment.
3. Do not use vibrators to transport concrete within forms.

C. FINISHING

1. Finish concrete slabs in accordance with the finishes and tolerances as specified in ACI 301, and the detailed recommendations in ACI 302. Confirm all finishes with Architect.
2. Dusting of slabs with cement or other materials to absorb excess bleed water is strictly prohibited.

<u>ITEM</u>	<u>TOLERANCE CLASS</u>	<u>FINISH</u>
Exterior Pavement	B	Broom or belt
Exterior Walks/Curbs	B	Fine broom
Interior Slabs	A	Troweled
Exterior Steps	A	Nonslip

3. For flat, very flat and super flat floors, "F" numbers are required for defining flatness and levelness. Refer to ACI 302.1R, Fig. 8.15.1.1, for minimum required "F" numbers for type of slab use.

D. NONSLIP FINISH

1. Give surface a dry shake application as specified in ACI 301 using crushed selected abrasive aggregate of aluminum oxide. The rate of application of blended mixture should not be less than 25 pounds per 100 square feet of surface.
2. Acceptable products are:

<u>TYPE</u>	<u>MANUFACTURER</u>
Grip-It	L&M Construction Chemicals
FRICTEX N.S.	Sonneborn
Nonslip	Euclid Chemical Co.
Emag 20	Lambert Corp.

2.05 REINFORCEMENT

A. GENERAL

1. Details of concrete reinforcement and accessories not covered herein or shown on drawings to be in accordance with ACI 315.
2. Reinforcement is to be secured in proper position and thoroughly clean of loose rust, scale, grease or other coatings.

B. REINFORCING MATERIALS

1. Unless otherwise indicated, for all reinforcing shown provide deformed bars conforming to ASTM A 615, or a 616 Grade 60.
2. Smooth dowels - ASTM A 615 and A 616, plain bars having a minimum yield strength of 60,000 psi.
3. Welded wire fabric - ASTM A 185 plain wire fabric in flat sheets.
4. Plain wire to conform to ASTM A 82.
5. Accessories to conform to ACI 315.

6. Where reinforcing rods are used as supports, use rods no lighter than No. 5
7. Where concrete surfaces are exposed, make those portions of all accessories in contact with the concrete surface or within 1/2 inch thereof, of plastic or stainless steel.

PART 3 EXECUTION

3.01 PLACING

A. GENERAL

1. Place reinforcing in conformance with the requirements of CRSI 63. Place reinforcement in proper position prior to placing concrete. Placing reinforcement during concrete placement will not be permitted.
2. Unless otherwise shown or indicated, provide minimum concrete protective covering for reinforcement as follows:
 - a. Concrete deposited against the ground, 3".
 - b. Formed surfaces exposed to weather or in contact with the ground, 2" for reinforcing bars No. 6 or larger, and 1-1/2" for reinforcing bars No. 5 or smaller
 - c. Interior surfaces, 1-1/2" for beams, girders and columns, 3/4" for slabs, walls and joists.
 - d. See drawing for special conditions.
3. Support reinforcing for slabs-on-grade on staggered concrete bricks or metal or plastic bar chairs and spacers with metal plates.
4. Unless specifically authorized, do not bend reinforcement partially embedded in hardened concrete.
5. Support and fasten all dowels in the formwork prior to placing concrete. Do not place dowels after concrete is in place.

3.02 JOINTS

A. CONSTRUCTION JOINTS

1. Construction joints not shown in the contract documents must be located and made to least impair the strength of the structure.
2. No horizontal construction joints will be permitted in beams, girders or slabs.
3. Location of any construction joint not shown is subject to review and acceptance by Engineer. Reinforcing is continuous through all construction joints, obtain bond by roughening surface of concrete in an acceptable manner which will expose aggregate uniformly and will not leave any latencies, loosened particles or aggregate or damaged concrete at surface.

B. EXPANSION JOINTS

1. Reinforcement or other embedded metal items bonded to the concrete

(except dowels in floors bonded on only one side of joints) will not be permitted to extend continuously through any expansion joint.

C. DOWELED SLIP JOINTS

1. Use completely smooth round bars for dowels.
2. For construction joints, paint half of bar with red lead paint. When dry, coat painted end with satisfactory grease to insure against bond with concrete.
3. For control joints, paint and grease entire bar.
4. For expansion joints, paint, grease and provide a metal expansion cap for one end.
5. Place in forms to insure that bars are perpendicular to joint face. Stop reinforcement at doweled slip joints so that it will not extend through joint.

D. JOINT MATERIALS

1. Expansion joint filler non-bituminous type - ASTM D 1752, resin impregnated fiberboard Homosote 300 or Thermosetting Polyurethane, W. R. Meadows' Rescor. Asphalt impregnated materials are unacceptable.
2. Polyethylene Film - ASTM D 2103 minimum 6 mil.
3. Horizontal Joint Sealer - 2-component self-leveling urethane conforming to Federal Specification TT-S-227E, Type 1, Class A. Color to match concrete. Acceptable products are:

<u>TYPE</u>	<u>MANUFACTURER</u>
Daraseal-U	A. C. Horn
Sonolastic SL2	Sonneborn
Pourthane	W. R. Meadows

4. Vertical Joint Sealer - 1-component Polyurethane conforming to Federal Specification TT-S-002306, Type II, Class A, color to match concrete. Acceptable products are:

<u>TYPE</u>	<u>MANUFACTURER</u>
SIKAFLEX IA	SIKA
SONOLASTIC NPI	Sonneborn

5. Epoxy Joint Sealer - semi-rigid epoxy, MM80 as manufactured by Metzger McGuire Co., master fill 300 by Master Builders.
6. Epoxy Bond - 2-component 100 percent solids epoxy resin, amine cured. Acceptable materials are Concrete Series by Master Builders, Sonneborn's Epogrip and Epiweld 580 by Lambert Corp.
7. Epoxy Grout - Epoxy bond filled with suitable mineral filler, 100 percent passing the No. 100 sieve, in ratio to insure thixotropic action without impairment of adhesive properties.
8. Compressive Joint Material - expanded polystyrene having a compressive strength not less than 8 psi when the board is compressed to a deformation of 5 percent of its original thickness when tested in conformance with ASTM C 165, modified to change drying temperature to 150°F.

9. Felt - 30 pound asphalt or coal tar roofing felt ASTM D 226 or D 227.

E. PLACING DOWELS IN EXISTING CONCRETE

1. Use deformed reinforcing bars as dowels. Drill holes in existing concrete of size 1/2" larger in diameter than the dowel using power-driven drill with tungsten-carbide tipped bit ground to insure against oversize hole. Clean out holes with air. Thoroughly swab surfaces of hole and embedded portion of dowel with epoxy grout. Force dowel into place. Wipe off excess grout and let set for not less than 12 hours at a temperature above 60°F.

3.03 FORMWORK

A. GENERAL

1. Provide and construct formwork in accordance with ACI 301 and 347.
2. Form design by P.E. registered in the State of Florida.
3. Observe and check formwork continuously while concrete is being placed to determine that there are no evidences of changes of elevations, plumbness, or camber and adjust forms as necessary. If, during construction, any such evidence or other defect appears, stop the work, remove concrete placed, if necessary, and repair formwork or supports before proceeding.
4. Earth cuts may be used as forms for footing vertical surfaces increase size 2 inch.
5. Forms and shoring are the responsibility of General Contractor.

B. FORMWORK MATERIALS

1. Make forms of lumber, plywood, metal or other materials suitable to provide the strength and tolerances specified herein before and the surface finishes specified hereinafter.
2. Forming exposed surfaces use any of the following materials as suitable for the specified finish, and to produce smooth uniform surfaces, true-to-line, in order that surfaces produced will require little finishing:
 - a. New plastic-bonded natural plywood, American Plywood Association, HD Overlay Plyform Class I, Ext-APA, or equal.
3. For forming exposed surfaces use plywood, or other nonmetallic surfaces free from knots, warps, breaks, or other defects likely to cause irregular surfaces.
4. Provide commercial formulation form coating compounds with maximum VOC of 350 mg/1 that will not bond with stain or adversely affect concrete surfaces and will not impair subsequent surface treatments.

C. REMOVAL OF FORMS

1. Forms and shoring in the formwork supporting the weight of concrete, in beams, slabs and other structural elements are to remain in place until the concrete has reached its specified 28-day compressive strength.
2. Formwork and facing forms for members such as grade beams, foundation walls and spread footings not supporting the weight of

concrete may be removed as soon as the concrete has hardened sufficiently to resist damage from the removal operations.

3. Arrange shores and other vertical supports so that the non-load carrying form-facing material may be removed without loosening or disturbing the shores and supports.
4. Whenever the formwork is removed during the curing period, continue curing of both the unexposed and exposed concrete by one of the methods specified in section "Curing and Protection".

D. REMOVAL STRENGTH

1. Removal Strength - The concrete will be presumed to have reached its specified strength when additional test cylinders (paid for by contractor) are field cured along with the concrete they represent and have reached the strength specified.

3.04 REPAIR OF SURFACE DEFECTS

A. GENERAL

1. Patch all tie holes and repair all honeycombed and defective areas immediately after form removal.
2. For surfaces other than those to be backfilled against, use patching mortar.
3. For surfaces to be backfilled against, use mastic damp-proofing compound, except that where reinforcing is exposed, use patching mortar.
4. Remove all honeycombed and defective concrete down to sound concrete prior to patching. Thoroughly clean the holes of dirt and debris.

B. PATCHING MORTAR

1. Cut edges of honeycombed and defective concrete to form dove-tail (undercut) joints. No feather edges will be permitted.
2. Apply a chemical bonding agent to voided surface. An acceptable product is L&M Construction chemicals – Everbond or equivalent.
3. Patch the cement mortar as specified in ACI 301, or with proprietary patching compounds, except that proprietary patching mixtures may be not used on exposed surfaces.
4. Acceptable proprietary patching mixtures are:
 - a. Euclid Chemical Corporation - Poly Patch
 - b. SIKA - Sikaset Mortar
 - c. Emaco R Series - Master Builders
 - d. Lambert Corp, Lambco Vinyl Patch
 - e. Sonneborn - Sonopatch

C. MASTIC DAMP-PROOFING COMPOUND

1. Patch full depth of hole and flush the surface with emulsified asphalt mastic heavy viscosity for trowel application. Prepare and place in accordance with manufacturer's directions. Acceptable products are:

- a. W. R. Meadows - Sealmastic Trowel Mastic
- b. Euclid Chemical Company - Damp-proofing Asphalt Coatings
- c. Sonneborn - Hydrocide 700 Mastic
- d. Lambert Corp – Waterban 60M

3.05 FINISHING OF FORMED SURFACES - GENERAL

- A. After removal of forms, give surfaces of concrete the following finishes as specified in ACI 301.

<u>SURFACE</u>	<u>FINISH</u>
Unexposed	Rough Form
Exposed	Smooth Form
Exposed to Public View	Smooth Rubbed

3.06 CURING AND PROTECTION

A. GENERAL

1. Conform to the applicable detailed recommendations of ACI 301 and 308.
2. Hot weather curing to be in accordance with applicable ACI Standard 305.
3. All cast-in-place concrete must be maintained with minimal moisture loss at a relatively constant temperature for a minimum of 7 days following the placing of the concrete by the use of a water spray, water saturated fabric, moisture retaining membrane or liquid curing compound.
4. Full curing days will be determined by the cumulative number of days or fractions thereof during which the temperature of the air in contact with the concrete is above 50°F
5. Cure slabs-on-grade for the first 72 hours by the use of:
 - a. fog spraying
 - b. ponding
 - c. sprinkling
 - d. continuously wet absorptive mats or fabric
 - e. continue curing by use of moisture retaining cover until concrete has obtained its specified 28-day compressive strength
 - f. or liquid curing compound after finishing process is completed.
5. Fog spraying, ponding, sprinkling or continuously wet absorptive mats or fabric. Continue curing by use of moisture retaining cover until concrete has obtained its specified 28-day compressive strength or liquid curing compound.
6. Submit materials and method of curing for review.
7. Do not use moisture retaining curing compounds for curing surfaces to receive the following coverings, unless it has been demonstrated that such compounds will not prevent bond of:
 - a. Carpet
 - b. Flexible flooring
 - c. Ceramic tiled floors
 - d. Other specified floor systems

B. MATERIALS

1. Where moisture retaining membranes or curing compounds are used for curing, provide only materials conforming to the following requirements:
 - a. Polyethylene Film - ASTM C171, Type II
 - b. Waterproof Paper - ASTM C 171, Type I
 - c. Absorptive Cover - AASHTO M 182, Class 3, Burlap cloth made from Jute or Kenaf or ASTM C 440 cotton mats
 - d. ASTM C309 spray on at max.

C. TEMPERATURE, WIND AND HUMIDITY

1. Do not permit concrete not fully cured to be exposed to excessive temperature changes or high winds.

3.07 EMBEDDED ITEMS

A. GENERAL

1. Prior to concreting, place all embedded items to be provided under this subdivision or to be furnished under other subdivisions for installation under this subdivision.
2. Give all contractors whose work is related to the concrete or must be supported by it, ample notice and opportunity to introduce and/or furnish embedded items before the concrete is placed.
3. Make certain that all embedded items furnished and set in forms by them are secured in position, and exercise due care not to disturb or damage their work while placing concrete.
4. Set anchor bolts for steel and equipment in accordance with setting drawings or templates which have been reviewed and found satisfactory.
5. Where holes in concrete for such purposes as recesses for railing posts, passageways for pipes, and the like are shown formed by sleeves, the contractor may, at his option, provide such holes by drilling with a acceptable diamond or tungsten carbide tipped drill bits. Fill with epoxy seal after railings are in place.

B. EMBEDDED ITEMS TO BE PROVIDED UNDER THIS SUBDIVISION

1. Dovetail anchor slots and dovetail brick anchors - DAS-G20 beehive dovetail anchor slot as manufactured by Gateway Building Products, together with DBA-G14 dovetail brick anchors. Provide masonry trades with one anchor for each 16" of anchor slot or fraction thereof plus one additional anchor for each vertical section. Place anchor slots 1'-4" on center in beams and walls where masonry abuts and one slot in each face of each column faced with masonry. Furnish anchors to space 16" on center in slots.
2. Plastic reglets for above and below grade counter flashing. Make of Type A rigid polyvinyl chloride, 0.060" thick, as manufactured by Superior Concrete Accessories, Inc. or equal.
3. Sleeves - galvanized steel pipe ASTM A 120, or plastic pipe ASTM D 2661, ASTM D 2665 or ASTM D 2852, bituminized fiber pipe conforming

to ASTM D 1861 or Wilson anchor bolt sleeve.

Anchor Bolts - ASTM F1554-GR 36. Furnish with one leveling nut plus one nut and one washer.

5. Cast Iron Frames and Grates - as manufactured by Neenah Foundry Company. Castings as manufactured by Flockhart Foundry Company or McKinley Iron Works may be acceptable, provided the dimensions and design are comparable in all respects.
6. Water stops locations as shown on drawings.

3.08 VAPOR BARRIER

1. Provide sub-grade under concrete slabs-on-grade with vapor barrier consisting of polyethylene film not thinner than 6 mils, conforming to ASTM C 171, or asphalt laminated reinforced Kraft paper with polyethylene coating on both sides. Moistop as manufactured by St. Regis Laminated and Coated Products Division.
2. Provide film in width and length not less than one foot larger than dimensions of slab sub-grade unless patently impracticable. Where joints are necessary, lap edges not less than 6" and tape continuously. Take care to avoid puncturing film. Immediately prior to placing concrete, tape-seal all tears, cuts and holes.

3.09 GROUTING OF BASE PLATES

1. Nonferrous grout acceptable products are:

<u>TYPE</u>	<u>MANUFACTURER</u>
Crystex	L&M Construction Chemicals
Five Star	U.S. Grout
Sonogrout	Sonneborn
Euco N.S.	Euclid Chemical Company
Construction Grout	Master Builders
Vibroprvf #11	Lambert Corp.

2. Mix and place in conformance with printed instructions of the manufacturer.

3.10 TESTING

A. GENERAL

1. The services of an independent testing laboratory shall be retained for obtaining test specimens and performing quality control work, routine testing of materials or proposed mix designs and of resulting concrete for compliance with technical requirements of specifications.
2. Testing of field-cured test cylinders, or testing required because of changes requested by contractor in materials or proportions of the mix, as well as any extra testing of concrete or materials occasioned by failure to meet specification requirements, to be at contractor's expense.
3. Failure of the testing laboratory to detect any defective work or materials is not in any way to prevent later rejection when such defect is discovered, nor is it to obligate the owner for final acceptance.

4. The testing agency and/or its representatives are not authorized to revoke, alter, relax, enlarge or release any requirement of the specifications, not to approve or accept any portion of the work, not to act as foreman or perform other duties for contractor.

B. SERVICES PROVIDED BY THE TESTING AGENCY

1. Field Sampling - Secure from different batches, on a truly random basis, composite samples for all field testing required below in accordance with ASTM C 172 where applicable. Take all samples at discharge end of conveying system. Clearly mark each test specimen master as to exact part of the structure represented, class of concrete curing conditions, temperature of concrete, and time and date of sample.
2. Compressive Strength Test - mold and cure test cylinders in accordance with ASTM C 31 and test each cylinder for strength in accordance with ASTM C 39. Take one "test set" consisting of four cylinders for each day's pour of 50 cubic yards, or fraction thereof. Test cylinders one at 7 and two 28 days, one hold.
3. Slump Tests - determine slump range for each "test set" in conformance with ASTM C 143.
4. Air Content Test - determine air content for each "test set" for air-entrained concrete in accordance with ASTM C 231.
5. Submit two copies of the results in each of the above tests and inspection to the contractor and the owner's representative and Engineer.
6. Should any of the test results fail to meet the requirements specified, make an immediate telephone report to the contractor and the owner's representative.
7. Furnish evaluation reports of compression tests as recommended by ACI 214 when any compression test fails to meet the specified strength.

3.11 ACCEPTANCE OF STRUCTURE

A. GENERAL

1. Acceptance of structure will be made in conformance with ACI 301, except that contractor must pay all costs incurred for providing any additional testing or analysis required when strength of structure is considered potentially deficient.

B. CRACKS

1. The contractor will be required to restore without cost to the owner any concrete which develops cracks within a period of one year after placement which has not been caused by action of the owner or others in over stressing the concrete.
2. Repair the cracks by means that will restore the cracked members to their designed strength and appearance by acceptable methods which will not impair the appearance of the affected surfaces, if exposed. Such repairs must be performed by use of suitable epoxy cements employed by an organization having satisfactorily demonstrated ability in the techniques necessary to affect such repairs, or by other acceptable methods.

END OF SECTION 03300

SECTION 03360

SPECIAL CONCRETE FLOOR FINISHES (RETROPLATE)

PART 1 GENERAL

1.01 SUMMARY

- A. This section includes the following.
 - 1. Applying Sealer and Hardener, and polishing concrete to specified finish level.
- B. Related Work:
 - 1. Section 03310 Cast-In-Place Concrete

1.02 REFERENCES

- A. American Society for Testing and Materials:
 - 1. ASTM-C779, Standard Test Method for Abrasion Resistance of Horizontal Concrete Surfaces
 - 2. ASTM G23-81, Ultraviolet Light & Water Spray
 - 3. ASTM C805, Impact Strength
- B. American Concrete Institute
 - 1. ACI 302. 1R-89, Guide for Concrete Floor and Slab Construction
- C. Other Test:
 - 1. Reflectivity

1.03 SUBMITTALS

- A. Comply with pertinent provisions of Product Requirements Section.
 - 1. Provide submittal information within 35 calendar days after the contractor has received the owner's notice to proceed.
- B. Product data:
 - 1. Submit special concrete finishes manufacturer's specifications and test data.
 - 2. Submit special concrete finishes describing product to be provided, giving manufacturer's name and product name for the specified material proposed to be provided under this section.
 - 3. Submit special concrete finishes manufacturer's recommended installation procedures; which when approved by the Architect, will become the basis for accepting or rejecting actual installation procedures used on the work.
 - 4. Submit special concrete finishes technical data sheet giving descriptive data, curing time, and application requirements.
 - 5. Submit special concrete finishes manufacturer's Material Safety Data Sheet (MSDS) and other safety requirements.
 - 6. Follow all special concrete finishes published manufacturer's installation instructions.
- C. Test Reports:
 - 1. Provide certified test reports, prepared by an independent testing laboratory, confirming compliance with specified performance criteria.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications:
1. Use an experienced installer and adequate number of skilled workmen who are thoroughly trained and experienced in the necessary craft.
 2. The special concrete finish manufacturer shall certify the applicator.
 3. Applicator shall be familiar with the specified requirements and the methods needed for proper performance of work of this section.
- B. Manufacturer's Certification:
1. Provide letter of certification from concrete finish manufacturer stating that installer is certified applicator of special concrete finishes and is familiar with proper procedures and installation requirements required by the manufacturer.
- C. Mock-ups:
1. Apply mock-ups of each type of finish, to demonstrate typical joints, surface finish, color variation (if any), and standard of workmanship.
 - a. Build mock-ups approximately 50 square feet in the location indicated or if not indicated, as directed by the Architect or Owner Representative.
 - b. Notify Architect or Owner Representative seven days in advance of dates and times when mock-ups will be constructed.
 - c. Obtain from the Architect or Owner Representative approval of mock-ups before starting construction.
 - d. If the Architect or Owner Representative determines that mock-ups do not meet requirements, demolish, and remove them from the site and cast others until mock-ups are approved.
 - e. Maintain mock-ups during construction in an undisturbed condition as a standard for judging the completed work.
 - f. Approved mock-ups may become part of the completed work if undisturbed at the time of substantial completion.
- D. Protection
1. No satisfactory chemical or cleaning procedure is available to remove petroleum stains from the concrete surface. Prevention is therefore essential.
 - a. All hydraulic powered equipment must be diapered to avoid staining of the concrete.
 - b. No trade will park vehicles on the inside slab. If necessary to complete their scope of work, drop cloths will always be placed under vehicles.
 - c. No pipe cutting machine will be used on the inside floor slab.
 - d. Steel will not be placed on the interior slab to avoid rust staining.
 - e. Acids and acidic detergents will not come into contact with slab.
 - f. All trades informed that the slab must be protected at all times.
- E. Pre-Installation Conference:
1. Conduct conference at project site to comply with requirements in Division 1 Section "Project Management and Coordination".

This is to be a MANDATORY MEETING and it is to be conducted prior to the placement of concrete in any areas that are to receive a RETROPLATE Concrete Floor Finish System. The scheduling of this Mandatory Meeting is the responsibility of the General Contractor. Those entities required to be in attendance are as follows: Owner's Representative, General Contractor, Architect, Concrete Supplier, Concrete Subcontractor, the Retroplate Applicator Subcontractor and a representative of Retroplate.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in original containers, with seal's unbroken, bearing manufacturer labels indicating brand name and directions for storage.
- B. Dispense special concrete finish material from factory numbered and sealed containers. Maintain record of container numbers.

1.06 PROJECT CONDITIONS

- A. Environmental limitations:
 - 1. Comply with manufacturers written instructions for substrate temperature and moisture content, ambient temperature and humidity, ventilation, and other conditions affecting topping performance.
 - a. Concrete Floor Flatness rating recommended at least 40, where possible.
 - b. Concrete Floor Levelness rating recommended at least 30, where possible.
 - c. Concrete must be cured a minimum of 45 days or as directed by the manufacturer before application of Retro Plate can begin.
 - d. Application of Retro-Plate shall take place 10 days prior to installation of equipment and substantial completion, thus providing a complete, uninhibited concrete slab for application.
 - e. **Concrete slab fly-ash content shall not exceed 20 percent.** The fly-ash present in blended cement conforming to ASTM C595 shall be included in the calculated percentage.
- B. Close areas to traffic during floor application and after application, for time period recommended in writing by manufacturer.

PART 2 – PRODUCTS

2.01 MATERIALS AND MANUFACTURERS

- A. HARDENING/SEALING AGENT
 - 1. Retro-Plate 99, manufactured by Advanced Floor Products, Inc., P.O. Box 50533, Provo, Utah 84605, 801-812-3420.
 - a. Performance Criteria:
 - i. Abrasion Resistance: ASTM C779 – Up to 400% increase in abrasion resistance.
 - ii. Impact Strength: ASTM C805 – Up to 21% increase impact strength.
 - iii. Ultraviolet Light and Water Spray: ASTM G23-81 – No adverse effects to ultra violet and water spray.
 - iv. Reflectivity: Up to 30% increase in reflectivity.
- B. Note:

Retro-Plate is a system based on a Silicate product. Other similar systems based on a Siliconate product will not be considered or equal. Only systems which are expressly called a Silicate in the manufacturer's literature will be considered for substitution.

2.04 RELATED MATERIALS

- A. Neutralizing Agent:
 - 1. Tri-sodium Phosphate

- B. Water:
 - 1. Potable

PART 3- EXECUTION

3.01 SURFACE CONDITIONS:

- A. Examine substrate, with installer present, for conditions affecting performance of finish. Correct conditions detrimental to timely and proper work. Do not proceed until unsatisfactory conditions are corrected.
- B. Verify that base slab meet finish and surface profile requirements in Division 3 Section "Cast-In-Place Concrete," and Project Conditions above.
- C. Prior to application, verify that floor surfaces are free of construction latents.

3.02 APPLICATION

- A. Start any of the floor finish applications in presence of manufacturer's technical representative.
- B. Sealing, Hardening and Polishing of Concrete Surface
 - 1. Concrete must be in place a minimum of 45 days or as directed by the manufacturer before application can begin.
 - 2. Application is to take place at least 10 days prior to racking and other in-store accessory installation, thus providing a complete, uninhibited concrete slab for application.
 - 3. Only a certified applicator shall apply Retro-Plate 99. Applicable procedures must be followed as recommended by the product manufacturer and as required to match approved test sample.
 - 4. Achieve waterproofing, hardening, dustproofing, and abrasion resistance of the surface without changing the natural appearance of the concrete, except for the sheen.
 - 5. Polish Level 2 (Medium Finish) (800 Grit)

3.03 WORKMANSHIP AND CLEANING:

- A. The premises shall be kept clean and free of debris at all times.
- B. Remove spatter from adjoining surfaces, as necessary.
- C. Repair damage to surface caused by cleaning operations.
- D. Remove debris from jobsite.
 - 1. Dispose of materials in separate, closed containers in accordance with local regulations.

3.04 PROTECTION:

- A. Protect finished work until fully cured in accordance with manufacturer's recommendations.

END OF SPECIFICATION SECTION 03360

SECTION 03395

CURING, SEALING, AND HARDENING CONCRETE FLOORS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Single application cure-seal-hardener for new concrete floors.
- B. Single application sealer-hardener for existing concrete floors.
- C. Precautions for avoiding staining concrete before and after application.

1.2 RELATED SECTIONS

- A. Section 03310 - Concrete: Concrete slabs.

1.3 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Material requirements for concrete to which cure-seal-hardener is to be applied, including cement type, water-cement ratio, type of trowel finish, limitations on admixtures, pigments, bonding agents, and bond breakers, etc.
- C. Product Data: Manufacturer's data sheets, including product specifications, test data, preparation instructions and recommendations, storage and handling requirements and recommendations, and installation methods.
- D. Maintenance instructions, including precautions for avoiding staining after application.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Applicator experienced with installation of product and certified by manufacturer, or applicator experienced with similar products and providing manufacturer's field technician on site to advise on application procedures; and providing adequate number of skilled workers trained and familiar with application requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver product in factory numbered and sealed drums, with numbers recorded for Owner's records.
- B. Store products in manufacturer's unopened drums until ready for installation.

1.6 PROJECT CONDITIONS

- A. No satisfactory procedures are available to remove petroleum or rust stains from concrete. Prevention is therefore essential. Take precautions to prevent staining of concrete prior to application of cure-seal-hardener and for minimum of three months after application:
 - 1. Prohibit parking of vehicles on concrete slab.
 - 2. If vehicles must be temporarily parked on slab, place drop cloths under vehicles during entire time parked.
 - 3. If construction equipment must be used for application, diaper all components that might drip oil, hydraulic fluid, or other liquids.

4. Prohibit pipe cutting using pipe cutting machinery on concrete slab.
 5. Prohibit temporary placement and storage of steel members on concrete slab.
- B. Do not install products under environmental conditions outside manufacturer's absolute limits.
- C. Do not use frozen material; thaw and agitate prior to use.

1.7 WARRANTY

- A. Provide manufacturer's warranty that a structurally sound concrete surface prepared and treated according to the manufacturer's directions will remain permanently dustproof, hardened and water repellent. If after the specified sealing period the treated surface does not remain dustproof, hardened and water repellent, provide, at manufacturer's expense, sufficient material to reseal defective areas.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Curecrete Distribution, Inc; 1203 West Spring Creek Place, Springville, UT 84663. ASD. Tel: (800) 998-5664. Fax: (801) 489-3307. Email: techsupport@ashfordformula.com. www.ashfordformula.com
- B. Not used.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 MATERIALS

- A. Cure-Seal-Hardener: Ashford Formula; water-based chemically-reactive penetrating sealer and hardener, that seals by densifying concrete so that water molecules cannot pass through but air and water vapor can, while allowing concrete to achieve full compressive strength, minimizing surface crazing, and eliminating dusting.
1. Colorless, transparent, odorless, non-toxic, non-flammable.
 2. Containing no solvents or volatile organic compounds.
 3. USDA approved for food handling facilities.
 4. Allowing traffic on floors within 2 to 3 hours, with chemical process complete within 3 months.
 5. No change to surface appearance except a sheen developed due to traffic and cleaning.
- B. Water: Clean, potable.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared and are suitable for application of product.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. If this is the applicator's first project using this product, provide the manufacturer's technical representative on-site to familiarize installers with proper procedures.
- C. Prevent damage to and soiling of adjacent work.
- D. New Concrete: Apply cure-seal-hardener to new concrete as soon as the concrete is firm enough to work on after troweling, except on colored concrete wait minimum of 30 days.
 - 1. Spray on at rate of 200 square feet per gallon (4.8 sq m/L).
 - 2. Keep surfaces wet with cure-seal-hardener for minimum soak-in period of 30 minutes, without allowing drying out or becoming slippery. In hot weather slipperiness may appear before the 30 minute time period has elapsed. If that occurs, apply more cure-seal-hardener as required to keep entire surface in a non-slippery state for the first 15 minutes. For the remaining 15 minutes, mist the surface as needed with water to keep the material in a non-slippery state.
 - 3. After this period, when treated surface becomes slippery lightly mist with water until slipperiness disappears.
 - 4. Wait for surface to become slippery again and then flush entire surface with water removing all residue of cure-seal-hardener.
 - 5. Squeegee surface completely dry, flushing any remaining slippery areas until no residue remains.
 - 6. Wet vacuum or scrubbing machines may be used to remove residue, provided manufacturer's instructions are followed.

3.4 PROTECTION

- A. Protect installed floors until chemical reaction process is complete; at least three months.
 - 1. Comply with precautions listed under PROJECT CONDITIONS.
 - 2. Clean floor regularly in accordance with manufacturer's recommendations because water will accelerate the sealing and scrubbing will impart a shine.
 - 3. Clean up spills immediately and spot-treat stains with good degreaser or oil emulsifier.
- B. Precautions and cleaning are the responsibility of the General Contractor until Substantial Completion.

END OF SECTION 03395

**SECTION 03470
TILT-UP CONCRETE**

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. Requirements of Section 03300 "Cast-In-Place Concrete" applies to this Section.

1.02 SUMMARY

- A. This Section includes tilt-up concrete panels that are cast, finished, and erected at the site.
- B. Extent of tilt-up precast concrete construction is shown on drawings.

1.03 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specifications Sections, and in addition to requirements of Section "Cast-In-Place Concrete."
 - B. Samples approximately 12 inches square and 2 inches thick, representative of full range of colors and textures of panel finishes.
 - C. Shop Drawings indicating panel dimensions, openings, reinforcement and connection details, locations of items cast into panels, lifting devices, and other pertinent information. Submitted panel shop drawings shall be checked and signed by the general contractor and signed and sealed by a licensed specialty engineer.
 - D. Furnish information concerning method and sequence of erection.

1.04 QUALITY ASSURANCE

- A. General: The following are in addition to "Quality Assurance" provisions of Section "Cast-In-Place Concrete."
 - B. Erector Qualifications: At least 2 years of successful experience in erection of tilt-up wall panels similar in size and amount as required for this Project.
 - C. Job Mock-Up: After acceptance of material samples, construct full-size panel to include representative items encountered in work. Cast, finish, cure, and erect job mock-up panel in same manner as will be employed in Project. Job mock-up panel may be incorporated in structure when acceptable to Architect.

- D. Construction Loads: Design and fabricate tilt-up wall panels to withstand construction loads which may occur during lifting, bracing, and impact by adjoining panels.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Tilt-up precast concrete construction materials are specified in Section "Cast-In-Place Concrete."
- B. The following are in addition to requirements specified in Section "Cast-In-Place Concrete."
- C. Facing Concrete: Use selected cement and aggregates to match Architect's sample.
- D. Bond Breaker: Polymerized solution containing no oils, waxes, paraffin's, or other material which could affect bond of subsequent finishes or natural appearance of exposed concrete surfaces.
- E. Anchors and Inserts: Provide inserts, dowels, bolts, nuts, washers, and other items shown to be cast in panels or required for connecting panels to adjacent work, including inserts required for lifting.
 - 1. Structural Steel Shapes: ASTM A 36 or A992.
 - 2. Malleable Iron Castings: ASTM A 47, grade 32510.
 - 3. Carbon Steel Castings: ASTM A 27, grade 60-30.
 - 4. Stainless Steel Anchors: ASTM A 167, type 301, mill finish.
 - 5. Hot-Dip Galvanized iron and steel anchors, inserts, and connecting devices: ASTM A 153.
- F. Flashing Reglets: Open type having continuous groove not less than 1-1/8 inches deep by 3/16 inch wide at opening and sloped upwards to 45 degrees. Furnish with easily removed, temporary filler strip.
 - 1. Stainless Steel: ASTM A 167, type 302/304 soft temper, minimum 0.018 inch (28 gage) thick.
 - 2. Copper Strip: ASTM B 370, cold-rolled temper, minimum 0.0216 inch thick (16 oz. psf.).
 - 3. Hot-Dip Galvanized Sheet Steel: ASTM A 526, with ASTM A 525, G90 zinc coating, minimum 0.0217 inch thick (26 gage).
- G. Forms: Wood, metal, or other substantial material to maintain forms in good alignment and produce required finish. Provide external bracing to prevent form displacement during casting operations.
- H. Form Liners: As required to produce panel finish matching Architect's control sample.

2.02 CONCRETE MIX DESIGN

- A. Comply with requirements of Section "Cast-In-Place Concrete."
- B. Facing Concrete: Selected aggregates, cement, and additives to produce the following properties:
 - 1. Design compressive strength at 28 days: 4000 psi minimum.
 - 2. Total air content: 3 percent to 6 percent.

2.03 FABRICATION TOLERANCES

- A. Casting Tolerances: Over-all height and width measured at face adjacent to mold when cast:
 - 1. Panels 10 ft. or under: plus or minus 1/8 inch.
 - 2. Panels 10 ft. to 20 ft.: plus 1/8 inch, minus 3/16 inch.
 - 3. Panels 20 ft. to 30 ft.: plus 1/8 inch, minus 1/4 inch.
 - 4. Each additional 10 ft.: plus or minus 1/16 inch per 10 ft.
 - 5. Panel thickness: plus 1/4 inch, minus 1/8 inch.
 - 6. Openings (cast within one member): plus or minus 1/4 inch.
 - 7. Out of square (diagonal): 1/8 inch per 6 ft. or 1/4 inch total.
- B. Location Tolerances: Cast-in items:
 - 1. Inserts, pipe sleeves, bolts, etc.: plus or minus 3/8 inch.
 - 2. Flashing reglets, at edge of panel: plus or minus 1/4 inch.
 - 3. Reglets for glazing gasket: plus or minus 1/8 inch.
 - 4. Groove width for glazing gaskets: plus or minus 1/16 inch.
 - 5. Electrical outlets, hose bibs, etc.: plus or minus 1/2 inch.
 - 6. Reveals across panels: plus or minus 1/8 inch.

PART 3 EXECUTION

3.01 PREPARATION

- A. General: Coordinate installation of inserts and anchorages required to be set into concrete slabs prior to casting panels.
- B. Curing Base Casting Slabs: Cure concrete surfaces upon which wall panels are to be cast in same manner specified under Section "Cast-In-Place Concrete," except do not use paper or other curing sheet. At completion of 48-hour fog spray curing, use varnish base type of "curing compound" certified to have qualities of a "bond breaker" (parting compound), applied in accordance with manufacturer's instructions.

3.02 CASTING PANELS

- A. Forms: Place forms to minimize damage to casting slab surfaces. Erect and

brace forms to receive reinforcing steel anchors, inserts, and other items to be cast into wall panels.

1. Place form liners accurately to provide finished surface texture to match Architect's sample.
- B. Reinforcing and Inserts: Set and tie reinforcing steel as specified in Section "Cast-In-Place Concrete." Locate and secure anchorages and inserts and other cast-in items.
1. Extend reinforcing as required for later connections to other concrete structures.
 2. After placing reinforcing steel for panels, check casting slab surfaces for continuity of bond breaker film. Touch up or re-coat worn or damaged areas, taking particular care to prevent application of coating on reinforcing steel and inserts.
- C. Casting: Cast panels individually on building floor slab, or temporary casting platform as required by project conditions. Comply with applicable requirements of Section "Cast-In-Place Concrete."
- D. Consolidate concrete thoroughly to produce maximum density throughout entire panel thickness without voids. Take care not to displace reinforcement or inserts, or to score forms, liners, or casting slab.
- E. Finish: Match Architect's sample for color and texture. Cracks, voids, protrusions, spalls, or non-uniform color or texture will not be acceptable.
- F. Curing: As specified in Section "Cast-In-Place Concrete." Curing may be completed with panels in vertical position when sufficient strength has been attained for lifting without damage.

3.03 ERECTION AND INSTALLATION

- A. General: Use erection equipment with care to prevent damage to floor slabs. Repair damage as directed.
- B. Erection: Do not erect panels until at least 75 percent of specified 28-day compressive strength has been verified.
- C. Raise and lift panels from casting slab and erect plumb in accurate location and alignment. Anchor in place as shown. Use wedges where required to correctly position panels. Provide concrete mortar, grout, or dry pack to fill joints between panels and foundation system.
- D. After placing, provide temporary braces and supports to securely hold panels in position. Maintain braces and supports in place, undisturbed, until closures, columns, or other supporting structures have been installed and are capable of receiving panels.

- E. Weld panels to supports where indicated on drawings. Comply with requirements of AWS D1.1 for welded steel connections and D1.4 for welded reinforcing bars.
- F. Installation Tolerances: 1/4 inch maximum offset in alignment with adjacent panel facings at any point.

3.04 PATCHING

- A. Patch holes in panel surfaces created by lifting and bracing devices. Comply with concrete surface repair requirements of Section "Cast-In-Place Concrete."
- B. Repair of other defective or damaged surfaces will be permitted only upon acceptance by Architect. Remove and replace panels that are not acceptable for surface repairs.

3.05 FIELD QUALITY CONTROL

- A. Comply with requirements of Section "Cast-In-Place Concrete."

END OF SECTION 03470

SECTION 04810
CONCRETE UNIT MASONRY

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section includes the following:
 - 1. Concrete unit masonry.
 - 2. Reinforced unit masonry.

1.02 PERFORMANCE REQUIREMENTS

- A. Provide concrete unit masonry with net compressive test strength of 2000 psi.
- B. Provide concrete unit masonry that develops 1350 psi installed compressive strength (f'm) at 28 days, based on net area.
- C. General Conformance Standard: ACI 530.1 "Specification for Masonry Structures."

1.03 SUBMITTALS

- A. Product Data: For each different masonry unit, accessory, and other manufactured products specified.
- B. Shop Drawings: For reinforcing detailing fabrication, bending, and placement of unit masonry reinforcing bars. Comply with ACI 315 "Details and Detailing of Concrete Reinforcement" showing bar schedules, stirrup spacing, diagrams of bent bars, and arrangement of masonry reinforcement.
- C. Mix Designs: Proposed mortar mix designs.
- D. All shop drawings shall be signed and sealed by a Florida licensed engineer.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Concrete Masonry Units:
 - 1. Store units above ground on level platforms which allow air circulation under stacked units.
 - 2. Cover with heavy weatherproof coverings to prevent staining by weather, dirt, mud, oils, and grease.
 - 3. Carefully handle units to prevent chipping, spalling, cracking, and any other condition which could impair strength, durability, or appearance of units.
 - 4. Discard and remove damaged units from Project site.
- B. Mortar and Masonry Grout:
 - 1. Deliver cementitious materials to Project site in manufacturer's original unopened containers.

2. Store lime and cement in waterproof sheds or enclosures. Do not use materials damaged by water, moisture, or extended storage.
3. Protect aggregates from dampness, freezing, and damage by inclusion of foreign substances.

1.05 PROJECT CONDITIONS

- A. Protection: Protect partially completed masonry against weather, when work is not in progress, by covering top of walls with strong, waterproof, nonstaining membrane.
 1. Extend membrane at least 2 feet down both sides of walls and anchor securely in place.
- B. Environmental Requirements:
 1. Do not lay masonry when temperature is below 32 deg F when temperature is rising or below 40 deg F when temperature is falling, unless adequate precautions are taken to prevent work from freezing.
 2. During freezing or near freezing weather, provide adequate equipment or cover to protect completed portions of Work and maintain minimum temperatures above 50 deg F.

1.06 QUALITY ASSURANCE

- A. Masonry inspections shall be provided per ACI 530, "Building Code Requirements & Specifications for Masonry Structures".

PART 2 - PRODUCTS

2.01 CONCRETE MASONRY UNITS

- A. General: Provide shapes indicated and as follows for each form of concrete masonry unit required.
 1. Provide special shapes for stretchers, lintel and bond beams, and other shapes indicated or required.
 2. Provide square-edged units for outside corners.
- B. Concrete Masonry Units: ASTM C 90, "Concrete Masonry Units Using Lightweight Aardelite Aggregate" and as follows:
 1. Weight Classification: Normal weight.
 2. Provide Type II, nonmoisture-controlled units.
 3. Sizes: Nominal face dimensions of 8 inches by 16 inches; thicknesses as indicated.
 4. Exposed Faces: Manufacturer's standard color and texture, unless otherwise indicated on Drawings.

2.02 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C 150, "Standard Specification for Portland Cement", Type I or II; maximum 0.6 percent alkali. Provide natural color.

- B. Masonry Cement: ASTM C 91, "Standard Specification for Masonry Cement", non-staining. 22 percent maximum air content by volume and properties complying with requirements of ASTM C 270, "Standard Specification for Mortar for Unit Masonry" Table 2, Type S mortar.
- C. Hydrated Lime: ASTM C 207, "Standard Specification for Hydrated Lime for Masonry Purposes", Type S.
- D. Aggregate for Mortar: ASTM C 144, "Standard Specification for Aggregate for Masonry Mortar". Clean, dry, and washed free of salts.
- E. Aggregate for Grout: ASTM C 404, "Standard Specification for Aggregates for Masonry Grout". Size #1 for fine grout; Size #8 for coarse grout when minimum horizontal dimension of grouting space exceeds 4 inches.
- F. Ready-Mixed Mortar: Cementitious materials, water, and aggregate complying with requirements specified in this Article; combined with set-controlling admixtures to produce a ready-mixed mortar complying with ASTM C 1142, "Standard Specification for Extended Life Mortar for Unit Masonry". Permissible for use subject to approval by Engineer for compliance with required compressive strength characteristics.
- G. Water: Clean, fresh, and potable.

2.03 REINFORCING STEEL

- A. Steel Reinforcing Bars: Material and grade as follows:
 - 1. Billet steel complying with ASTM A 615, "Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement".
 - 2. Grade 60.

2.04 JOINT REINFORCEMENT

- A. General: Provide joint reinforcement formed from the following:
 - 1. Galvanized carbon steel wire, coating class as follows:
 - a. ASTM A 82, "Standard Specification for Steel Wire, Plain, for Concrete Reinforcement" with ASTM A 153, "Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware" Class B-2 coating, for exterior walls.
- B. Description: Welded-wire units prefabricated with deformed continuous side rods and plain cross rods into straight lengths of not less than 10 feet, with prefabricated corner and tee units, integral drips, and complying with requirements indicated below:
 - 1. Wire Diameter for Side Rods: 0.1483 inch.
 - 2. Wire Diameter for Cross Rods: 0.1483 inch.
- C. For single-wythe masonry provide ladder type design with single pair of side rods. Space joint reinforcement at 16 inches o.c. vertically.

- D. Manufacturers: One of the following:
 - 1. AA Wire Products Company.
 - 2. Dur-O-Wal, Inc.
 - 3. National Wire Products Corp.

2.05 MISCELLANEOUS MASONRY ACCESSORIES

- A. Premolded Control Joint Gaskets: Material as indicated below, designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.
 - 1. Styrene-butadiene rubber compound complying with ASTM D 2000, "Standard Classification System for Rubber Products in Automotive Applications" Designation M2AA-805.
 - 2. Products/Manufacturers: One of the following:
 - a. "Titewall AA1000"; AA Wire Products Co.
 - b. "D/A 2005"; Dur-O-Wal, Inc.
 - c. "Regular"; Ty-Wal.

2.06 MORTAR AND GROUT MIXES

- A. General: Do not add admixtures, including pigments, air-entraining agents, accelerators, retarders, water repellent agents, anti-freeze compounds, or other admixtures, unless otherwise specified.
 - 1. Do not use calcium chloride in mortar or grout.
 - 2. Add cold-weather admixture (if used) at the same rate for all mortar, regardless of weather conditions, in order to ensure that mortar color is consistent.
- B. Mortar for Unit Masonry: Comply with ASTM C 270, "Standard Specification for Mortar for Unit Masonry" Proportion Specification, for types of mortar indicated below:
 - 1. Limit cementitious materials in mortar to portland cement-lime.
 - 2. Exterior and Loadbearing Masonry: Type M or S.
- C. Grout for Unit Masonry: Comply with ASTM C 476, "Standard Specification for Grout for Masonry". Use grout of consistency indicated or, if not otherwise indicated, of consistency (fine or coarse) at time of placement that will completely fill spaces intended to receive grout.
 - 1. Compressive Strength: 3000 psi at 28 days.
 - 2. Aggregate Size: 3/8 inch.
 - 3. Slump: 8 to 10 inches.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of unit masonry. Do not proceed with installation until unsatisfactory conditions have been corrected.
- B. Examine rough-in and built-in construction to verify actual locations of piping connections prior to installation.

3.02 INSTALLATION, GENERAL

- A. Thickness: Build single-wythe walls to the actual thickness of the masonry units, using units of thickness indicated.
- B. Build chases and recesses to accommodate items specified in this and other Sections.
- C. Cut masonry units using motor-driven saws to provide clean, sharp, unchipped edges.

3.03 CONSTRUCTION TOLERANCES

- A. Variation from Plumb: Do not exceed 1/4 inch in 10 feet, nor 3/8 inch in 20 feet, nor 1/2 inch in 40 feet or more.
- B. Variation from Level: Do not exceed 1/4 inch in 20 feet, nor 1/2 inch in 40 feet or more.
- C. Variation of Linear Building Line: Do not exceed 1/2 inch in 20 feet, nor 1/2 inch in 40 feet or more.
- D. Variation in Cross-Sectional Dimensions: Do not exceed minus 1/4 inch nor plus 1/2 inch from wall thickness indicated.

3.04 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint widths and to accurately locating of openings, movement-type joints, returns and offsets. Avoid the use of less-than-half-size units at corners, jambs and where possible at other locations.
- B. Lay walls to comply with specified construction tolerances, with courses accurately spaced and coordinated with other construction.
- C. Bond Pattern for Exposed Masonry: Lay exposed masonry in the following bond pattern; do not use units with less than nominal 4 inch horizontal face dimensions at corners or jambs.
 - 1. One-half running bond with vertical joint in each course centered on units in courses above and below.
- D. Stopping and Resuming Work: In each course, rake back 1/2-unit length for one-half running bond; do not tooth. Clean exposed surfaces of set masonry and remove loose masonry units and mortar prior to laying fresh masonry.
- E. Built-in Work: As the construction progresses, build-in items specified under this and other Sections of the Specifications. Fill in solidly with masonry around built-in items.
 - 1. Fill space between hollow metal frames and masonry solidly with mortar, unless otherwise indicated.
 - 2. Fill cores in hollow concrete masonry units with grout 24 inches under bearing plates, beams, lintels, and similar items, unless otherwise indicated.

3.05 MORTAR BEDDING AND JOINTING

- A. Lay hollow concrete masonry units as follows:
 - 1. With full mortar coverage on horizontal and vertical face shells.
 - 2. Bed webs in mortar in starting course on footings and where adjacent to cells or cavities to be filled with grout.
 - 3. For starting course on footings where cells are not grouted, spread out full mortar bed, including areas under cells.
 - 4. Maintain joint widths indicated, except for minor variations required to maintain bond alignment. If not indicated, lay walls with 3/8 inch joints.
- B. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness, unless otherwise indicated.

3.06 HORIZONTAL JOINT REINFORCEMENT

- A. General: Provide continuous horizontal joint reinforcement as indicated. Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcing a minimum of 6 inches.
 - 1. Space reinforcement no more than 16 inches o.c.
 - 2. Provide reinforcement in mortar joint 1 block course above and below wall openings and extending 12 inches beyond opening.
 - a. Reinforcement above is in addition to continuous reinforcement.
- B. Cut or interrupt joint reinforcement at control and expansion joints, unless otherwise indicated.
- C. Provide continuity at corners and wall intersections by using prefabricated "L" and "T" sections. Cut and bend reinforcement units as directed by manufacturer for continuity at returns, offsets, column pipe enclosures, and other special conditions.

3.07 CONTROL AND EXPANSION JOINTS

- A. General: Install control and expansion joints in unit masonry construction where indicated. Build-in related items as the masonry progresses. Do not form a continuous span through movement joints unless provisions are made to prevent in-plane restraint of wall or partition movement.
- B. Form control joints in concrete masonry as follows:
 - 1. Install preformed control joint gaskets designed to fit standard sash block. Provide at 34 feet on center maximum.

3.08 LINTELS

- A. Provide masonry lintels where shown and where openings of more than 24 inches for block size units are shown without structural steel or other supporting lintels.
 - 1. Provide prefabricated or built-in masonry lintels. Use specially formed bond beam units with reinforcement bars placed as indicated and filled with coarse grout. Cure precast lintels before handling and installation. Temporarily support formed-in-place lintels until cured.

- B. Provide minimum bearing of 8 inches at each jamb, unless otherwise indicated.

3.09 INSTALLATION OF REINFORCED UNIT MASONRY

- A. Temporary Formwork: Construct formwork and shores to support reinforced masonry elements during construction.
 - 1. Construct formwork to conform to shape, line, and dimensions shown. Make sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
 - 2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other temporary loads that may be placed on them during construction.
- B. Placing Reinforcement: Comply with requirements of ACI 530.1, "Building Code Requirements & Specifications for Masonry Structures".
 - 1. Lap reinforcing bars 48 diameters where spliced.
 - 2. Hold vertical bars in position at top and bottom and with a minimum clearance of 1/4 inch to masonry walls and one diameter between bars.
- C. Grouting: Do not place grout until entire height of masonry to be grouted has attained sufficient strength to resist grout pressure.
 - 1. Grouting Options:
 - a. 4 foot high lifts with no observation holes.
 - b. 8 foot high lifts with observation holes. Observation holes shall be 4 inch by 4 inch sawcuts at the base course of all reinforcing.

3.10 REPAIRING, POINTING, AND CLEANING

- A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged, or if units do not match adjoining units. Install new units to match adjoining units; install in fresh mortar or grout, pointed to eliminate evidence of replacement.
- B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point-up all joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for application of sealants.
- C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears prior to tooling joints.
- D. Protection: Provide final protection and maintain conditions that ensure unit masonry is without damage and deterioration at time of Substantial Completion.

END OF SECTION 04810

**SECTION 05120
STRUCTURAL STEEL FRAMING**

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. All requirements of the general provisions of the contract including General and Supplementary Conditions, Division 0 and Division 1 forms a part of this section.

1.02 DESCRIPTION

A. SCOPE OF WORK

1. This Section includes fabrication, delivery, unload and store in locations directed and erect all structural steel work, as shown on drawings and specified, including schedules, notes, and details showing size and location of members, typical connections, and types of steel required. All connections not shown on the structural drawings shall be by the detailer and submitted on shop drawings signed and sealed by a registered Florida Engineer.

B. Related work not specified under this subdivision:

1. Steel joist
2. Setting of anchor bolts, cast in concrete, or masonry.
3. Metal fabrications.

1.03 SUBMITTALS

- A. Submit for review, complete shop drawings covering fabrication and erection of all work under this subdivision, including schedules, notes, and details showing size and location of members, typical connections, and types of steel required. All connections not shown on the structural drawings shall be by the detailer and submitted on shop drawings, signed and sealed by a registered Florida engineer.

- B. Submitted shop drawings must be checked and signed by the General Contractor.

- C. Test reports conducted on shop and field bolted and welded connections. Include data on type(s) of test conducted and test results.

- D. Pre-engineered metal pan stairs and landings shall be designed for 100 PSF live load by a licensed engineer retained by the steel fabricator. Stair shop drawing submittals shall be signed and sealed by a registered Florida engineer.

1.04 QUALITY ASSURANCE

- A. Codes and standards: Comply with applicable provisions of the latest issue of the following, except as otherwise indicated:
 - 1. American Institute of Steel Construction (AISC) "Code of Standard Practice for Steel Buildings and Bridges" - except paragraph 4.2.1. AISC "Specification for Structural Steel Buildings", including "Commentary".
 - 2. "Specifications and Structural Joints using ASTM A 325 or A 490 Bolts" approved by the Research Council on Structural Connections.
 - 3. Structural Welding Code (AWS D1.1)
 - 4. Steel Structures Painting Council (SSPC)
 - B. Qualifications for welding work: Qualify welding procedures and welding operations in accordance with AWS "Qualification" requirements.
 - C. Welders to have current certificates, If recertification of welders is required, retesting will be Contractor's responsibility.
- 1.05 DELIVERY, STORAGE, AND HANDLING
- A. Deliver materials to site at such intervals to ensure uninterrupted progress or work. Store on site only in authorized locations.
 - B. Deliver anchor bolts and anchorage devices, which are to be embedded in cast-in-place concrete or masonry, in ample time to not to delay work.
 - C. Store materials to permit easy access for inspection and identification. Keep steel members off ground. Protect steel members and packaged materials from exposure to the weather.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Structural steel shapes, tees: ASTM A992
- B. Structural steel angles, channels, plates, bars: ASTM 36
- C. Hot-formed steel tubing: ASTM A 501
- D. Steel pipe: ASTM A 53, Type E or S, Grade B; or ASTM A 501
- E. Anchor bolts: ASTM F1554 Grade 36, non-headed type, with nuts and washers.
- F. Unfinished threaded fasteners: ASTM A 307, Grade A, regular low-carbon steel bolts, nuts, and washers. Provide hexagonal heads.

- G. High strength threaded fasteners: Heavy hexagon structural bolts, heavy hexagon nuts, and hardened washers, complying with ASTM A325.
- H. Electrodes for welding: Comply with AWS Code. Use E70XX electrodes.

2.02 FABRICATION

- A. Fabricate items of structural steel in accordance with AISC Specifications and as indicated on final shop drawings. Properly mark-match materials for field assembly. Fabricate for delivery sequence that will expedite erection and minimize field handling of materials.
- B. Work shall be executed by skilled workmen under experienced supervision.
- C. Connections: Weld or bolt shop connections.
- D. Bolt field connections with high-strength bolts, except where welded connections are indicated.
- E. Field verify all existing dimensions and elevations prior to fabrication.
- F. High strength bolted construction: Install high strength threaded fasteners in accordance with AISC "Specifications for Structural Joints Using ASTM A 325 Bolts". Use bearing type bolts with threads included in shear plane.
- G. Welded construction: Comply with AWS Code for procedures, appearance, and quality of welds, and methods used in correcting welding work.
- H. Holes for other work: Provide holes required for securing other work to structural steel framing and for passage of other work through steel framing members, as shown on final shop drawings.

2.03 SHOP PAINTING

- A. General: Shop paint all structural steel, except anchor bolts and surfaces to be field welded.
- B. Paint all members after fabrication, except where surfaces would be inaccessible for surface prep and painting.
- C. Apply paint in sufficient volume or coats to provide a minimum dry film thickness of 3 but not more than 5 mils.
- D. Surface preparation: Clean steel in accordance with Steel Structures Painting Council (SSPC - SP3 Power Tool Cleaning).
- E. Proprietary Paints

1. Grey metal alkyd-oil primer of any of the following:

<u>Manufacturer</u>	<u>Designation</u>
Porter	No. 298
Mobile	No. 13F812
Tinemec	No. 1009
Ameron	No. 5102 Amercoat

2.04 SOURCE QUALITY CONTROL

- A. General: Materials and fabrication procedures are subject to inspections at tests in mill, shop, and field, conducted by a qualified inspection agency. Such inspections and tests will not relieve Contractor of responsibility for providing materials and fabrication procedures in compliance with specified requirements.
- B. Promptly remove and replace materials or fabricated components that do not comply.

PART 3 EXECUTION

3.01 ERECTION

- A. Must conform to the applicable provisions of AISC specifications.
- B. Temporary planking: Provide temporary planking and working platforms as necessary to effectively complete work.
- C. Setting bases and bearing plates: Clean concrete and masonry bearing surfaces of bond-reducing materials and roughen to improve bond to surfaces. Clean bottom surface of base and bearing plates.
- D. All anchor bolts shall be built into connections work in advance.
- E. Set loose and attached base plates and bearing plates for structural members on leveling nuts. Do not use wedges or shims.
- F. Tighten anchor bolts after supported members have been positioned and plumbed. Do not remove wedges or shims, but if protruding cut off flush with edge of base or bearing plate prior to packing with grout.
- G. Field assembly: Set structural frame accurately to lines and elevations indicated. Align and adjust various members forming part of complete frame or structure before permanently fastening. Clean bearing surfaces and other surfaces that will be in permanent contact before assembly. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
- H. All bolts, including anchor bolts, shall have enough projection to expose not less than 1-1/2 threads after nuts are tightened. Level and plumb individual members of

structure within specified AISC tolerances.

- I. If steel is damaged or does not fit-up, Contractor shall submit proposed corrective measures for review by Engineer.
- J. Do not enlarge unfair holes in members by burning or by using drift pins. Drill or ream holes that must be enlarged to accommodate next larger fastener, where possible.
- K. The use of a gas cutting torch in field for correcting fabrication errors in primary structural members will not be permitted.
- L. Immediately after erection, clean field welds, bolted connections, and abraded areas where shopcoat was damaged. Spot and prime areas using same material as used for shop coat.
- M. Set all members so that, in their final location, level, plumbness and alignment are within the tolerances prescribed by AISC Code.

3.02 QUALITY CONTROL

- A. An independent testing and inspection agency shall be retained to inspect structural steel members high strength bolted connections and welded connections.
- B. Testing agency shall conduct and interpret tests, state in each report whether test specimens comply with requirements, and specifically state any deviations there from. Submit 3 copies of each report to Owner's representative.
- C. Provide access for testing agency to places where structural steel work is begin fabricated or produced so that required inspection and testing can be accomplished.
- D. Minimum required testing:
 - 1. Visually inspect all structural steel beams, columns, etc.
 - 2. Visually inspect all bolted and welded connections.
 - 3. Test all beam or column splices.
 - 4. Test a representative sample of all full or partial penetration welds.
- E. Correct deficiencies in structural steel work that inspections have indicated to be not in compliance with requirements. Perform additional tests, at Contractor's expenses, as necessary to reconfirm any non-compliance of original work and to show compliance of corrected work.

3.03 FINAL CLEANUP

- A. All temporary guys, braces, falswork, cribbing, rubbish and other debris are to be removed upon completion of erection.

END OF SECTION 05120

**SECTION 05210
STEEL JOIST FRAMING**

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specifications Sections, apply to work of this Section.

1.02 SCOPE OF WORK

- A. Provide all equipment, labor and perform all work as necessary to fabricate, furnish, deliver, unload, store in locations directed and erect on supports to be provided under another subdivision all open-web steel joists and accessories as specified herein and as indicated.
- B. Related work not specified under this subdivision:
 - 1. Structural Steel
 - 2. Steel and ironwork of a miscellaneous nature
 - 3. Setting anchor bolts
 - 4. Grouting bearing plates

1.03 QUALITY ASSURANCE

- A. Provide joists fabricated in compliance with the following, as herein specified.
- B. Steel Joist Institute (SJI) "Standard Specifications, Load Tables and Weight Table" for:
 - 1. K-Series open web steel joists
- C. Joist fabricator shall be a member of the Steel Joist Institute.
- D. American Institute of Steel Construction (AISC)
- E. American Welding Society (AWS)
- F. Steel Structures Painting Council (SSPC)
- G. Qualification of field welding: Qualify welding processes and welding operators in accordance with American Welding Society "Structural Welding Code", AWS D1.1
- H. See Structural Steel 05120, 3.02 for testing requirements.

1.04 SUBMITTALS

- A. Submit for review complete shop drawings covering, fabrication of all work under

this subdivision including erection of such work on supports furnished under a separate subdivision.

- B. Submitted shop drawings and calculations to bear the seal of a Specialty Engineer who is a Florida licensed Engineer in the structural discipline.
- C. Design techniques, type, and format of supporting calculations, and all submittals must be reviewed by the Engineer-of-Record.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Joist shall be inspected by the manufacturer before shipment to insure compliance of materials and workmanship.
- B. Deliver, unload, store in locations directed, and handle steel joists as recommended in SJI "Specifications". Handle and store joists in a manner to avoid deforming members and to avoid excessive stresses.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Chord members: 50 ksi yield
- B. Web members: 36 ksi or 50 ksi yield
- C. If requested by owner's representative, evidence that the steel meets design yield strength shall be provided in the form of certified test reports.
- D. Bearing plates ASTM A36.
- E. High strength bolts ASTM A325.
- F. Steel prime paint:
 - 1. Steel Structures Painting Council specification 15-68T, Type I. Asphalt paint shall not be used.

2.02 FABRICATIONS

- A. General: The design and manufacture of steel joists shall conform to the latest standard specifications and load tables for open web steel joists, as adopted by the Steel Joist Institute.
- B. Holes in chord members: Provide holes in chord members where shown for securing other work to steel joists; however, deduct area holes from the area of chord when calculating strength member.

- C. Extend ends: Provide extended ends on joists where shown, complying with manufacturer's standards and requirements of applicable SJI "Specification" and load tables.
- D. Bridging: Provide horizontal or diagonal type bridging for joists and joist girders, complying with SJI "Specifications".
- E. Provide bridging anchors for ends of bridging lines terminating at walls or beams.
- F. Splices: May occur at any point in the chord members and shall be butt welded splices developing 100% of the cross sectional area of the member splices, and shall develop a minimum tensile strength of 57,000 psi on the full cross sectional area.
- G. Deflection: Live load deflections shall not exceed: 1/240 of span for roofs and 1/360 of span for floors.
- H. Camber: See SJI specifications for required camber.
- I. Shop painting: Prior to shipping, all joists shall be cleaned of rust and mill scale by brushing with steel bristle brushes and shall have one shop coat of paint meeting Steel Structures Painting Council Specification (SSPC) 15-68T, Type I, grey applied by either dipping and/or spraying.

PART 3 EXECUTION

3.01 ERECTION

- A. Place and secure steel joists in accordance with SJI "Specifications", final shop drawings, and as herein specified.
- B. Anchors: Furnish anchor bolts, bearing plates, and other devices to be built into concrete and masonry construction.
- C. Refer to Division 4 sections for installation of anchors set in masonry.
- D. Placing joist: Do not start placement of steel joists until supporting work is in place and secured. Place joists on supporting work, adjust and align in accurate locations and spacing before permanently fastening.
- E. Provide temporary bridging, connections, and anchors to ensure lateral stability during construction.
- F. Where "open web" joist lengths are 40 feet and longer, install a center row of bolted bridging to provide lateral stability before slackening of hoisting lines.
- G. Bridging: Install bridging simultaneously with joist erection, before construction loads

are applied. Anchor ends of bridging lines at top and bottom chords where terminating at walls or beams.

- H. Uplift: See plan for net wind load uplifts on roofs. Steel joist bottom chords must safely resist the wind uplift. A single line of bottom chord bridging must be provided at the first panel point from each support.
- I. Temporary bracing: Contractor shall provide any temporary bracing required to adequately distribute erection loads so that the carrying capacity of any individual joist is not exceeded.
- J. Field weld or bolt joists to supporting steel framework in accordance with SJI "Specifications" for type of joists used. Coordinate welding sequence and procedure with placing of joists.
- K. Damaged joists: Shall be replaced at no additional cost to Owner.
- L. Touch-up painting: After joist installation, paint field bolt heads and nuts, and welded areas, abraded or rusty surfaces on joists and steel supporting members. Wire brush surfaces and clean with solvent before painting. Use same type of paint as used for shop painting.
- M. Do not permit any application of construction loads to joists unless all joists are fastened in place and permanent bridging installed.
- O. Fasten joist and joist girders to structural steel at column lines by bolting per SJI standard specification provisions.

END OF SECTION 05210

**SECTION 05310
STEEL DECKING**

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specifications Sections, apply to this section.

1.02 DESCRIPTION

A. SCOPE OF WORK

- 1. This section includes fabrication, delivery, unload and store in locations directed and erect all roof deck units as shown on drawings and specified.

1.03 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification section.
- B. Product data including manufacturer's specifications and installation instructions for each type of decking and accessories.
- C. Shop drawings showing layout and type of deck units, anchorage details, and conditions requiring closure strips, supplementary framing, sump pans, cant strips, cut openings, special jointing, and other accessories.
- D. Submitted shop drawings must be checked and signed by the General Contractor.
- E. Welder certificate: See Section 05120 for certification submittal requirement.

1.04 QUALITY ASSURANCE

- A. Codes and standards: Comply with provisions of the following Codes and Standards, except as otherwise indicated:
 - 1. American Iron and Steel Institute (AISI), "Specification for the Design of Cold-Formed Steel Structural Members".
 - 2. American Welding Society (AWS), D1.3 "Structural Welding Code - Sheet Steel".

3. Steel Deck Institute (SDI), "Design Manual for Composite Decks, Form Decks and Roof Decks".
- B. Qualification of field welding: Use qualified welding processes and welding operators in accordance with "Welder Qualifications" procedures of AWS. Welded decking in place is subject to inspection and testing.
- C. FM listing: Provide steel roof deck units that have been evaluated by Factory Mutual System and are listed in "Factory Mutual Approval Guide" for "Class I" fire-rated construction.
- D. See Structural Steel 05120, 3.02 for testing requirements.

PART 2 PRODUCTS

2.01 PRODUCTS

- A. Roof deck to be 1-1/2 inch deep, 22 gauge, wide rib (Type B) with galvanized finish. Minimum properties are as follows. Computation of properties shall reflect the "Effective Compress Flange Width" concept.

22 Gauge

$$I = 0.169 \text{ in.}^{(4)}$$

$$S_p = 0.189 \text{ in.}^{(3)}$$

$$S_n = 0.192 \text{ in.}^{(3)}$$

Maximum live load deflection = $l/240$ of span.

Maximum working stress = 20 ksi

- B. Floor deck to be 9/16 inches deep, 26 gauge, galvanized permanent composite form deck. Minimum properties are as follows:

26 Gauge

$$I = 0.015 \text{ in.}^{(4)}$$

$$S = 0.043 \text{ in.}^{(3)}$$

2.02 MANUFACTURERS

- A. Available manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the work include, but are not limited to the following:

1. Marlyn Steel Products, Inc.
2. H. H. Robertson Company
3. Vulcraft Div., Nucor Corporation

2.03 MATERIALS

- A. Steel for galvanized metal deck units: A653 SQ Grade 33 with coating

designation G60.

- B. Miscellaneous steel shapes: ASTM A 36.
- C. Sheet metal accessories: ASTM A 924-94, galvanized.
- D. Galvanizing: ASTM A 653-940 G60.
- E. Galvanizing repair: Where galvanized surfaces are damaged, prepare surfaces and repair in accordance with procedures specified in ASTM A 780.
- F. Flexible closure strips: Manufacturer's standard mineral fiber closures.

2.04 FABRICATION

- A. General: Form deck units in lengths to span three or more supports, with flush, telescoped, or nested 2 inch laps at ends and interlocking or nested side laps, of metal thickness, depth, and width as indicated.
- B. Roof deck units: Provide deck configurations that comply with SDI "Specification and Commentary for Steel Roof Deck".
- C. Roof sump pans: Fabricate from single piece of 0.071 inch min. (14 gauge) galvanized sheet steel with level bottoms and sloping sides to direct water flow to draining. Provide sump pans of adequate size to receive roof drains and with bearing flanges not less than 3 inches wide. Recess pans not less than 1-1/2 inches below roof deck surfaces unless otherwise shown or required by deck configuration. Holes for drains will be cut in the field by others.

PART 3 EXECUTION

3.01 GENERAL

- A. Delivery and storage: Deliver deck to job site in bundles and store off ground with one end elevated for water drainage. Cover with waterproof covering, ventilated to avoid condensation.

3.02 INSTALLATION

- A. General: Install deck units and accessories in accordance with manufacturer's recommendations, shop drawings, and as specified herein.
- B. Place deck units on supporting steel framework and adjust to final position with end accurately aligned and bearing on supporting members before being permanently fastened. Do not stretch or contract side lap interlocks.
- C. Align deck units for entire length of run of cells and with close alignment between cells at ends of abutting units.

- D. Place deck units flat and square, secured to adjacent framing without warp or deflection.
- E. Suspended ceiling, light fixtures, ductwork, piling or other utilities shall not be suspended from decking.
- F. Coordinate and cooperate with structural steel erector in locating decking bundles to prevent overloading of structural members.
- G. Fasten roof deck to supporting steel by welding. See drawings for weld pattern.
- H. Comply with AWS requirements and procedures for manual shielded metal arc weld, appearance and quality of welds, and methods used in correcting welded work. Minimum puddle welded size = 5/8 inch diameter.
- I. Use care in selecting electrodes and amperage to provide positive weld and to prevent blow-out holes.
- J. Use welding washers for all decking 24 gage or thinner.
- K. Mechanically fasten side laps of adjacent deck units between supports with No. 10 self-tapping machine screws.
- L. Uplift loading: Install and anchor roof deck units to resist gross uplift loading. See plan for uplift loading requirements.
- M. Cutting and fitting: Cut and neatly fit deck units and accessories around other work projecting through or adjacent to the decking, as shown.
- N. Reinforcement at openings: Provide additional metal reinforcement and closure pieces as required for strength, continuity of decking, and support of other work shown.
- O. Roof sump pans: Place over openings provided in roof decking and weld to top decking surface. Space weld not more than 12 inches o.c. with at least one weld at each corner. Detail on architectural drawings.
- P. Closure strips: Provide metal closure strips at open uncovered ends and edges of roof decking and in voids between decking and other construction. Weld into position to provide a complete decking installation.
- Q. Touch-up painting: After decking installation, wire brush, clean, and paint scarred areas, welds, and rust spots on top and bottom surfaces of decking units and supporting steel members.
- R. Touch-up galvanized surfaces with galvanizing repair paint applied in accordance with manufacturer's instructions.

END OF SECTION 05310

SECTION 05400
STRUCTURAL METAL STUD FRAMING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to work of this section.
- B. For steel framing for non-structural interior walls and partitions see SECTION 09250 GYPSUM DRYWALL.

1.02 DESCRIPTION

A. SCOPE OF WORK

- 1. Extent of structural stud framing is shown on drawings.

B. Types of structural stud framing members include the following:

- 1. "C" shaped structural steel studs
- 2. Channel shaped structural steel runners with 1-1/4 legs
- 3. Studs and accessories are to be obtained from one manufacturer

1.03 QUALITY ASSURANCE

- A. ASTM A-446 Steel Sheet, Zinc Coated (Galvanized) by the Hot Dip Process Structural (Physical) quality.
- B. ASTM A-924-94 Steel Sheet, Zinc Coated (Galvanized) by the Hot Dip Process, general requirements.
- C. AWS "Code for Welding in Building Construction, D1.0".
- D. ANSI 249.1 - 1973 "Safety in Welding and Cutting".
- E. ASTM A-568 Standard Specification for general requirements for steel, carbon, and high strength low-alloy hot rolled sheet and cold rolled sheet.
- F. AISC "Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings", latest edition.

1.04 SUBMITTALS

- A. Submit manufacturer's product information on framing and accessories, including other data as may be required to certify compliance with performance requirements specified herein.

- B. Submit complete structural calculations for the steel framing system. Calculations shall cover all studs, jamb studs, runner track, bracing, attachment of light gauge framing to light gauge framing, and attachment of light gauge framing to concrete or structural steel. Calculations shall be signed and sealed by a registered Florida engineer.
- C. Submit complete detail shop drawings for metal stud exterior wall system and special component installation not fully dimensioned or detailed in manufacturer's product data. Shop drawings shall be signed and sealed by a registered Florida engineer.
- D. Submitted shop drawings must be checked and signed by the General Contractor.
- E. Submit certification of materials from the manufacturer to show compliance with the specification and related drawings.
- F. Welder certification: See Section 05120 for certification submittal requirement.

1.05 PRODUCT HANDLING

- A. Protect structural stud framing members from rusting and damage. Deliver to project site in bundles, fully identifies with name, brand, type and grade. Store off ground in a dry ventilated space or protect with suitable waterproof coverings.

1.06 COMPONENT DESIGN

- A. In accordance with AISI "Specification of the Design of Cold-Formed Steel Structural Members", latest edition. No composite action shall be considered between collateral wall material.

PART 2 PRODUCTS

2.01 SYSTEM COMPONENTS

- A. With each type of steel framing required, provide manufacturer's standard steel runners (tracks), blocking, lintels, clip angles, bracing reinforcements, fasteners, and accessories as recommended by manufacturer for applications indicated, as needed to provide a complete steel framing system.

2.02 MATERIALS

- A. Fabricate metal framing components of structural quality sheet steel with a minimum yield point of 50,000 psi for studs, and 33,000 psi for runners; ASTM A 653 and A 570.
- B. Provide galvanized finish to metal framing components complying with ASTM A 525 with a G60 coating.

2.03 "C" SHAPED STUDS

- A. Manufacturer's standard structural steel studs of size and shape, indicated, with nominal 1-5/8" flange and minimum 1/2" flange return lip. See drawings for gauge.

2.04 AVAILABLE PRODUCTS

- A. Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to:
 - 1. Clark Steel Framing Systems
 - 2. Dietrich Industries, Inc.
 - 3. Unimast Incorporated

2.05 FABRICATION

- A. Framing components may be prefabricated into panels prior to erection. Fabricate panels plumb, square, true to line and braced against racking with joints welded. Perform lifting of prefabricated panels in a manner to prevent damage or distortion.
- B. Splicing of components shall not be permitted.

2.06 FASTENING

- A. Attach all components by welding or screw fasteners as recommended by manufacturer. No bolts, rivets, or similar devices shall be used for permanent fastening.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install metal framing system in strict accordance with manufacturer's printed or written instruction and recommendations. Employ authorized installers approved by the manufacturer to do all installation work.
- B. Install continuous tracks sized to match stud depth. Align tracks accurately to layout at base and tops of studs. Secure tracks as recommended by stud manufacturer for type of construction involved, except do not exceed 24" o.c. spacing for nail or power driven fasteners, or 16" o.c., for other types of attachments. Provide fasteners at corners and at ends of tracks.
- C. Install studs vertically in the runners, 16 inches on centers. Provide additional framing and headers at all openings as required.
- D. Where required, temporary bracing shall be provided until erection is completed.
- E. Resistance to bending and rotation about the minor axis shall be provided by mechanical lateral bracing where required.

3.02 TOLERANCES

- A. No more than 1/8" out of alignment in 10'-0" vertically, horizontally, or diagonally as determined by 16'-0" straight edge, with total tolerance of 3/8" in any run.

END OF SECTION 05400

SECTION 05500
METAL FABRICATIONS

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Furnish and install all metal fabrications as indicated on the Drawings and/or specified herein.
- B. Miscellaneous metal work shall include, but not be limited to, the following:
 - 1. Miscellaneous Steel Framing and Supports which are not a part of structural steel framework and as required to complete the Work.

1.02 RELATED WORK

- A. COLD-FORMED METAL FRAMING: Section 05400.

1.03 QUALITY ASSURANCE

- A. Codes and Standards: Comply with provisions of the following, except as otherwise indicated or specified:
 - 1. American Institute of Steel Construction (AISC):
 - a. AISC Code of Standard Practice for Steel Buildings and Bridges.
 - b. AISC Specification for Structural Buildings Allowable Stress Design and Plastic Design with Commentary.
 - 2. American National Standards Institute (ANSI):
 - a. Referenced Standards.
 - 3. American Society for Testing and Materials (ASTM):
 - a. Referenced Standards.
 - 4. American Welding Society (AWS):
 - a. AWS D1.1 Structural Welding Code - Steel.
 - 5. Steel Structures Painting Council (SSPC):
 - a. Referenced Standards.
- B. All welding shall be performed pursuant to AWS D1.1. All welding shall be performed by welders with current certificates for the type of weld being done. Special care shall be taken to keep welding electrodes free of moisture.
- C. Field measurements shall be taken prior to preparation of shop drawings and fabrication, where possible. Trimming and fitting shall be allowed for wherever taking field measurements before fabrication might delay the work.

- D. Items shall be preassembled in the shop to the greatest extent possible to minimize field splicing and assembly. Units shall be disassembled only as necessary for handling and shipping limitations. Disassembled units shall be clearly marked for reassembly.

1.04 SUBMITTALS

A. Shop Drawings:

- 1. Submit shop drawings for fabrication and erection of metal fabrications. Include plans, elevations, details of sections and connections, anchorages, and accessory items. Provide templates for anchor and bolt installations.

1.05 PRODUCT DELIVERY AND STORAGE

- A. Materials shall be delivered to the Site undamaged and shall be stored and protected from the elements by covering in plastic. All material damaged prior to Substantial Completion shall be removed from the Site and replaced at no additional cost to the Owner.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Metal Surfaces, General:

- 1. For metal fabrications work which will be exposed to view, only materials which are smooth and free of surface blemishes such as pitting, seam marks, roller marks, rolled trade names and roughness shall be used.

B. The following shall be used except where otherwise specified or required:

- 1. Steel plates, shapes and bars shall conform to ASTM A 36.
- 2. Steel pipe shall conform to ASTM A 53, Type S, Grade B, Schedule 40, black finish unless galvanizing is required.

2.02 FASTENERS

A. General:

- 1. Zinc-coated fasteners shall be used for exterior locations or where built into exterior walls wherever possible.
- 2. Fasteners and connections shall be welded wherever possible.
- B. Nuts and bolts shall be regular hexagon type conforming to ASTM A307, Grade A.
- C. Lag bolts shall be square head type conforming to ANSI B18.2.1.
- D. Machine screws shall be cadmium plated steel conforming to ANSI B18.6.3.
- E. Wood screws shall be flat head carbon steel conforming to ANSI B18.6.1.
- F. Washers shall be round, carbon steel conforming to ANSI B18.22.1.

- G. Masonry anchorage devices shall be expansion shields and epoxy set anchors (as indicated) conforming to ASTM E 488.
- H. Toggle bolts shall be tumble-wing type conforming to Federal Specification (FS) FF-B-588, type, class, and style as required.
- I. Lock washers shall be helical spring-type carbon steel conforming to ANSI B18.21.1.

2.03 PAINT (Coordinate with Division 9900)

- A. Shop Primer for Ferrous Metals: Manufacturer's or fabricator's standard, fast-curing, lead-and chromate-free, universal modified alkyd primer complying with performance requirements selected for good resistance to normal atmospheric corrosion, compatibility with finish paint systems indicated, and for capability to provide a sound foundation for field-applied topcoats despite prolonged exposure.
- B. Galvanizing Repair Paint: High zinc dust content paint for re-galvanizing welds in galvanized steel, with dry film containing not less than 94 percent zinc dust by weight and complying with DOD-P-21035A (SH) or SSPC-Paint-20.
- C. Dissimilar Metals Coating: Provide Scotch-Clad Brand Protective Coating No. 1706 as manufactured by 3M Corp. or approved equal.

2.04 FINISHES (Coordinate with Division 9900)

- A. General:
 - 1. Comply with NAAMM "Metal Finishes Manual" for recommendations relative to application and designation of finishes.
 - 2. Finish metal fabrications after assembly.
- B. Galvanizing: For those items indicated for galvanizing, apply zinc coating by the hot-dip process in compliance with the following requirements:
 - 1. ASTM A 153 for galvanizing iron and steel hardware.
 - 2. ASTM A 123 for galvanizing both fabricated and un-fabricated iron and steel products.
- C. Preparation for Shop Priming: Prepare uncoated ferrous metal surfaces to comply with minimum requirements indicated below for SSPC surface preparation specifications and environmental exposure conditions of installed metal fabrications:
 - 1. Exterior: SSPC-SP 6 "Commercial Blast Cleaning."
 - 2. Interior: SSPC-SP 3 "Power Tool Cleaning."
- D. Apply shop primer to uncoated surfaces of metal fabrications, except those with galvanized finish or to be embedded in concrete or masonry, unless otherwise indicated. Comply with requirements of SSPC-PA 1 "Paint Application Specification No. 1" for shop painting.

2.05 FABRICATION

A. Miscellaneous Steel Framing and Supports:

1. Provide miscellaneous steel framing and supports which are not a part of structural steel framework, as required to complete the Work. Fabricate miscellaneous units to size, shapes and profiles indicated or, if not indicated, of required dimensions to receive adjacent other work to be retained by framing. Except as otherwise indicated, fabricate structural steel shapes, plates, and steel bars of welded construction, using mitered joints for field connection. Cut, drill, and tap units to receive hardware and similar items.
2. Equip units with integrally welded anchors for casting into concrete or building into masonry. Furnish inserts if units are required to be installed after concrete is placed. Except as otherwise indicated, space anchors 24 inches on center.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine the areas and conditions under which the metal fabrications are to be installed. Do not proceed until the unsatisfactory conditions have been corrected in an acceptable manner.

3.02 INSTALLATION

- A. Materials of type, size and thickness shown shall be used, or if not shown, of required size and thickness to produce adequate strength and durability in the finished product. Metal shall be well formed to shape and size with sharp lines and angles.
- B. Exposed work shall be formed true to line and level with accurate angles and surfaces and straight sharp edges. Exposed edges shall be eased to a radius of 1/32 inch unless otherwise shown. Bent metal corners shall be formed to the smallest radius possible without causing grain separation, or otherwise impairing work.
- C. All corners and seams shall be welded continuously, complying with AWS recommendations. At exposed connections, exposed welds shall be ground smooth and flush to match and blend with adjoining surfaces.
- D. Shearing and punching shall leave clean, true lines and surfaces. Curved work shall be evenly sprung.
- E. Exposed connections shall be formed with hairline joints, flush and smooth, using concealed fasteners wherever possible. Exposed fasteners shall be of the type shown or, if not shown, Phillips flat-head (countersunk) screws or bolts shall be used.
- F. Anchoring devices shall be fabricated and spaced to provide adequate support for the intended use.
- G. Metal fabrications shall be cut, reinforced, drilled and tapped, as required, to receive finish hardware and similar items.
- H. All steel fabrications to be installed in exterior locations (outside the building) shall be galvanized as specified.
- I. All metal fabrications shall be installed as shown on the Drawings, and adjusted to satisfactorily fulfill the use for which such is intended.

3.03 ADJUST AND CLEAN

- A. All exposed surfaces shall be left clean and free from all blemishes or discolorations after erection.

END OF SECTION 05500

SECTION 06100
ROUGH CARPENTRY

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Scope:

1. Types of work in this Section include, but are not limited to, rough carpentry for:

- a. Wood grounds, nailers, plates, and blocking.
- b. Plywood sheathing and backing.

B. Treatment of rough carpentry materials included under this Work is specified under Section 06300 - WOOD TREATMENT.

1.02 RELATED WORK

- A. UNIT MASONRY: Section 04220.
- B. FINISH CARPENTRY AND MILLWORK: Section 06200.
- C. TPO ROOFING SYSTEM: Section 07540.
- D. FLASHING AND SHEET METAL: Section 07600.

1.03 QUALITY ASSURANCE

A. Approved Products: As applicable, products used herein shall comply with requirements of the Florida Product Approval System as required by Florida Statute 553.842 and Florida Administrative Code 9B-72. Refer to Drawings for details including fastenings governing approved products.

B. Reference Standards:

- 1. American Forest & Paper Association (AFPA):
 - a. Manual for Wood Frame Construction.
- 2. American Lumber Standards Committee (ALSC):
 - a. Board of Review.

3. American Plywood Association (APA):
 - a. APA Standard Grading Rules.
4. American Society for Testing and Materials (ASTM):
 - a. Reference Standards.
5. Federal Specifications (FS):
 - a. Reference Standards.
6. Product Standards (PS):
 - a. Referenced Standards.
7. Southern Pine Inspection Bureau (SPIB):
 - a. SPIB Standard Grading Rules.
8. West Coast Lumber Inspection Bureau (WCLIB):
 - a. WCLIB Standard Grading Rules.
9. Western Wood Products Association (WWPA):
 - a. WWPA Standard Grading Rules.
 - b. Recommended Nailing Schedule.

1.04 SUBMITTALS

A. Manufacturer's Data for Treated Lumber:

1. Submit treatment plant's data showing the lumber type, certification by the treating plant stating chemicals and process used, net amount of treatment retained, and conformance with applicable standards. Include a statement that moisture content of treated materials was reduced to a maximum of 15 percent prior to shipment to the Site.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Maintain materials under cover and dry. Protect against exposure to weather and contact with damp or wet surfaces. Stack lumber as well as plywood and other panels; provide for air circulation within and around stacks and under temporary coverings including polyethylene and similar materials.
- B. For lumber and plywood pressure treated with waterborne chemicals, provide space between each course to provide air circulation.

1.05 JOB CONDITIONS

A. Coordination:

1. Fit carpentry work to other work; scribe and cope as required for accurate fit. Correlate location of furring, nailers, plates, blocking, grounds and similar supports to allow attachment of other work.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Lumber Standards, General:

1. Manufacture lumber to comply with PS 20 "American Softwood Lumber Standard" and with applicable grading rules of inspection agencies certified by ALSC Board of Review.
2. Factory mark each piece of lumber with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grade species, moisture content at time of surfacing, and mill.
3. Nominal sizes are indicated, except as shown by detailed dimensions. Provide actual sizes as required by PS 20, for moisture content specified for each use.
4. Provide seasoned lumber with 19 percent maximum moisture content at time of dressing and shipment for sizes 2 inches or less in nominal thickness, unless otherwise indicated.

B. Grounds, Blocking, Plates, Nailers, and Similar Members:

1. Grounds, blocking, plates, nailers, and similar members shall be standard grade light framing size lumber of any species or board size lumber as required. No. 2 Common or Standard grade boards per WCLIB or WWPA rules, or No. 2 boards per SPIB rules.

C. Plywood Panels:

1. Comply with PS 1 "U.S. Product Standard for Construction and Industrial Plywood" for plywood panels and, for products not manufactured under PS 1 provisions, with American Plywood Association (APA) "Performance Standard and Policies for Structural-Use Panels, Form No. E 445.
2. Factory mark each construction panel with APA trademark evidencing compliance with grade requirements.
3. Where construction panels are used for the following concealed types of applications, provide APA Performance-Rated Panels complying with requirements indicated for grade designation, span rating, exposure durability classification, and thickness:
 - a. Sheathing: APA Rated Sheathing.
 - (1) Thickness: as indicated.
 - (2) Exposure Durability Classification: Exterior.
 - (3) Span Rating: 16/0, 20/0, 24/0, as required to suit stud spacing indicated.

b. Backing Panels:

- (1) For mounting electrical or telephone equipment, provide fire-retardant treated plywood panels with grade designation, APA C-D PLUGGED INT with exterior glue, in 15/32-inch thickness unless otherwise indicated.

D. Fasteners and Anchorages:

1. Provide size, type, material, and finish as indicated and as recommended by applicable standards, complying with applicable Federal Specifications for nails, staples, screws, bolts, nuts, washers, and anchoring devices. Provide metal hangers and framing anchors of the size and type recommended by the manufacturer for each use including recommended nails.
2. Where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners and anchorages with a hot-dip zinc coating pursuant to ASTM A 153.

2.02 WOOD TREATMENT

- A. Decay (Termite) and Fire treatment of the following lumber shall be in accordance with requirements described under Section 06300 - WOOD TREATMENT:

<u>Location</u>	<u>Treatment (General)</u>
Wood members in contact with concrete, used in connection with roofing, or exposed to moisture	Decay (Termite)
Sheathing	Decay (Termite) & Fire
Plywood backing panels for mounting electrical and telephone equipment	Fire
Concealed wood blocking and in general all wood in concealed spaces	Fire

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine the areas and conditions under which rough carpentry work is to be installed. Do not proceed with rough carpentry work until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. General:

1. Material with defects which might impair the quality of the work, and units which are too small to fabricate with a minimum of joints or the optimum joint arrangement, shall be discarded.
2. All rough carpentry work shall be set accurately to required levels and lines, with members plumb and true, and accurately cut and fitted.
3. All rough carpentry work shall be securely attached to substrates by anchoring and fastening as shown, and as required for structural adequacy. On exposed rough carpentry work, nail

heads shall be countersunk, and holes filled.

4. Fasteners shall be of a size that will not penetrate members where opposite side will be exposed to view or will receive finish materials. Tight connections shall be made. Fasteners shall be installed without splitting wood; predrill as required.
5. Use washers where required for fasteners to avoid movement of material through loading and/or vibration.
6. Seal ends where exposed to moisture or where moisture could migrate via gravity, capillary action, expansion, or pressure gradients.

B. Wood Grounds, Plates, Nailers, and Blocking:

1. Wood grounds, plates, nailers, and blocking shall be installed where indicated on the Drawings, and wherever required for screeding or attachment of other work. Shapes shall be formed as shown and cut as required for true line and level of work to be attached.
2. Attach to substrates as required to support applied loading. Countersink bolts and nuts flush with surfaces, unless otherwise indicated. Build into masonry during installation of masonry work. Where possible, anchor to formwork prior to concrete placement.

C. Plywood Panels:

1. Comply with applicable recommendations contained in Form No. E 30K, "APA Design/Construction Guide - Residential & Commercial", for types of plywood panels and applications indicated.
2. Fastening Methods: Fasten panels as follows, in strict accordance with the Florida Building Code, 2001 Edition, as amended:
 - a. Sheathing: Nail and/or screw to supports, as applicable.
 - b. Backing Panels: Nail and/or screw to supports, as applicable.

END OF SECTION 06100

SECTION 06200
FINISH CARPENTRY AND MILLWORK

PART 1 - GENERAL

1.01 WORK INCLUDED (**Refer to ID Drawings**)

- A. Finish carpentry includes carpentry work which is exposed to view, is non-structural, and which is not specified as part of other sections.
- B. Types of Finish Carpentry include, but are not limited to the following:
 - 1. Wood Casework and Trim.
 - 2. Plastic Laminate Finished Casework.
 - 3. Cabinet and Shelving Hardware.

1.02 RELATED WORK

- A. ROUGH CARPENTRY: Section 06100.
- B. WOOD TREATMENT: Section 06300.
- C. FINISH HARDWARE: Section 08710.
- D. GYPSUM WALLBOARD: Section 09250.
- E. TILE WORK: Section 09300.
- F. PAINTING: Section 09900.

1.03 QUALITY ASSURANCE

- A. Pre-Installation Meeting:
 - 1. Meet at Project Site prior to delivery of finish carpentry materials, and review coordination and environmental controls required for proper installation and ambient conditioning in areas to receive work.
 - 2. Include in meeting, the Contractor, Owner, Installers of finish carpentry, wet work including plastering, other finishes, painting, mechanical work and electrical work, and firms and persons responsible for continued operation (whether temporary or permanent) of HVAC system as required to maintain temperature and humidity conditions.
 - 3. Proceed with finish carpentry on interior only when required ambient conditions can be properly maintained.

B. Applicator Qualifications:

1. Fabrication and installation shall be performed only by a qualified installer with at least five (5) years documented experience in installations of a similar nature, and as approved by the Architect.

C. Source Quality Control:

1. Factory-mark each piece of lumber and plywood with type, grade, mill and grading agency identification; except omit marking from surfaces to receive transparent finish, and submit mill certificate that material has been inspected and graded in accordance with requirements if it cannot be marked on a concealed surface.

D. Fire-Retardant Marking:

1. Mark each unit of fire-retardant treated lumber and plywood with the classification marking of Underwriters Laboratory, Inc., or other testing and inspecting agency acceptable to authorities having jurisdiction. Place marking on surfaces which will not be exposed after installation.

1.04 SUBMITTALS

A. Product Data:

1. Submit manufacturer's specifications and installation instructions for each item of factory fabricated woodwork and manufactured item.
2. Submit manufacturer's (Fabricator's) certification, stating that the fabricated work complies with quality grades and other requirements indicated.

B. Wood Treatment Data:

1. Submit chemical treatment manufacturer's instructions for handling, storage, installation and finishing treated materials.
 - a. Dip Treatment: For each type specified, include certification by treating plant stating chemical solutions used, submersion period, and conformance with specified standards.
 - b. Fire-Retardant Treatment: Include certification by treating plant, indicating type of chemicals used and fire performance characteristics achieved.

C. Shop Drawings:

1. Submit shop drawings showing location of each item, dimensioned plans and elevations, large scale details, hardware schedule, attachment devices and other components. Submit shop drawings for the following:
 - a. Casework/Cabinet Work.
 - b. Shelving.

D. Samples:

1. Submit two (2) each of the following samples for each species and cut or pattern of finish carpentry, and manufactured product:
 - a. Trim and Molding: 24 inches long x full molding width, unfinished.
 - b. Not used
 - c. Not Used
 - d. Plastic Laminate Finished Casework: 12 inches square by thickness specified.
 - e. Exposed cabinet hardware, one unit of each type and finish.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Protect finish carpentry materials during transit, delivery, storage, and handling to prevent damage, soiling and deterioration.
- B. Do not deliver finish carpentry materials until painting, wet work, grinding, and similar operations which could damage, soil, or deteriorate woodwork, have been completed in installation areas. If, due to unforeseen circumstances, finish carpentry materials must be stored in other than installation areas, store only in areas meeting requirements specified for installation areas.

1.06 PROJECT CONDITIONS

- A. Conditioning:
 1. Installer shall advise Contractor of temperature and humidity requirements for finish carpentry installation areas. DO NOT install finish carpentry until the required temperature and relative humidity have been stabilized and will be maintained in installation areas.
 2. Maintain temperature and humidity in installation area as required to maintain moisture content of installed finish carpentry within a 1.0 percent tolerance of optimum moisture content, from date of installation through remainder of construction period. The fabricator of woodwork shall determine optimum moisture content and required temperature and humidity conditions.
- B. Verify all measurements at the job site on which this work is dependent.
- C. Coordinate with Owner's equipment supplier to obtain exact sizes of all items to be built-in to cabinet work.

PART 2 - PRODUCTS

2.01 PRODUCT QUALITY STANDARDS

- A. Softwood Lumber Standards: Comply with PS 20 "American Softwood Lumber Standard" and with applicable grading rules of the respective grading and inspecting agency for the species and product indicated.
- B. Hardwood Lumber Standard: Comply with National Hardwood Lumber Association (NHLA) rules.
- C. Plywood Standard: Comply with PS 1 "U.S. Product Standard for Construction and Industrial Plywood.

- D. Hardwood Plywood Standard: Comply with PS 51.
- E. Woodworking Standard: Where indicated for a specific product, comply with specified provision of the following:
 - 1. Architectural Woodwork Institute (AWI) "Quality Standards."
- F. Plastic Laminate: Comply with AWI for type, thickness, pattern, and finish indicated for each application.

2.02 MATERIALS, GENERAL

- A. Nominal sizes are indicated, except as shown by detailed dimensions. Provide dressed or worked and dressed lumber, as applicable, manufactured to the actual sizes as required by PS 20, or to actual sizes and pattern as shown, unless otherwise indicated.
- B. Moisture Content of Softwood Lumber: Provide kiln-dried (KD) lumber having a moisture content from time of manufacture until time of installation not greater than values required by the applicable grading rules of the respective grading and inspection agency for the species and product indicated.
- C. Moisture Content of Hardwood Lumber: Provide KD lumber having a moisture content from time of manufacture until time of installation within the ranges required in the referenced woodworking standard.
- D. Pre-cut Openings: Fabricate finish carpentry work with pre-cut openings, where possible, to receive hardware, appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams for proper size and shape. Smooth edges of cutoffs and, where located in countertops and similar exposures, seal edges of cutouts with a water-resistant coating.
- E. Measurements: Before proceeding with fabrication of finish carpentry work required to be fitted to other construction, obtain measurements and verify dimensions and shop drawing details as required for accurate fit.
 - 1. Where sequence of measuring substrates before fabrication would delay the project, proceed with fabrication (without field measurements) and provide ample borders and edges to allow for subsequent scribing and trimming for accurate fit.
- F. Where hardwood plywood edges are exposed in cabinet and shelving units, provide end caps of same species and grade as plywood veneer.

2.03 WOOD CASEWORK/TRIM AND SHELVING

- A. Quality Standard: Comply with AWI Section 400 requirements.
- B. Grade: Custom.
- C. Wood Species and Cut: As indicated.
- D. Thickness: As indicated.

2.04 PLASTIC LAMINATE FINISHED CASEWORK

- A. Quality Standards: For the following types of architectural woodwork; comply with indicated standards as applicable:
 - 1. Plastic Laminate Casework: AWI Section 400 B.
- B. Exposed Surfaces: Provide high pressure laminate in grades indicated for the following types of surfaces:
 - 1. Horizontal Surfaces: GP-50 (0.050-inch nominal thickness).
 - 2. Post Formed Surfaces: PF-42 (0.42-inch nominal thickness).
 - 3. Vertical Surfaces: GP-28 (0.028-inch nominal thickness).
- C. Semi-Exposed Surfaces: Finish semi-exposed surfaces as follows, unless otherwise indicated:
 - 1. Plastic Laminate, GP-50 for all surfaces of shelving, and GP-28 for cabinet interiors.
- D. Fabricate exposed edges of casework with matching plastic laminate, except as otherwise indicated.
- E. Plastic Laminate Products: Provide the following selections:
 - 1. Countertops: As indicated on Drawings.
 - 2. Base and Wall Cabinets: As indicated on Drawings.
- F. All plastic laminate finished casework backing shall be plywood.

2.05 CABINET AND SHELVING HARDWARE

- A. General:
 - 1. Provide cabinet hardware and accessory materials associated with architectural woodwork, except for units which are specified as "Door Hardware" in other sections of these specifications.
- B. Hardware Standards:
 - 1. Except as otherwise indicated, comply with ANSI A 156.9 "American National Standard for Cabinet Hardware".
 - a. Quality Level: Type 2 unless otherwise indicated.
 - b. Quality Certification: Where available, provide cabinet hardware bearing the BHMA certification label, affixed to either hardware or its packaging, showing compliance with BHMA Cabinet Hardware Standard 201.
- C. Cabinet Door Hardware:
 - 1. Provide European-Type concealed hinges for casework doors.
 - 2. Provide wire pulls for all drawers and doors.

D. Locks:

1. Confirm with Owner locations of locked cabinets. Furnish standard pin-type or disc-type (5 pins or discs) tumbler locks, master keyed in one system.

E. Shelf Supports:

1. Where shelving is indicated as "adjustable", provide slotted-type pilaster standards, and supports.
2. Products: Provide the following products manufactured by Knape & Vogt Manufacturing Co.:
 - a. Pilaster Standards: 255.
 - b. Supports: 256.

F. Drawer Glides:

1. Provide full extension drawer glides, self-closing, for all drawers; 100 lbs. capacity. Positive stop design with guided rollers.
2. Product: "1429"; Knape & Vogt Manufacturing Co.

G. Exposed Hardware Finish:

1. Except where otherwise indicated, provide exposed hardware with BHMA Code 626 satin nickel plate finish (US26D).

2.08 MISCELLANEOUS MATERIALS

A. Fasteners and Anchorages:

1. Provide nails, screws and other anchoring devices of the type, size, material, and finish required for application indicated to provide secure attachment, concealed where possible, and complying with applicable Federal Specifications.

2.09 WOOD TREATMENT

A. Refer to Section 06300 - WOOD TREATMENT.

2.09 SHOP FINISHING OF INTERIOR ARCHITECTURAL WOODWORK (if indicated)

A. Quality Standard: Comply with AWI Section 1500, unless otherwise indicated.

B. General: The entire finish of interior architectural woodwork is specified in this Section, regardless of whether shop applied or applied after installation.

1. Shop Finishing: To the greatest extent possible, finish architectural woodwork at the fabrication shop. Defer only final touch-up, cleaning, and polishing until after installation.

C. Preparations for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing architectural woodwork, as applicable to each unit of work.

1. Back priming: Apply one coat of sealer or primer compatible with finish coats to concealed surfaces of woodwork, including backs of trim, cabinets, and ornamental work.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Condition wood materials to average prevailing humidity conditions in installation areas prior to installing.
- B. Back prime lumber for painted finish exposed to moisture and high relative humidities on the interior. Comply with requirements of Section 09900 - PAINTING for primers and their application.
- C. Deliver concrete inserts and similar anchoring devices to be built into substrates, well in advance of time substrates are to be built.

3.02 INSTALLATION

A. General:

- 1. Finish carpentry work shall be executed in accordance with drawings. Workmanship shall be of first quality and the construction of all parts shall be of the best current practice. The work shall be assembled so as to hold together with close joints, fastenings shall be concealed, and all work shall be properly and firmly backed up and blocked where and as required.
- 2. Discard units or material which are unsound, warped, bowed, twisted, improperly treated, not adequately seasoned, too small to fabricate work with minimum of joints or optimum jointing arrangements, or which are of defective manufacture with respect to surfaces, sizes or patterns.
- 3. Install the work plumb, level, true and straight with no distortions. Shim as required, using concealed shims. Install to a tolerance of 1/8 inch in 8 feet for plumb and level countertops, with 1/16-inch maximum offset in flush adjoining surfaces, and 1/8 inch maximum offsets in revealed adjoining surfaces.
- 4. Scribe and cut work to fit adjoining work, and re-finish cut surfaces or repair damaged finish at cuts.
- 5. Anchor finish carpentry work to anchorage devices or blocking built-in, or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for a complete installation. Except where pre-finished, matching fastener heads are required. Use fine finishing nails for exposed nailing, countersunk and filled flush with finished surface, and matching final finish where a transparent finish is indicated.

B. Standing and Running Trim, and Molding:

- 1. Install with the minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to the greatest extent possible. Stagger joints in adjacent and related members. Cope at returns, miter at corners to produce tight fitting joints with full surface contact throughout length of joint. Use scarf joints for end-to-end joints.

C. Cabinets:

- 1. Install without distortion so that doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete the installation of hardware and accessory items as indicated.

2. Install cabinets with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.
 3. Maintain veneer sequence matching of cabinets with transparent finish.
- D. Complete the finishing work specified in this Section to whatever extent not completed at shop or before installation of woodwork. Fill nail holes with matching filler where exposed. Apply specified finish coats, including stains and paste fillers if any, to exposed surfaces where only sealer/prime coats were applied in the shop.
- 3.03 FIRE-RETARDANT TREATED WOOD
- A. Handle, store, and install in accordance with manufacturer's directions, and as required to meet required classification or rating. Provide special fasteners, moldings, adhesives, and other accessories as tested and listed for type of fire-retardant materials indicated.
- 3.04 ADJUSTMENT, CLEANING, FINISHING AND PROTECTION
- A. Repair damaged and defective finish carpentry work wherever possible to eliminate defects functionally and visually; where not possible to repair properly, replace woodwork. Adjust joinery for uniform appearance.
- B. Clean woodwork on exposed and semi-exposed surfaces. Touch up factory-applied finishes to restore damaged or soiled areas.
1. Refer to Section 09900 - PAINTING for installed finish carpentry work to receive final finish in field.
- C. Protection: Installer of finish carpentry work shall advise Contractor of final protection and of conditions necessary to be maintained to ensure that work will be without damage or deterioration at time of acceptance.

END OF SECTION 06200

SECTION 06300
WOOD TREATMENT

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Scope:

1. The work required under this Section shall include the treatment of all rough carpentry materials specified under Section 06100 - ROUGH CARPENTRY, as follows:
 - a. Decay and Termite Resistant Wood Treatment.
 - b. Fire Resistant Wood Treatment.

1.02 RELATED WORK

- A. ROUGH CARPENTRY: Section 06100.

1.03 QUALITY ASSURANCE

A. Reference Standards:

1. American Wood Preservers' Association (AWPA):
 - a. Referenced Standards.
2. Federal Specifications (FS):
 - a. Referenced Standards.
3. Underwriters' Laboratories (UL):
 - a. Referenced Standards.

1.04 GUARANTEE

- A. Provide a five (5) year written guarantee against defects in materials and workmanship.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Decay and Termite Resistant Wood Treatment:

1. All lumber and plywood specified for decay and termite resistant treatment shall be pressure treated according to AWPA Standard P-5 and FS TT-W-550.

2. Products: Provide one of the following treatments:
 - a. "CCA"; Hoover Treated Wood Products.
 - b. "Osmose K-33"; Osmose Wood Preserving Co., Inc.
- B. Fire Resistant Wood Treatment:
1. All lumber and plywood specified for fire resistant treatment shall be pressure impregnated with fire retardant products. Such products shall not subject the wood to deterioration when exposed to heat and humidity.
 2. Products: Provide one of the following treatments:
 - a. "Pyro-Guard"; Hoover Treated Wood Products.
 - b. "Osmose Flame Proof"; Osmose Wood Preserving Co., Inc.

PART 3 - EXECUTION

3.01 TREATMENT

- A. Decay and Termite Resistant Wood Treatment: Chemicals shall be applied in a closed cylinder by vacuum-pressure process in strict accordance with manufacturer's instructions and with the approved standards and recommended treating practices as listed in AWPA Standards C2 and C9 or the appropriate AWPA standard covering the commodity treated and as listed in FS TT-W-571.
1. After treatment and before shipment, lumber 2" nominal or less shall be dried to a 15-19 percent moisture content.
 2. Plywood shall be dried after treatment and before shipment to moisture content of 18 percent or less.
- B. Fire Resistant Wood Treatment:
1. Chemicals shall be applied in a closed cylinder by vacuum-pressure in strict accordance with manufacturer's instructions to comply with the requirement for a flame spread of 25 or less with no evidence of significant progressive combustion when tested for 30 minutes duration under the standard test method for Fire Hazard Classification of Building Materials; ASTM E 84; UL 723 and; AWPA C20 and AWPA C27.
 2. Each piece of wood shall bear the mark of Underwriters' Laboratories FR-S Label, indicating compliance with the fire hazard classification.
 3. After treatment and before shipment, all fire treated wood shall be dried to an average moisture content of 19 percent or less.
 4. Surfaces of wood that are to be exposed or painted shall be free from sludge or deposits of salts that would affect its paint ability.

END OF SECTION 06300

SECTION 07170
BENTONITE WATERPROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

The general provision of the Contract, including General and Supplementary Conditions and General Requirements apply to the work specified in this section.

1.2 DESCRIPTION OF WORK

The extent of Geotextile/Bentonite Clay waterproofing membrane is shown on the drawing and includes the entire elevator pit.

1.3 RELATED WORK

- A. Concrete
- B. Masonry
- C. Backfill
- D. Expansion Joints

1.4 QUALITY ASSURANCE

- A. Manufacturer: Provide Geotextile/Bentonite Clay waterproofing membrane produced by a manufacturer with a minimum of 5 years experience in the waterproofing industry.
- B. Installer: A firm with a minimum of 2 years experience in installing bentonite clay or other related waterproofing products
- C. The formation or presence of mold or fungi in a building is dependent upon a broad range of factors including, but not limited to, the presence of spores and nutrient sources, moisture, temperatures, climatic conditions, relative humidity, and heating/ventilating systems and their maintenance and operating capabilities. These factors are beyond the control of Carlisle and Carlisle shall not be responsible for any claims, repairs, restoration, or damages relating to the presence of any irritants, contaminants, vapors, fumes, molds, fungi, bacteria, spores, mycotoxins, or the like in any building or in the air, land, or water serving the building.
- D. Shotcrete installations should have an independent inspector to record and monitor the shotcrete installation.

1.5 SUBMITTALS

- A. Manufacturer: Submit six copies of product data sheets, specifications, installation instructions and general recommendations for each type of product specified.
- B. Installer: Submit detailed drawings for installation of product specified.
- C. Water Sample Test Result: A water sample (2 liters) is required on projects that have ground water and should be submitted to the waterproofing manufacturer to test for contamination and compatibility with waterproofing membrane. Submit to architect a letter of compatibility recommending which formulation to use.
- D. Warranty: Submit specimen of manufacturers' standard warranty.

1.6 WARRANTY

- A. Upon completion and acceptance of the work required by this section, the manufacturer will issue a warranty agreeing to promptly replace defective materials for a period of 5 years.
- B. The formation or presence of mold or fungi in a building is dependent upon a broad range of factors including, but not limited to, the presence of spores and nutrient sources, moisture, temperatures, climatic conditions, relative humidity, and heating/ventilating systems and their maintenance and operating capabilities. These factors are beyond the control of Carlisle and Carlisle shall not be responsible for any claims, repairs, restoration, or damages relating to the presence of any irritants, contaminants, vapors, fumes, molds, fungi, bacteria, spores, mycotoxins, or the like in any building or in the air, land, or water serving the building.

1.7 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in the original manufacturer's packaging and store materials in strict accordance with manufacturer's instructions.
- B. Remove and replace products that have been prematurely exposed to moisture.

1.8 PROJECT CONDITIONS

- A. Install materials in accordance with all safety and weather conditions required by the manufacturer.
- B. Install materials only after work on the applicable substrate is complete.
- C. Complete cast-in-place reinforced columns prior to membrane installation.

PART 2 - PRODUCTS

2.1 WATERPROOFING SYSTEM

- A. The Geotextile/Bentonite clay waterproofing membrane shall be CCW MiraCLAY supplied by Carlisle Coatings & Waterproofing Incorporated, 900 Hensley Lane, Wylie, Texas 75098, Phone (800) 527-7092 Fax: (972) 442-0076.
- B. Physical Properties for Geotextile/Bentonite Clay Waterproofing Membrane:
CCW MiraCLAY Physical Properties:
Property Test Method Value
Bentonite Content — 1.0 lb./ft² (.488 kg/m²)*
Nominal Dry Thickness — 0.25 in. (6.4 mm)
Weight — 75 lb. (34.05 kg)
Permeability ASTM D 5084 5×10^{-9} cm/sec
Grab Tensile Strength ASTM D 4632 95 lb. (422 N)
Grab Elongation ASTM D 4632 150%
Puncture Resistance ASTM D 4833 120 psi (828 kPa)
Hydrated Internal Shear ASTM D 5321 500 psf (24 kPa)
Swell Index ASTM D 5890 2g (24 ml) min.
Fluid Loss ASTM D 5891 18 ml max
*@ 12% moisture content
- C. Waterproofing system accessories supplied by waterproofing membrane manufacturer:
Mastic: CCW MiraCLAY Mastic is used for detailing terminations and penetrations. Also used to fill minor voids in concrete and as a fillet in angle changes.
Granules: CCW MiraCLAY Granules used for horizontal to vertical transitions and for detailing at seams and slab penetrations.
Waterstop: CCW MiraSTOP used as a waterstop at cold concrete pours and between pre-cast concrete panels.

- D. Membrane to Substrate Fasteners: Fasteners, of the type and length suitable for the substrate, shall be used in conjunction with washers, of at least 1" diameter, to attach the geotextile/bentonite clay waterproofing membrane to the substrate.
- E. Membrane to Membrane Fasteners: Mechanically fasten membrane sheets together with a box-stapler or similar device for horizontal applications.
- F. The Geotextile/Bentonite membrane shall consist of geotextile panels of sodium bentonite clay sandwiched between two layers of needle-punched woven and non-woven polypropylene fabrics.
- G. Drainage Composite: Shall be CCW MiraDRAIN[®] as recommended by the manufacturer for each condition.
- H. Perimeter Drainage System: Where required shall be CCW QuickDRAIN[™].
- I. Or equal per Section 01600

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine substrate and condition under which waterproofing will be installed. Do not proceed with the work until unsatisfactory conditions have been corrected.

3.2 SURFACE PREPARATION

- A. Lagging, Concrete Cassions, Shotcrete or Guniting Applications:
 - 1. Fill all spaces that are over 1" (25mm) in width with grout or concrete to a smooth and uniform surface. Cover large gaps with 1/2" (12mm) plywood or CCW MiraDRAIN 6000 or 6000XL.
 - 2. Trowel CCW MiraCLAY Mastic around all tieback plates and soldier beams a minimum of 1 1/2" (39mm) thick and extend a minimum of 4" (10cm) beyond the flange.
 - 3. Remove projections from the wall surface in excess of 3/4" (20mm).
- B. Grade Substrates: Shall be level and uniform that is compacted to a minimum of 85% modified proctor.
- C. Concrete Application:
 - 1. Apply CCW MiraCLAY Mastic to all construction joints at a minimum of 1/4" (7mm) thickness and a 3" (8cm) minimum width.
 - 2. Remove projections from the wall surface in excess of 3/4" (20mm).
- D. Honeycombing, voids, and aggregate pockets exceeding 1 inch in diameter or having a depth greater than 3/4 inch should be filled with a non-shrink cementitious grout. Fill tie-rod holes with a non-shrink cementitious grout.

3.3 INSTALLATION

- A. Prevent geotextile/bentonite clay waterproofing membrane from hydrating before being covered with overburden. When the threat of rain is imminent or backfill is not immediate, geotextile/bentonite clay waterproofing membrane should be covered with polyethylene sheeting.

- B. Lagging Application

1. Install a stripping piece of CCW MiraCLAY over each soldier beam that extends a minimum of 8" (20cm) beyond either side of the beam. Each soldier beam shall have a double layer of CCW MiraCLAY Membrane.
 2. Install CCW MiraCLAY with the white non-woven side out, facing the installer.
 3. Starting at the bottom of the wall, unroll CCW MiraCLAY and nail across top of panel one nail per 12" (31cm) on center. Allow sheet to hang down nailing only as required to stabilize.
 4. Install adjacent membrane by overlapping edges a minimum of 4" (10cm).
 5. Fasten membrane once every 18" (45cm) on seams or as required to prevent blousing.
 6. Extend waterproofing membrane to or above grade and fasten membrane once every 12" to 15" (31cm to 39cm).
 7. Install CCW MiraSTOP at all pour joints and exterior perimeter of tie-back box outs.
- C. Underslab Application: (Concrete slab shall have a minimum thickness of 4" if reinforced or 5" if not reinforced).
1. Install CCW MiraCLAY with the white non-woven side up, facing the installer.
 2. Overlap edges a minimum of 4" (10cm).
 3. Protect CCW MiraCLAY from damage caused by chairs with sharp edges or points by placing a patch of CCW MiraCLAY under the chair.
 4. Staple joints often enough to prevent excessive movement.
 5. Pour CCW MiraCLAY Granules or trowel CCW MiraCLAY Mastic around all penetrations and press in "cut to fit" collars of CCW MiraCLAY.
 6. Extend the installation of CCW MiraCLAY 12" (31cm) up or beyond the perimeter slab forms.
 7. Inspect and repair any damaged material before concrete pour.
- D. Concrete Wall Application:
1. Install CCW MiraCLAY with the white non-woven side out, facing the installer.
 2. Starting at the bottom of the wall, unroll CCW MiraCLAY and nail across top of panel one nail per 12" (31cm) on center. Allow sheet to hang down nailing only as required to stabilize.
 3. Install adjacent membrane by overlapping edges a minimum of 4" (10cm).
 4. Fasten membrane once every 18" (45cm) on seams or as required to prevent blousing with 3/4" (20mm) to 1" (25mm) concrete nails with washers.
 5. Extend waterproofing membrane to 6-inches below grade and fasten membrane to the substrate to maintain constant compression using a 1/8" X 1" (3 X 25 mm) minimum termination bar. Trowel a 1/2" (12mm) thick and 2" (5cm) wide bead of CCW MiraCLAY Mastic at top edge of membrane and cover termination bar.
 6. Create a cant at any vertical to horizontal transition by applying a 1.5" to 2" (4cm to 5cm) cant of CCW MiraCLAY Granules or CCW MiraCLAY Mastic.
 7. Strip in all corners and transitions with a 12" to 15" (31cm to 39cm) piece of CCW MiraCLAY membrane to double cover these areas.
 8. Backfill must be compactable soils free of construction debris and must be uniformly compacted to a minimum 85% Modified Proctor on each lift.
- E. Concrete Caissons, Shotcrete or Guniting Application
1. Conform CCW MiraCLAY to the change in planes.
 2. Install CCW MiraCLAY with the white non-woven side out, facing the installer.
 3. Starting at the bottom of the wall, unroll CCW MiraCLAY and nail across top of panel one nail per 12" (31cm) on center. Allow sheet to hang down nailing only as required to stabilize.
 4. Install adjacent membrane by overlapping edges a minimum of 4" (10cm).

5. Fasten membrane once every 12" (30 cm) on seams or as required to prevent blousing with 3/4" (19mm) to 1" (25mm) concrete nails with 1" (25 mm) washers.

3.4 SHOTCRETE PLACEMENT

1. Apply shotcrete in strict accordance with ACI 506.2-95 Specification for Shotcrete.
2. Moisten the MiraCLAY non-woven surface to improve adhesion.
3. Commence spraying from the bottom to the top at a pressure not to vibrate or move the CCW MiraCLAY.
4. Install to the designed thickness in lifts not to exceed 4 feet (1.2m).
5. Protect adjacent CCW MiraCLAY from overspray and remove rebound and sand pockets.

3.5 PROTECTION AND DRAINAGE

1. Protect the geotextile/bentonite clay waterproofing membrane with CCW MiraDRAIN Drainage Composite.
2. Install the CCW MiraDRAIN Drainage Composite according to the detailed drawings for the specific installation requirements of the project.

3.6 BACKFILL

Backfill with smooth and uniform material with no sharp projections or stones larger than 3/4-inch. Compact backfill to an 85% Modified Proctor. Insure backfill material is not contaminated with salt or other materials that could prevent the CCW MiraCLAY from hydrating.

END OF SECTION 07170

SECTION 07200

INSULATION

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Types of insulation included under this Work shall include, but not be limited to:

1. Unfaced Mineral Fiber Blanket/Batt Insulation.
2. Safeing Insulation.
3. Sound Attenuation Blankets.
4. Rigid Insulation Board.

1.02 RELATED WORK

- A. CONCRETE UNIT MASONRY: Section 04810.
- B. COLD FORMED METAL FRAMING: Section 05400.
- C. GYPSUM WALLBOARD: Section 09250.

1.03 SUBMITTALS

- A. Product Data: For each type of product specified.
- B. Samples for Verification: Representative samples for each type of insulation.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to the Project site in original unopened packages, clearly marked with product brand name and manufacturer's labels. Store under cover and protect from weather and construction activities.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Unfaced Mineral-Fiber Blanket Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers manufactured from glass; with maximum flame-spread and smoke-developed indices of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.
 1. Products: Provide insulation products by one of the following manufacturers:
 - a. CertainTeed Corporation.
 - b. Johns Manville Corporation.
 - c. Owens Corning.
- B. Safeing Insulation: UL Rated semi-rigid boards designed for use as a fire stop at top of rated walls and openings, for ratings indicated, ASTM C 612, Class 1 and 2, nominal density of 4.0 lbs. per cu.

ft., passing ASTM E 136 for combustion characteristics.

1. Products: Provide "Thermafiber" safeing insulation with "Thermafiber Smoke Seal" compound for firestopping and smokestopping as manufactured by United States Gypsum Company.
- C. Sound Attenuation Blankets: ASTM C 665, Type I, Class 25 flame spread, thickness as indicated or as required by STC Assembly Rating.
1. Products for Non-Rated Applications: Provide one of the following insulation products:
 - a. "CertaSound Sound Attenuation Batts"; CertainTeed Corp.
 - b. "Sound Attenuation Batt Insulation"; Owens Corning.
 - c. "Sound-Shield"; Johns Manville Corporation.
- D. Rigid Insulation Board: glass fibers bonded together with a thermoset binder.
1. Un-faced where located between GWB and Masonry Wall
 2. With a foil-scrim Kraft where located above the terminus of GWB
 3. Total assembly minimum R value of 11.
1. Products for Non-Rated Applications: Provide one of the following manufacturers:
 - a. Dow Chemical.
 - b. Tenneco Building Products.
 - c. CERTAPRO™ Commercial Board, CertainTeed Corp.
- E. Foil Faced Mineral-Fiber Blanket Insulation: Type: FS 25 Foil Faced Insulation Blanket. R-Value: 3.8 per inch. Density - Greater than 1 inch: 3.0 pcf (nominal).
1. Products: Provide insulation products by one of the following manufacturers:
 - a. Thermafiber, Inc.,
 - b. CertainTeed Corporation.
 - c. Johns Manville Corporation.
 - d. Owens Corning.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install building insulation in strict compliance with manufacturer's written instructions.

END OF SECTION 07200

SECTION 07212

SPRAYED THERMAL INSULATION

PART 1 - GENERAL

1.0 WORK INCLUDED

1.1 Related Documents

- A. Drawings and general provisions of the contract, including contractual conditions and division 01 specification sections, apply to this section.

1.2 Summary

- A. Section includes: light density, open celled, flexible, 100 percent water blown polyurethane foam insulation & URE-K top coating by Icynene.
- B. Coordinate mechanical ventilation and fresh air supply with mechanical sections and ASHRAE guidelines for optimum indoor air quality.

1.3 References

- 1. ASTM c 518: standard test method for steady-state thermal transmission properties by means of the heat flow meter apparatus.
- 2. ASTM d 2863: standard test method for measuring the minimum oxygen concentration to support candle-like combustion of plastics (oxygen index)
- 3. ASTM e 84: test method for surface burning characteristics of building materials
- 4. ASTM e 96: standard test methods for water vapor transmission of materials
- 5. ASTM e 2178: standard test method for air permeance of building materials
- 6. ASTM e 283: standard test method for determining rate of air leakage through exterior windows, curtain walls, and doors under specified pressure differences across the specimen.

1.4 Submittals

- A. Product data for each type of insulation product specified.
- B. Product test reports performed by a qualified independent testing agency evidencing compliance of insulation products with specified requirements including those for thermal resistance, fire-test-response characteristics, water-vapor transmission, water absorption, and other properties, based on comprehensive testing of current products.
- C. Evaluation report: evidence of compliance of foam-plastic insulations with The International Building Code (IBC), International Residential Code (IRC), International Energy Conservation Code (IECC), International Association of Plumbing and Mechanical Officials (IAPMO)
- D. Manufacturer's certificate certifying insulation provided meets or exceeds specified requirements.
- E. Installer's certificate showing the Icynene installation certification.
- F. Sample warranty

1.5 Quality Assurance

- A. Manufacturer's qualifications: product produced in an iso9001 registered factory.
- B. Single source responsibility: single source product from one manufacturer.
- C. Installer qualifications: engage an Icynene licensed dealer (applicator) who has been trained and certified by Icynene.
- D. Fire-test-response characteristics: provide materials specified as determined by testing identical products per test method indicated below by a testing and inspecting agency acceptable to authorities having jurisdiction. identify materials with appropriate markings of applicable testing and inspecting agency.
 - 1. Surface-burning characteristics: ASTM e 84

- E. Toxicity/hazardous materials
 - 1. Provide products that contain no urea-formaldehyde.
 - 2. Products and equipment requiring or using cfcs, hcfc, or hfc during the manufacturing or application process will not be permitted.
 - 3. Provide products that contain no pbdes.
 - 4. Provide products that are "low emitting".
- 1.6 Delivery, Storage, and Handling
 - A. Comply with manufacturers written instructions for handling and protection prior to and during installation.
 - B. Store both components in a temperature-controlled area between 50 deg f (15 deg c) and 100 deg F (32 deg C). do not allow product to freeze.
 - C. Use only those components that are supplied by the manufacturer.
- 1.7 Project Conditions
 - A. Do not expose to sunlight, except to the extent necessary for period of installation and concealment.
- 1.8 Warranty
 - A. Manufacturer's standard limited lifetime warranty.
 - B. Refer to www.icynene.com for full warranty terms

PART 2 – PRODUCTS

- 2.1 Manufacturers
 - A. Polyurethane spray foam insulation: Icynene Id-c-50tm by Icynene inc.
- 2.2 Materials
 - A. General: Provide insulating materials that comply with requirements and with referenced standards.
 - B. Icynene Id-c-50tm spray foam insulation: low-density, water-blown, conforming to the following:
 - 1. Thermal resistance (R-value/inch @75 deg f): ASTM C 518; 3.7 hr/sq ft/degree f/btu
 - A. heat flow reduction:
 - 1) through 1 inch: 75 percent
 - 2) through 3.5 inches 93 percent
 - 3) through 5.5 inches 95 percent
 - 4) through 10.5 inches 98 percent
 - 2. Provide URE-K spray coating by international cellulose corporation to provide a thermal barrier as required by IBC 2603. In that URE-K has an R-3.57 per inch rating, the thickness of polyurethane spray can be reduced. If Icynene is used, 1" URE-K over 7" Icynene will provide r-30. Provide materials in thicknesses necessary to achieve R-30 and meet thermal barrier code requirements.
 - C. Product description:
 - 1) ICC/ES evaluation report no. esr 1826
 - 2) lapmo-es report no. 0165
 - 3) Collaborative for high-performance schools (chps) "low-emitting material" per CA 01350 criteria
 - 4) Effective "breathing," (vapor permeable), air barrier material that can move with the building to maintain the air barrier characteristic for the life of the building.

- 2.3 Source Quality Control
1) Product produced in an ISO 9001 registered factory.

PART 3 – EXECUTION

- 3.1 Examination
A. Examine substrates and conditions, under which work is to be performed. Do not proceed until unsatisfactory conditions have been corrected.
1. Review placement area to determine final location will not be within 3 inches of any heat source where the temperature will exceed 200 deg F per astm c 411 or in accordance with authorities having jurisdiction.
- 3.2 Preparation
A. Clean substrates and cavities of loose materials capable of interfering with insulation placement.
- 3.3 Application
A. Site mix liquid components manufactured by Icynene and supplied by independent Icynene licensed dealer.
B. Apply insulation to substrates in compliance with manufacturer's written instructions.
C. Apply insulation to produce thickness required for indicated Rvalue.
1. R-13 is achieved at 3 1/2 inches
2. R-20 is achieved at 5 1/2 inches
3. R-30 is achieved at 8 1/2 inches
D. Extend insulation in thickness indicated to envelop entire area to be insulated.
E. Water-piping coordination: If water piping is located within insulated exterior walls, coordinate location of piping to ensure that it is placed on warm side of insulation and insulation encapsulates piping.
- 3.4 Repairs
A. Any repairs must be affected by an Icynene licensed dealer.
- 3.5 Protection
A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings where insulation is subject to abuse.

END OF SECTION 07212

SECTION 07420

Exterior Aluminum Cladding System (ACM)

Part 1: General

1.01 SCOPE

- A. The extent of panel system work is indicated on the drawings and in the Architect of Record's specifications. In the event of discrepancy between architectural drawings and specifications, the specifications will dictate.
- B. Panel system requirements include the following components: Aluminum faced composite panels with mounting system. Panel mounting system including an approved vapor permeable air and water barrier, anchorages, shims, furring, fasteners, gaskets and sealants, related flashing adapters, and masking (as required) for a complete installation.

1.02 QUALITY ASSURANCE

- A. Aluminum Composite Material (ACM) Manufacturer shall have a minimum of 10 years' experience in the manufacturing of this product.
- B. ACM Manufacturer must be approved to participate in this program.
- C. ACM Manufacturer shall be solely responsible for panel manufacture and application of the finish.
- D. Fabricator and Installer shall be acceptable to the composite panel manufacturer.
- E. A Project Manager shall be assigned by the Fabricator/Installer to the project and provide continuous management of all submittals, engineering, shop drawings, material procurement, fabrication, jobsite coordination and installation.
- F. Project schedules shall be provided by the Fabricator/Installer at the time the contract is awarded. This schedule is to be updated throughout the construction process.
- G. A jobsite Superintendent shall be assigned by the Fabricator/Installer to the project and will make jobsite visits to ensure General Contractor is installing substrate and sheathing correctly. It is imperative that the substrate is plumb, level and string-line straight. Superintendent shall also verify that the substrate dimensions match the metal wall panel engineered shop drawings.
- H. Field measurements shall be taken prior to the completion of shop fabrication whenever possible. Fabricator/Installer shall coordinate fabrication schedule with construction progress, as directed by the Contractor, to avoid delay of work. Field fabrication may be allowed to ensure proper fit; however, field fabrication shall be kept to an absolute minimum with most of the fabrication being done under controlled shop conditions.
- I. Flatness Criteria of the installed panel system: maximum of 1/4" in 20'-0" on panel in any direction.

- J. Panel fabricator/installer shall assume undivided responsibility for all components of the exterior panel system including, but not limited, to the vapor-permeable air and water barrier, attachment to sub-construction, panel to panel joinery, panel to dissimilar material joinery, and joint seal associated with the panel system.
- K. Prior to installation of panel system, the fabricator/installer shall apply an approved vapor- permeable air and water barrier over the building sheathing, as well as verify the type of sheathing to determine compatibility of panel system fasteners. It is the responsibility of the fabricator/installer to coordinate this with the General Contractor.

1.03 RELATED SECTIONS

Related Sections include the following:

- A. Division 5 Section "Cold-Formed Metal Framing" for secondary support framing supporting metal wall panels.
- B. Division 7 Section "Flashings" for perimeter openings related to metal wall panels.
- C. Division 7 Section "Sealants" for perimeter and non-exposed system sealants.
- D. Division 8 Section "Curtain wall" for perimeter openings related to metal wall panels.

1.04 SUBMITTALS

A. SAMPLES

- 1. Two samples of each color or finish selected, 76mm (3") x 102mm (4") minimum.
- 2. Two samples of vapor-permeable air and water barrier

B. SHOP DRAWINGS

Submit shop drawings showing project layout and elevations; fastening and anchoring methods; detail and location of joints, sealants, and gaskets, including joints necessary to accommodate thermal movement; trim; flashing; and accessories.

C. WARRANTIES—Special warranty specific to this program, see 3.04.

D. TWO COPIES OF THE MANUFACTURER'S LITERATURE FOR PANEL MATERIAL.

E. CODE COMPLIANCE

Submit Florida Product Approval packet.

F. TEST REPORTS: Submit certified test reports which meet or exceed the requirements as described in the Testing Section 2.04. The test report shall include the following,

- 1. Name and location of the certified independent testing laboratory with the contact phone numbers.
- 2. Unit description and system name of the panel system tested. Include the test drawings with elevations with details showing the tested panel joinery.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Protect finish and edges in accordance with panel manufacturer's recommendations.
- B. Store material in accordance with panel manufacturer's recommendations.

PART 2: PRODUCTS

2.01 PANELS

A. COMPOSITION:

Two sheets of aluminum, sandwiching a solid core of extruded thermoplastic material, formed in a continuous process with no glues or adhesives between dissimilar materials. The core material shall be free of voids and/or air spaces and not contain foamed insulation material. Products laminated sheet by sheet in a batch process using glues or adhesives between materials shall not be acceptable.

Approved Program Manufacturers – NO SUBSTITUTIONS:

3A Composites – Alucobond (800-626-3365)

Mitsubishi Chemical Composites, Inc.– Alpolic (800-622-1066)

B. THICKNESS:4MM (0.157")

C. PRODUCT PERFORMANCE

1. Bond Integrity

When tested for bond integrity, in accordance with ASTM D 1781 (simulating resistance to panel delamination), there shall be no adhesive failure of the bond a) between the core and the skin nor b) cohesive failure of the core itself below the following minimum values:

Peel Strength: 100 N·mm/mm (22.5 in·lb/in) as manufactured.

100 N·mm/mm (22.5 in·lb/in) after 8 hours in water at 200°F (93°C)

100 N·mm/mm (22.5 in·lb/in) after 21 days soaking in water at 70°F (21°C)

D. FINISHES

ACM 1: Alpolic Color, CPW White (Cadillac White) / 4 MM / 4CPW8
Alucobond Color, Cadillac White III / 2002186 / BN5W11B

ACM 2: Alpolic Color, Mica MNC (Mica Silver) / 4MM / 4MNC8
Alucobond Color, Anodic Clear Mica / PVDF 2

ACM 3: Alpolic Color, CNC Charcoal (Charcoal) / 4MM / 4CNC8
Alucobond Color, Dusty Charcoal / PVDF 2

a. Coating Thickness:

2 coat finish: .2-.4 primer, .7-.9 color, total 1.0 mil (± 0.1 mil), 25.4 µm (± 2.5 µm)

3 coat finish: .2-.4 primer, .7-.9 color, .5 clear, total 1.5 mil (± 0.15 mil), 38.1 µm (± 3.8 µm)

b. Hardness: ASTM D 3363; HB minimum using Eagle Turquoise Pencil.

c. Impact:

1) Test method: ASTM D 2794; Gardner Variable Impact Tester with 5/8" (15.9mm) mandrel.

2) Coating shall withstand reverse impact of 1.5 in·lb per mil substrate thickness (0.681 m·kg per mm substrate).

- 3) Coating shall adhere tightly to metal when subjected to #600 Scotch Tape pick-off test. Slight minute cracking permissible. No removal of film to substrate.
- d. Adhesion:
 - 1) Test Method: ASTM D 3359.
 - 2) Coating shall not pick off when subjected to a grid of 11 cuts x 11 cuts, 1/16" apart, and taped with #600 Scotch Tape.
- e. Humidity Resistance:
 - 1) Test Method: Expose the sample in a controlled heat and humidity cabinet for 4000 hours at 38 degrees C (100 degrees F) and 100% RH with the cabinet operated in accordance with ASTM D 2247.
 - 2) No formation of blisters to extent greater than "Few" blisters Size No.8 as shown in Figure 4, ASTM D 714.
- f. Salt Spray Resistance:
 - 1) Test Method: ASTM B 117; Expose coating system to 4000 hours, using 5% NaCl solution.
 - 2) Corrosion creepage from scribe line: 1/16" max. (1.6mm).
 - 3) Minimum blister rating of 8 within the test specimen field.
- g. Weather Exposure:
 - 1) Outdoor:
 - a. In accordance with the parameters of the South Florida Testing, ten-year exposure at 45° angle facing south Florida exposure.
 - b. Maximum color change of 5 Delta E units as calculated in accordance with ASTM D 2244.
 - c. Maximum chalk rating of 8 in accordance with ASTM D 4214.

2.02 SYSTEM DESCRIPTION

- A. Provide a Rout and Return Dry Joint panel system, as detailed on the Architect of Record's drawings. Any panel system utilizing a continuous field applied joint sealant is unacceptable. Exposed sealant in the 4-way joints is unacceptable.
- B. The panel system, as detailed, shall consist of perimeter extrusions, extruded stiffeners, fasteners and may consist of related flashings (where architectural drawings indicate they are to be furnished under this specification section), sealants between jamb panels and previously installed adjacent construction, and other miscellaneous accessories required for a complete watertight installation. Assembly shall meet the air and water infiltration requirements in section 2.04 of this specification.
- C. Commercial grade vapor-permeable air and water barrier shall be installed by the General Contractor per manufacture specification. All edges must be sealed to adjacent perimeter conditions for an airtight fit.
Approved Program Manufacturers
 1. TYVEK Commercial Wrap
 2. VAPRO SHIELD
 3. W.R Grace Peel n' Stick

2.03 COMPOSITE PANEL SYSTEM

- A. Fabricator/Installers; AGI
Contact: Jerry Cronley, Architectural Graphics Incorporated Phone (865) 323-3560
Email: jcronley@agisign.com
- B. Panel System: The panel system shall consist of ACM provided by one of the approved program vendors and a system of custom aluminum extrusions of size and shape indicated on the Architect

of Record's drawings and as specified herein. The panel system shall conform to all of the following,

1. Perimeter Extrusions: Mill extruded aluminum, as detailed on drawings, so as to provide the following essential features,
 - a. Rout and return the ACM panels on all perimeters. "Continuous Edge Grip" (CEG) is not acceptable.
 - b. Maximum overall panel thickness, including the attachment shim space, shall not exceed 2 1/2".
 2. Stiffeners: Extruded aluminum sections secured to edge trim and bonded to rear face of ACM panels with silicone, and of sufficient size and strength to maintain flatness of the panel within the specified tolerances.
 3. Reveals at Panel: Joint size between the faces of the perimeter extrusions shall be 3/4" nominal, painted to match adjoining panels.
 4. Flatness Criteria: Maximum 1/8" in 5'-0" on panel in any direction for assembled units (non-accumulative) and 1/4" in 20'-0" (accumulative).
- C. Code Performance Requirements: Work of the section shall conform to all applicable codes and regulations.
1. Thermal Design Criteria:
 - a. Make allowances for free and noiseless vertical and horizontal thermal movement due to the contraction and expansion of component parts, for an ambient temperature range from -20 degrees F to +180 degrees F. Buckling of panels, separation/opening of joints, undue stress on fasteners, failure of sealants or any other detrimental effects due to thermal movement of component parts will not be permitted. Fabrication, assembly, and erection procedure shall take into account the ambient temperature range at the time of the respective operation.
 2. Wind Loads: See structural drawings for components and cladding. Product to surpass requirements of the worst case shown.
 3. Material Stress and Deflection:
 - a. Normal to the plane of the wall between structural supports, deflection of the attached perimeter-framing members shall not exceed L/175 of span length or 3/4", whichever is less.
 - b. At connection points of framing members to anchors, anchor deflection in any direction shall not exceed 1/16". Where connection points are not clearly defined, maximum anchor deflection shall not exceed 1/16".
 - c. Stresses must take into account interaction and in no case shall allowable values exceed the yield stress.
 - d. At 1.5 times design pressure, permanent deflections of framing members must not exceed L/100 of the span length, and components must not experience failure or gross permanent distortion. At connection points of framing members to anchors, permanent set shall not exceed 1/16".

2.04 TESTING

- A. Wall System Performance: Panel system furnished under this section shall have been tested. If comparable tests are not available, mockups shall be constructed, and tests performed. In either case, an independent laboratory approved by the Architect of Record shall conduct the tests. Test results shall meet or exceed the following.
1. Air Infiltration:
 - a. When tested in accordance with ASTM E283, the air infiltration at 6.24 psf must not exceed 0.06 cfm per square foot of wall area.
 2. Static Water Infiltration:
 - a. When tested at a differential static pressure of 12.0 psf for 15 minutes, in accordance with ASTM E331, any uncontrolled water passing into the room-side beyond the interior barrier of the wall system shall not be permitted. The panel system shall be designed to provide

controlled drainage to the exterior face of the wall for any leakage of water occurring at joints and/or condensation taking place within the wall system.

3. Structural Performance:
 - a. Shall be tested in accordance with ASTM E330 at design pressure. Deflection limitations are listed previously. After initial test, test at 150% of design pressure; no permanent deformation exceeding L/100 or failure to structural members allowed.

- B. Bond Integrity Test for ACM: In accordance with ASTM D 1781-76 for bond integrity, simulating resistance to delaminating (No other test procedure is acceptable):
 1. Peel strength: 22.5 in lb/in (min)

2.05 PRODUCT HANDLING

After acceptance of panels on a given elevation, protection shall be the responsibility of the General Contractor.

3.0 INSTALLERS' EXAMINATION—Fabricator/Installer

- A. Examine substrates, areas and conditions for compliance with requirements for installation tolerances, metal wall panel supports, approved vapor-permeable air and water barrier and other conditions affecting performance of work.
 1. Examine solid wall sheathing to verify that sheathing joints are supported by framing or blocking, and that installation is within flatness tolerances required by metal wall panel manufacturer.
 2. Verify approved vapor-permeable air and water barrier is installed correctly prior to installation of ACM system.
 3. For the record, prepare a written report, endorsed by Fabricator/Installer, listing conditions detrimental to performance of work.
- B. Examine roughing-in for components and systems penetrating metal wall panels to verify actual locations of penetrations relative to seam locations of metal wall panels before metal wall panel installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected. Commencement of installation indicates that the substrate is 100% satisfactory to the installer.

3.01 METAL –FACED COMPOSITE WALL PANEL INSTALLATION

- A. General: Install attachment system required to support wall panels and to provide a complete weather tight wall system, including approved vapor-permeable air and water barrier, perimeter extrusions, tracks, drainage channels, panel clips and anchor channels.
 1. Include attachment to supports, panel-to-panel joinery, panel-to-dissimilar material joinery and panel-system joint seals.
 2. Do not begin installation until approved vapor-permeable air and water barrier and flashings that will be concealed by composite panels are installed.
 3. Panels shall be erected in accordance with an approved set of shop drawings.
 4. Anchor panels, securely per engineering recommendations and in accordance with approved shop drawings to all for necessary thermal movement and structural support.
 5. Conform to panel fabricator's instruction for installation of concealed fasteners.
 6. Do not install component parts that are observed to be defective, including warped, bowed, dented, abraded and broken members.
 7. Do not cut, trim, weld or braze component parts during erection in a manner which would damage the finish, decrease strength, or result in visual imperfection or a failure in performance. Return component parts which require alteration to shop for refabrication, if possible, or for replacement with new part.

3.02 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 a complete metal wall panel assembly including approved vapor-permeable air and water barrier, trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
- 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 set units true to line and level as indicated. Install work with laps, joints and seams that will be permanently watertight and weather resistant.
 - 1. Install exposed flashing and trim that is without excessive oil canning, bucking and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance.
 - 2. Fabricate flashing materials from .040 minimum thickness aluminum sheet painted to match the adjacent curtain wall/panel system where exposed.
 - 3. Expansion Provisions: provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3meters) with no joints allowed within 24 inches (600 mm) of corner or intersection. Where lapped or bayonet-type expansion provisions cannot be used or would not be sufficiently weather resistant or waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with mastic sealant (concealed within joints).

3.03 CLEANING AND PROTECTION

- A. Remove temporary protective coverings and strippable films, if any, as metal wall panels are installed, unless otherwise indicated in, manufacturer's written installation instructions. On the completion of metal wall panel installation, clean finished surfaces as recommended by metal wall panel manufacturer. Maintain a clean condition during construction.
- B. After metal wall panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.
- C. Replace metal wall panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 07420

SECTION 07500

THERMOPLASTIC POLYTOLEFIN MEMBRANE (TPO) ROOFING

PART 1 GENERAL

1.01 SUMMARY

- A. Furnish and install Firestone TPO mechanically attached single-ply roofing system, including:
 - 1. Roofing manufacturer's requirements for the specified warranty.
 - 2. Preparation of roofing substrates.
 - 3. Wood nailers for roofing attachment.
 - 4. Insulation.
 - 5. Flashings.
 - 6. Walkway pads.
 - 7. Other roofing-related items specified or indicated on the drawings or otherwise necessary to provide a complete weatherproof roofing system.
- B. Disposal of demolition debris and construction waste is the responsibility of Contractor. Perform disposal in a manner complying with all applicable federal, state, and local regulations.
- C. Comply with the published recommendations and instructions of the roofing membrane manufacturer, at <http://manual.fsbp.com>.
- D. Commencement of work by the Contractor shall constitute acknowledgement by the Contractor that this specification can be satisfactorily executed, under the project conditions and with all necessary prerequisites for warranty acceptance by roofing membrane manufacturer. No modification of the Contract Sum will be made for failure to adequately examine the Contract Documents or the project conditions.

1.02 REFERENCES

- A. Referenced Standards: These standards form part of this specification only to the extent they are referenced as specification requirements.
- B. ASTM C 1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2004.
- C. ASTM C 1549 - Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer; 2004.
- D. ASTM D 638 - Standard Test Method for Tensile Properties of Plastics; 2003.
- E. ASTM D 1004 - Standard Test Method for Initial Tear Resistance of Plastic Film and Sheeting; 2003.
- F. ASTM D 6878 - Standard Specification for Thermoplastic Polyolefin Based Sheet Roofing; 2003.
- G. CAN-ULC-S770 - Standard Test Method Determination of L-Term Thermal Resistance of Closed-Cell Thermal Insulating Foams; 2003.
- H. PS 1 - Construction and Industrial Plywood; 1995.
- I. PS 20 - American Softwood Lumber Standard; 2005.

1.03 SUBMITTALS

- A. Product Data:
 - 1. Provide membrane manufacturer's printed data sufficient to show that all components of roofing system, including insulation and fasteners, comply with the specified requirements and with the membrane manufacturer's requirements and recommendations for the system type specified; include at least the following:
 - a. Technical data sheet for roof membrane.
 - b. Technical data sheet for each insulation type.
 - c. Manufacturer's roof system specification.
 - d. Florida Product Approval
- B. Samples: Submit samples of at least the following:
 - 1. Sample of roof membrane.
 - 2. Sample of each insulation type.
- C. Specimen Warranty: Submit both manufacturer's and installer's sample warranty.

1.04 QUALITY ASSURANCE

- A. Applicator Qualifications: Roofing installer shall have the following:
 - 1. Current Firestone Red Shield Licensed Contractor status.
 - 2. Current approval, license, or authorization as applicator by the manufacturer.
 - 3. Fully staffed office within 100 miles of the job site.
 - 4. At least five years' experience installing specified system.
- B. Pre-Installation Conference: Before start of roofing work, Contractor shall hold a meeting to discuss the proper installation of materials and requirements to achieve the warranty.
 - 1. Require attendance with all parties directly influencing the quality of roofing work or affected by the performance of roofing work including General Contractor's project Manager, Job Super and Roofing manufacturer's Representative.
 - 2. Notify Architect well in advance of meeting. If possible, schedule a meeting after deck is installed and to correspond with Architect's Pay App Tour.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver products in the manufacturer's original containers, dry and undamaged, with seals and labels intact and legible.
- B. Store materials clear of ground and moisture with weather protective covering.
- C. Keep combustible materials away from ignition sources.

1.06 WARRANTY

- A. Comply with all warranty procedures required by manufacturer, including notifications, scheduling, and inspections.
- B. Warranty: Firestone 20-year Red Shield Limited Warranty covering membrane, roof insulation, and membrane accessories.
 - 1. Limit of Liability: No dollar limitation (NDL).
 - 2. Scope of Coverage: Repair leaks in the roofing system caused by:
 - a. Ordinary wear and tear of the elements.
 - b. Manufacturing defect in Firestone brand materials.
 - c. Defective workmanship used to install these materials.
 - d. Damage due to winds up to 100 mph (129 km/h).
 - e. Materials and labor for repairs are at no cost to Owner.
 - f. Warranty period starts at date of Substantial Completion.

- C. Insulation Warranty: Separate Firestone ISO 95+ Insulation Warranty with warranty term coinciding with Red Shield Warranty.
 - 1. Limit of Liability: No dollar limitation (NDL)
 - 2. Scope of Coverage: Provide replacement for insulation that warps, bows, or is on the point of causing a roof leak because of a manufacturing defect.
 - 3. Materials and labor for repairs are at no cost to the Owner.

- D. Installers Warranty: The installer shall repair any leak due to poor workmanship, material failure or windstorm under 101 mph for a period of 2 years from date of substantial completion with no dollar limitations and materials and labor at no cost to owner.

1.07 PERFORMANCE REQUIREMENTS

- A. Energy Performance: Provide roofing system with Solar Reflectance Index not less than 78 when calculated according to ASTM E 1980 based on testing identical products by a qualified testing agency.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturer - Roofing System: Firestone Building Products Co., Carmel, IN.
www.firestonebpco.com.
 - 1. Or Equal.

- B. Manufacturer of Insulation: Same manufacturer as roof membrane.

2.02 ROOFING SYSTEM DESCRIPTION

- A. Roofing System:
 - 1. Membrane: Thermoplastic olefin (TPO).
 - 2. Thickness: **.060**
 - 3. Membrane Attachment: Mechanically attached. (UT-120-206)
 - 4. Comply with applicable local building code requirements.

- B. Insulation:
 - 1. Poly-isocyanurate Board Insulation
 - a. Approximate combined thickness: **3.3 inches**
 - 2. Top Layer: Polyisocyanurate foam board, non-composite.
 - a. Attachment: Mechanical fastening.
 - 3. Tapered Insulation: Provide tapered poly-isocyanurate insulation at roofing crickets, equipment curbs and roof drain sumps as shown on the roof plan or as otherwise may be required to provide a 1/4" per slope from ridge to drain and allow drainage to flow unimpeded with no ponding.

- C. Miscellaneous
 - 1. Provide walkway pads (carry treads) from roof hatch to and surrounding roof top equipment
 - 2. Provide walkway pad or other protection acceptable to roofing manufacturer under all pipe supports.

2.03 TPO MEMBRANE MATERIALS

- A. Membrane: Flexible, heat weldable sheet composed of thermoplastic polyolefin polymer and ethylene propylene rubber; complying with ASTM D 6878, with polyester weft inserted reinforcement and the following additional characteristics:
 - 1. Thickness: 0.060 inch (1.52 mm) plus/minus 10 percent, with coating thickness over reinforcement of 0.024 inch (0.61 mm) plus/minus 10 percent.
 - 2. Puncture Resistance: 265 lbf (1174 N), minimum, when tested in accordance FTM 101C Method 2031.
 - 3. Solar Reflectance: 0.79, minimum, when tested in accordance with ASTM C 1549.
 - 4. Color: White.
 - 5. Acceptable Product: ULTRAPLY TPO by Firestone.
- B. Membrane Fasteners: Type and size as required by roof membrane manufacturer for roofing system and warranty to be provided; use only fasteners furnished by roof membrane manufacturer.
- C. Curb and Parapet Flashing: Same material as membrane, with encapsulated edge which eliminates need for seam sealing the flashing-to-roof splice; precut to 18 inches (457 mm) wide.
- D. Formable Flashing: Non-reinforced, flexible, heat weldable sheet, composed of thermoplastic polyolefin polymer and ethylene propylene rubber.
 - 1. Thickness: 0.060 inch (1.52 mm) plus/minus 10 percent.
 - 2. Tensile Strength: 1550 psi (10.7 MPa), minimum, when tested in accordance with ASTM D 638 after heat aging.
 - 3. Elongation at Break: 650 percent, minimum, when tested in accordance with ASTM D 638 after heat aging.
 - 4. Tearing Strength: 12 lbf (53 N), minimum, when tested in accordance with ASTM D 1004 after heat aging.
 - 5. Color: White.
 - 6. Acceptable Product: ULTRAPLY TPO Flashing by Firestone.
- E. Tape Flashing: 5-1/2 inch (140 mm) nominal wide TPO membrane laminated to cured rubber polymer seaming tape, overall thickness 0.065 inch (1.6 mm) nominal; TPO QuickSeam Flashing by Firestone.
- F. Pourable Sealer: Two-part polyurethane, two-color for reliable mixing; Pourable Sealer by Firestone.
- G. Seam Plates: Steel with barbs and Galvalume coating; corrosion-resistance complying with FM 4470.
- H. Termination Bars: Aluminum bars with integral caulk ledge; 1.3 inches (33 mm) wide by 0.10 inch (2.5 mm) thick; Firestone Termination Bar by Firestone.
- I. Cut Edge Sealant: Synthetic rubber-based, for use where membrane reinforcement is exposed; UltraPly TPO Cut Edge Sealant by Firestone.
- J. General Purpose Sealant: EPDM-based, one-part, white general purpose sealant; UltraPly TPO General Purpose Sealant by Firestone.
- K. Molded Flashing Accessories: Unreinforced TPO membrane pre-molded to suit a variety of flashing details, including pipe boots, inside corners, outside corners, etc.; UltraPly TPO Small and Large Pipe Flashing by Firestone.

2.04 ROOF INSULATION AND COVER BOARDS

- A. Poly-isocyanurate Board Insulation: Closed cell polyisocyanurate foam with black glass reinforced mat laminated to faces, complying with ASTM C 1289 Type I Class 1, with the following additional characteristics:
 - 1. Thickness: As indicated elsewhere.
 - 2. Size: 48 inches (1220 mm) by 96 inches (2440 mm), nominal.
 - 3. R-Value (LTTR):
 - a. 3.3-inch (83 mm) Thickness: LTTR - 20.4, minimum (R-24.1)
 - 4. Compressive Strength: 20 psi (138 kPa) when tested in accordance with ASTM C 1289.
 - 5. Ozone Depletion Potential: Zero; made without CFC or HCFC blowing agents.
 - 6. Recycled Content: 19 percent post-consumer and 15 percent post-industrial, average.
 - 7. Acceptable Product: ISO 95+ GL Polyisocyanurate Insulation by Firestone.
- B. Insulation Fasteners: Type and size as required by roof membrane manufacturer for roofing system and warranty to be provided; use only fasteners furnished by roof membrane manufacturer.

2.05 ACCESSORY MATERIALS

- A. Wood Nailers: PS 20-dimension lumber, Structural Grade No. 2 or better Southern Pine, Douglas Fir; or PS 1, APA Exterior Grade plywood; pressure preservative treated.
 - 1. Width: 3-1/2 inches (90 mm), nominal minimum, or as wide as the nailing flange of the roof accessory to be attached to it.
 - 2. Thickness: Same as thickness of roof insulation.

PART 3 INSTALLATION

3.01 GENERAL

- A. Install roofing, insulation, flashings, and accessories in accordance with roofing manufacturer's published instructions and recommendations for the specified roofing system. Where manufacturer provides no instructions or recommendations, follow good roofing practices and industry standards. Comply with federal, state, and local regulations.
- B. Obtain all relevant instructions and maintain copies at the project site for duration of installation period.
- C. Do not start work until the Pre-Installation Notice has been submitted to manufacturer as notification that this project requires a manufacturer's warranty.
- D. Perform work using competent and properly equipped personnel.
- E. Temporary closures, which ensure that moisture does not damage any completed section of the new roofing system, are the responsibility of the applicator. Completion of flashings, terminations, and temporary closures shall be completed as required to provide a watertight condition.
- F. Install roofing membrane only when surfaces are clean, dry, smooth, and free of snow or ice; do not apply roofing membrane during inclement weather or when ambient conditions will not allow proper application; consult manufacturer for recommended procedures during cold weather. Do not work with sealants and adhesives when material temperature is outside the range of 60 to 80 degrees F (15 to 25 degrees C).

- G. Protect adjacent construction, property, vehicles, and persons from damage related to roofing work; repair or restore damage caused by roofing work.
 - 1. Protect from spills and overspray from bitumen, adhesives, sealants, and coatings.
 - 2. Particularly protect metal, glass, plastic, and painted surfaces from bitumen, adhesives, and sealants within the range of wind-borne overspray.
 - 3. Protect finished areas of the roofing system from roofing related work traffic and traffic by other trades.
- H. Until ready for use, keep materials in their original containers as labeled by the manufacturer.
- I. Consult membrane manufacturer's instructions, container labels, and Material Safety Data Sheets (MSDS) for specific safety instructions. Keep all adhesives, sealants, primers, and cleaning materials away from all sources of ignition.

3.02 EXAMINATION

- A. Examine roof deck to determine that it is sufficiently rigid to support installers and their mechanical equipment, and that deflection will not strain or rupture roof components or deform deck.
- B. Verify that surfaces and site conditions are ready to receive work. Correct defects in the substrate before commencing roofing work.
- C. Examine roof substrate to verify that it is properly sloped to drains.
- D. Verify that the specifications and drawing details are workable and not in conflict with the roofing manufacturer's recommendations and instructions; start of work constitutes acceptance of project conditions and requirements.

3.03 PREPARATION

- A. Take appropriate measures to ensure that fumes from adhesive solvents are not drawn into the building through air intakes.
- B. Prior to proceeding, prepare roof surface so that it is clean, dry, and smooth, and free of sharp edges, fins, roughened surfaces, loose or foreign materials, oil, grease, and other materials that may damage the membrane.
- C. Fill all surface voids in the immediate substrate that are greater than 1/4 inch (6 mm) wide with fill material acceptable insulation to membrane manufacturer.
- D. Seal, grout, or tape deck joints, where needed, to prevent bitumen seepage into building.

3.04 INSULATION INSTALLATION

- A. Install insulation in configuration and with attachment method(s) specified in PART 2, under Roofing System.
- B. Install only as much insulation as can be covered with the completed roofing system before the end of the day's work or before the onset of inclement weather.
- C. Lay roof insulation in courses parallel to roof edges.
- D. Neatly and tightly fit insulation to all penetrations, projections, and nailers, with gaps not greater than 1/4 inch (6 mm). Fill gaps greater than 1/4 inch (6 mm) with acceptable insulation. Do not leave the roofing membrane unsupported over a space greater than 1/4 inch (6 mm).

3.05 TPO MEMBRANE INSTALLATION

- A. Beginning at low point of roof, place membrane without stretching over substrate and allow to relax at least 30 minutes before attachment or splicing; in colder weather allow for longer relax time.
- B. Lay out the membrane pieces so that field and flashing splices are installed to shed water.
- C. Install membrane without wrinkles and without gaps or fish mouths in seams; bond and test seams and laps in accordance with membrane manufacturer's instructions and details.
- D. Install membrane mechanically attached to the substrate using Firestone Heavy Duty Fasteners and Seam Plates over the membrane and edge securement as specified.
- E. Mechanical Attachment: Install Firestone Heavy Duty Fasteners and Seam Plates over membrane, covered by membrane from next parallel sheet.
 - 1. Lay out Firestone Heavy Duty Fasteners and Seam Plates as recommended by membrane manufacturer and as indicated, whichever is most stringent.
 - 2. Fasten Firestone Heavy Duty Fasteners and Seam Plates, properly engaged in the deck with head flush with the batten strip surface.
- F. Edge Sacrament: Secure membrane at all locations where membrane terminates or goes through an angle change greater than 2 in 12 inches (1:6) using mechanically fastened reinforced perimeter fastening strips, plates, or metal edging as indicated or as recommended by roofing manufacturer.
 - 1. Exceptions: Round pipe penetrations less than 18 inches (460 mm) in diameter and square penetrations less than 4 inches (200 mm) square.

3.06 FLASHING AND ACCESSORIES INSTALLATION

- A. Install flashings, including laps, splices, joints, bonding, adhesion, and attachment, as required by membrane manufacturer's recommendations and details.
- B. Scuppers: Set in sealant and secure to structure; flash as recommended by manufacturer.
- C. Flashing at Walls, Curbs, and Other Vertical and Sloped Surfaces: Install weathertight flashing at all walls, curbs, parapets, curbs, skylights, and other vertical and sloped surfaces that the roofing membrane abuts to; extend flashing at least 8 inches (200 mm) high above membrane surface.
 - 1. Use the longest practical flashing pieces.
 - 2. Evaluate the substrate and overlay and adjust installation procedure in accordance with membrane manufacturer's recommendations.
 - 3. Complete the splice between flashing and the main roof sheet with specified splice adhesive before adhering flashing to the vertical surface.
 - 4. Provide termination directly to the vertical substrate as shown on roof drawings.
- D. Roof Drains:
 - 1. Taper insulation around drain to provide smooth transition from roof surface to drain. Use specified pre-manufactured tapered insulation with facer or suitable bonding surface to achieve slope; slope not to exceed manufacturer's recommendations.
 - 2. Position membrane, then cut a hole for roof drain to allow 1/2 to 3/4 inch (12 to 19 mm) of membrane to extend inside clamping ring past drain bolts.
 - 3. Make round holes in membrane to align with clamping bolts; do not cut membrane back to bolt holes.
 - 4. Apply sealant on top of drain bowl where clamping ring seats below the membrane
 - 5. Install roof drain clamping ring and clamping bolts; tighten clamping bolts to achieve constant compression.

- E. Flashing at Penetrations: Flash all penetrations passing through the membrane; make flashing seals directly to the penetration.

3.07 FINISHING AND WALKWAY INSTALLATION

- A. Install walkways at access points to the roof, around rooftop equipment that may require maintenance, and where indicated on the drawings.

3.08 FIELD QUALITY CONTROL

- A. Inspection by Manufacturer: Provide final inspection of the roofing system by a Technical Representative employed by roofing system manufacturer specifically to inspect installation for warranty purposes (i.e. not a salesperson).
- B. Perform all corrections necessary for issuance of warranty.

3.09 CLEANING

- A. Clean all contaminants generated by roofing work from building and surrounding areas, including bitumen, adhesives, sealants, and coatings.
- B. Repair or replace building components and finished surfaces damaged or defaced due to the work of this section; comply with recommendations of manufacturers of components and surfaces.
- C. Remove leftover materials, trash, debris, equipment from project site and surrounding areas.

3.10 PROTECTION

- A. Where construction traffic must continue over finished roof membrane, provide durable protection and replace or repair damaged roofing to original condition.

END OF SECTION 07540

SECTION 07600
FLASHING AND SHEET METAL

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Furnish and install all sheet metal flashings, copings, counterflashings, trim components, and similar flashing and sheet metal work required for roofing and related work, complete as indicated on Drawings and specified herein.

1.02 RELATED WORK

- A. CONCRETE UNIT MASONRY: Section 04810.
- B. METAL FABRICATIONS: Section 05500.
- C. ROUGH CARPENTRY: Section 06100.
- D. TPO ROOFING SYSTEM: Section 07540.

1.03 QUALITY ASSURANCE

- A. Approved Products: As applicable, products used herein shall comply with requirements of the Florida Product Approval System as required by Florida Statute 553.842 and Florida Administrative Code 9B-72.
- B. Installer's Qualifications: Flashing and sheet metal work shall be fabricated by a qualified sheet metal fabricator with at least five (5) years documented experience in installations of a similar nature.
- C. Performance Criteria: Comply with the following:
 - 1. Wind Uplift Resistance: Installation and fastening of all sheet metal work shall comply with Factory Mutual Global (FMG) 1-120 wind uplift requirements in FMG Loss Prevention Data Sheet 1-28, "Wind Loads to Roof Systems and Roof Deck Securement," and with the Florida Building Code 2004 Edition wind resistance/wind loading requirements. (130 MPH zone)
 - 2. Sheet Metal Flashing and Trim Standard: Comply with SMACNA's "Architectural Sheet Metal Manual." Conform to dimensions and profiles shown unless more stringent requirements are indicated. (Architect's reference 5th Edition w/ Addendum No.1 October 31, 1997)

1.04 SUBMITTALS

- A. Product Data: Submit complete product data for each type of product specified. Include details of construction relative to materials, dimensions of individual components, profiles, finishes, and installation instructions.
- B. Shop Drawings: Submit complete shop drawings for all flashing and sheet metal work, indicating fabrication, assembly, and attachment details, size of all members, fastenings, supports and anchors, patterns, clearances, and all necessary connections to work of other trades.

- C. Installer's Qualifications: Submit documented evidence of installer's qualifications.
- D. Warranty: Submit specimen copy of specified warranty.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver sheet metal flashing materials and fabrications undamaged. Protect sheet metal flashing and trim materials and fabrications during transportation and handling.
- B. Unload, store, and install sheet metal flashing materials and fabrications in a manner to prevent bending, warping, twisting, and surface damage.
- C. Stack materials on platforms or pallets, covered with suitable weathertight and ventilated covering. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage.

1.06 COORDINATION

- A. Coordinate installation of sheet metal flashing and trim with interfacing and adjoining construction to provide a leakproof, secure, and noncorrosive installation.

1.07 WARRANTY

- A. Provide separate and or inclusive roofing warranty, a 2-year installer's Warranty and 20 year No Dollar Limit manufacturer's warranty with Windstorm Rider to 90 MPH. The Warranty is to cover materials and workmanship with no cost to the Owner for materials and labor.

PART 2 - PRODUCTS

2.01 MATERIALS

Copings and flashings are to be either Pre-Finished Galvanized Sheet Steel, Pre-Finished Aluminum or Stainless Steel which meet the following minimum standards:

- A. Galvanized (Hot-Dipped) Steel Sheet: Comply with the following:
 - 1. Material: ASTM A 653, G 90, commercial quality, for hot-dip galvanized steel sheet, mill phosphatized where indicated for paint finish. Provide minimum 0.050-inch (18 gauge) material thickness.
 - 2. Finish: Provide fluoropolymer 2-coat thermocured coating system composed of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight; complying with AAMA 2605.
 - a. Color as selected by Architect from manufacturer's standard color line.
 - b. Products, Resin Manufacturers: Provide fluoropolymer coating systems containing one of the following resins:
 - (1) "Hylar 5000"; Ausimont USA, Inc.
 - (2) "Kynar 500"; Atofina Chemicals, Inc.

- B. Aluminum: Alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated and with not less than the strength and durability of alloy and temper designated below:
1. Factory Painted Aluminum Sheet: ASTM B 209, 3003-H14, with a minimum thickness of 0.063 inch (14 gauge).
 2. Finish: Provide manufacturer's standard fluoropolymer 2-coat thermocured coating system composed of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight; complying with AAMA 2605.
 - a. Color as selected by Architect from manufacturer's standard color line.
 - b. Products, Resin Manufacturers: Provide fluoropolymer coating systems containing one of the following resins:
 - (1) "Hylar 5000"; Ausimont USA, Inc.
 - (2) "Kynar 500"; Atofina Chemicals, Inc.
- C. Stainless Steel: Alloy and temper recommended by producer and finisher for type of use and finish indicated and with not less than the strength and durability of alloy and temper designated below:
1. Factory Painted Sheet:, with a minimum thickness of 0.0375 inch (20 gauge).
 2. Finish: Provide manufacturer's standard fluoropolymer 2-coat thermocured coating system composed of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight; complying with AAMA 2605.
Finish may be omitted where flashing is not exposed to view from street level.
 - a. Color as selected by Architect from manufacturer's standard color line.
 - b. Products, Resin Manufacturers: Provide fluoropolymer coating systems containing one of the following resins:
 - (1) "Hylar 5000"; Ausimont USA, Inc.
 - (2) "Kynar 500"; Atofina Chemicals, Inc.

2.03 FABRICATION, GENERAL

- A. General: Shop-fabricate work to greatest extent possible, with applicable requirements of SMACNA "Architectural Sheet Metal Manual" and other recognized industry practices. Fabricate for waterproof and weather-resistant performance; with expansion provisions for running work, sufficient to permanently prevent leakage, damage or deterioration of the work.
- B. Form work to fit substrates. Comply with material manufacturer instruction and recommendations for forming material. Form exposed sheet metal work without excessive oil-canning, buckling and tool marks, true to line and levels indicated, with exposed edges folded back to form hems.
- C. Conceal fasteners and expansion provisions where possible on exposed-to-view sheet metal flashing and trim, unless otherwise indicated. Conceal fasteners on all copings.
- D. Fabricate cleats and attachment devices from same material and thickness as accessory being

anchored or from compatible, noncorrosive metal.

- E. Provide shop welded interior and exterior corners for all flashings. Folded, riveted, and sealed corners are not acceptable.
- F. Provide mitered, shop welded interior and exterior corners at parapet cap. Folded, riveted, and sealed corners are not acceptable.
- G. All parapet caps are to be constructed with butt joints with concealed back up plate. Similar to SMACNA Figure 2-5C (ref Architect's Manual noted above).
- H. Pre-engineered pre-manufactured systems are acceptable. Submit manufacturer's literature and details for approval.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions, and other conditions affecting performance of work. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
- B. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by applying a rubberized-asphalt underlayment to each contact surface, or by EPDM sheet separation.
- C. Install exposed sheet metal flashing and trim without excessive oil canning, buckling, and tool marks.
- D. Install sheet metal flashing and trim true to line and levels indicated. Provide uniform, neat seams.
- E. Install sheet metal flashing and trim true to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet material.
 - 1. Space cleats not more than 12 inches apart. Anchor each cleat with two fasteners. Bend tabs over fasteners.
- F. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped or bayonet-type expansion provisions cannot be used or would not be sufficiently watertight, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with elastomeric sealant concealed within joints. See 2.03 above.
- G. Fasteners: Use stainless steel fasteners of sizes that will penetrate substrate not less than 1-1/4 inches for nails and not less than 3/4 inch for wood screws.
- H. Seal joints with elastomeric sealant as required for watertight construction. Embed hooked flanges of joint members not less than 1 inch into sealant. Form joints to completely conceal sealant. Prepare joints and apply sealants to comply with requirements in Section 07900 – JOINT SEALANTS.

- I. Collector Heads and Downspouts: Install collector heads and downspouts according to SMACNA recommendations (reference Architectural Sheet Metal Manual 5th addition with Addendum 1, Oct 31, 1997) and as indicated. Provide conductor head per figure 1-25F and scupper per figure 1-26A. Scupper to be sized and follow limitations as set forth on page 1.56. Provide minimum 16 ga. galvanized steel with Kynar 500 or Hylar 5000 finish to match copings or as otherwise directed by Architect. Coordinate installation of roof perimeter flashing and trim with installation of collector heads and downspouts.

3.03 CLEANING AND PROTECTION

- A. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed. On completion of installation, clean finished surfaces, including removing unused fasteners, metal filings, pop rivet stems, and pieces of flashing. Maintain a clean condition during construction.
- B. 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.

END OF SECTION 07600

SECTION 07723

ROOF HATCHES

PART 1 - GENERAL

1.1 SUMMARY

- A. Work Included: Provide factory-fabricated roof hatches for ladder access.

1.2 SUBMITTALS

- A. Product Data: Submit manufacturer's product data.
- B. Shop Drawings: Submit shop drawings including profiles, accessories, location, adjacent construction interface, and dimensions.
- C. Warranty: Submit executed copy of manufacturer's standard warranty.

1.3 QUALITY ASSURANCE

- A. Manufacturer: A minimum of 5 years experience manufacturing similar products.
- B. Installer: A minimum of 2 years experience installing similar products.
- C. Manufacturer's Quality System: Registered to ISO 9001:2008 Quality Standards including in-house engineering for product design activities.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Deliver products in manufacturer's original packaging. Store materials in a dry, protected, well-vented area. Inspect product upon receipt and report damaged material immediately to the delivering carrier and note such damage on the carrier's freight bill of lading.

1.5 WARRANTY

- A. Manufacturer's Warranty: Provide manufacturer's standard warranty. Materials shall be free of defects in material and workmanship for a period of five years from the date of purchase. Should a part fail to function in normal use within this period, the manufacturer shall furnish a new part at no charge.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. Basis-of-Design Manufacturer: Type S Roof Hatch by The Bilco Company, P.O. Box 1203, New Haven, CT 06505, 1-800-366-6530, Fax: 1-203-933-8478, Web: www.bilco.com.
- B. Provide Safety Rail System-Bil-Guard by Bilco.

2.2 ROOF HATCH

- A. Furnish and install where indicated on plans metal roof hatch Type S, size width: 36" (914mm) x length: 30" (762mm). Length denotes hinge side. The roof hatch shall be single leaf. The roof hatch shall be pre-assembled from the manufacturer.
- B. Performance characteristics:
1. Cover shall be reinforced to support a minimum live load of 40 psf (195kg/m²) with a maximum deflection of 1/150th of the span and a [select: 140 psf (684 kg/m²) wind uplift for galvanized steel (Type S-20) and aluminum (Type S-50) roof hatches or 20 psf (97 kg/m²) for stainless steel (Type S-90) roof hatches or roof hatches with an aluminum cover and galvanized steel curb (Type S-40)].
 2. Operation of the cover shall be smooth and easy with controlled operation throughout the entire arc of opening and closing.
 3. Operation of the cover shall not be affected by temperature.
 4. Entire hatch shall be weather tight with fully welded corner joints on cover and curb.
 5. Galvanized steel (Type S-20) and aluminum (Type S-50) roof hatches shall be Miami-Dade Product approved (NOA No. 14-0708.07 Expiration Date: December 2, 2019), meeting large and small missile impact requirements. Florida Product Approval #FL15110.
- C. Cover: Shall be [select: 14-gauge (1.9mm) paint bond G-90 galvanized steel or 11 gauge (2.3mm) aluminum] with a 3" (76mm) beaded flange with formed reinforcing members. The cover shall have a heavy extruded EPDM rubber gasket that is bonded to the cover interior to assure a continuous seal when compressed to the top surface of the curb.
- D. Cover insulation: Shall be fiberglass of 1" (25mm) thickness, fully covered and protected by a metal liner [select: 22-gauge (.8mm) paint bond G-90 galvanized steel or 18 gauge (1mm) aluminum].
- E. Curb: Shall be 12" (305mm) in height and of [select: 14-gauge (1.9mm) paint bond G-90 galvanized steel or 11-gauge (2.3mm) aluminum]. The curb shall be formed with a 3-1/2" (89mm) flange with 7/16" (11.1mm) holes provided for securing to the roof deck. The curb shall be equipped with an integral metal cap flashing of the same gauge and material as the curb, fully welded at the corners, that features the Bil-Clip[®] flashing system, including stamped tabs, 6" (153mm) on center, to be bent inward to hold single ply roofing membrane securely in place.
- F. Curb insulation: Shall be rigid, high-density fiberboard of 1" (25mm) thickness on outside of curb.
- G. Lifting mechanisms: Manufacturer shall provide compression spring operators enclosed in telescopic tubes to provide a smooth, easy, and controlled cover operation throughout the entire arc of opening and closing. The upper tube shall be the outer tube to prevent accumulation of moisture, grit, and debris inside the lower tube assembly. The lower tube shall interlock with a flanged support shoe [for aluminum construction: welded to the curb assembly; for steel construction: through bolted to the curb assembly].
- H. Hardware
1. Heavy pintle hinges shall be provided.
 2. The cover shall be equipped with a spring latch with interior and exterior turn handles.
 3. Roof hatch shall be equipped with interior and exterior padlock hasps.
 4. The latch strike shall be a stamped component bolted to the curb assembly.

5. Cover shall automatically lock in the open position with a rigid hold open arm equipped with a 1" (25mm) diameter red vinyl grip handle to permit easy release for closing.
 6. Compression spring tubes shall be an anti-corrosive composite material and all other hardware shall be zinc plated and chromate sealed.
 7. Cover hardware shall be bolted into heavy gauge channel reinforcing welded to the underside of the cover and concealed within the insulation space.
- I. Finishes: Factory finish shall be alkyd based red oxide primed steel. Apply 2 coats of finish paint in field. Color TBD.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and openings for compliance with requirements for installation tolerances and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install products in strict accordance with manufacturer's instructions and approved submittals. Locate units level, plumb, and in proper alignment with adjacent work.
1. Test units for proper function and adjust until proper operation is achieved.
 2. Repair finishes damaged during installation.
 3. Restore finishes so no evidence remains of corrective work.

3.3 ADJUSTING AND CLEANING

- A. Clean exposed surfaces using methods acceptable to the manufacturer which will not damage finish.

END OF SECTION

SECTION 07900
JOINT SEALANTS

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. This Section includes the furnishing and installation of joint sealants as indicated on the Drawings and as specified herein.

1.02 RELATED WORK

- A. UNIT MASONRY: Section 04220.
- B. STEEL DOORS AND FRAMES: Section 08110.
- C. ALUMINUM STOREFRONT / CURTAIN WALL:
- D. GLASS AND GLAZING: Section 08800.
- E. PORTLAND CEMENT PLASTER (STUCCO): Section 09220.
- F. GYPSUM WALLBOARD: Section 09250.
- G. PAINTING: Section 09900.

1.03 QUALITY ASSURANCE

- A. The Installer shall have a minimum of five (5) years continuous documented experience in the application of the types of materials required.

1.04 PRODUCT DELIVERY AND STORAGE

- A. All products shall be delivered to the site undamaged, and in the manufacturer's original packing. Products shall be stored within the manufacturer's published temperature tolerances.

1.05 SUBMITTALS

- A. Product Data: Submit the following manufacturer's data for each manufactured item:
 - 1. Certification that each product to be furnished is recommended for the application shown.
 - 2. Complete instructions for handling, storage, mixing, priming, installation, curing, and protection of each type of sealant.

1.06 ENVIRONMENTAL CONDITIONS

- A. Do not install materials when the temperature is below 40 degrees F, unless the manufacturer specifically recommends application of his materials at lower temperatures. If job progress or any other condition requires installations when temperatures are below 40 degrees F (or below the minimum installation temperature recommended by the manufacturer), consult the manufacturer's representative and establish the minimum provisions required to ensure satisfactory work. Record in writing to the manufacturer, with a copy to the Architect, the conditions under which such installation must proceed, and the provisions made to ensure satisfactory work.
- B. Do not proceed with installation of bulk compounds during inclement weather unless all requirements and manufacturer's instructions can be complied with. Do not proceed with the installation of elastomeric sealants under extreme temperature conditions which would cause joint openings to be at either maximum or minimum width, or when such extreme temperatures or heavy wind loads are forecast during the period required for initial or nominal cure of elastomeric sealants. Whenever possible, schedule the installation and cure of elastomeric sealants during periods of mean temperatures (nominal joint width shown) so that subsequent stresses upon the cured sealants will be minimized.

1.07 GUARANTEE

- A. Provide a five (5) year written guarantee, signed by the installer and Contractor, against defects materials and workmanship for joint sealants which fail to perform as airtight or watertight joints; or fail in joint adhesion, cohesion, abrasion resistance, weather resistance, extrusion resistance, migration resistance, stain resistance, or general durability; or appear to deteriorate in any other manner not clearly specified in joint sealant manufacturer's published data as an inherent quality of the material for the exposure indicated.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Hardnesses shown and specified are intended to indicate the general range necessary for overall performance. The manufacturer's technical representative shall determine the actual hardness recommended for the conditions of installation and use. Except as otherwise indicated or recommended, compounds shall be provided within the range of hardness (Shore A, Fully cured, at 75 degrees F) of 25 to 40.
- B. Before purchasing each specified sealant, the Contractor shall confirm its compatibility with the joint surfaces, joint fillers, and other materials in the joint system. Only materials that are known to be fully compatible with the actual installation conditions, as shown by the manufacturer's published data or certification, shall be provided.

2.02 SEALANTS

- A. Exterior Sealants: Sealants for exterior locations and all interior and exterior expansion joints shall be cold-applied elastomeric joint sealant, single component polyurethane non-sag sealant meeting ASTM C 920.
1. Products, Provide one of the following:
 - a. Tremco; Vulkem 116.
 - b. Sika Corporation, Inc.; Sikaflex - 1a.
 - c. Sonneborn, Division of ChemRex Inc.; Ultra.
 - d. Sonneborn, Division of ChemRex Inc.; NP 1.
 2. Type and Grade: S (single component) and NS (nonsag).
 3. Class: 25.
 4. Uses Related to Exposure: T (traffic) and NT (nontraffic).
- B. Interior Sealants: Sealants for interior locations shall be acrylic latex sealant compound, non-staining, non-bleeding, paintable, complying with ASTM C 834.
1. Products: Provide one of the following sealants:
 - a. "Pecora AC-20"; Pecora Corp.
 - b. "Sonolac"; Sonneborn Building Products, Div. Of Chemrex, Inc.
 - c. "Tremco Acrylic Latex 834"; Tremco Inc.
- C. Acoustical Joint Sealants: Sealants for interior acoustical applications shall be nonsag, paintable, nonstaining latex sealant complying with ASTM C 834.
1. Products, Exposed Joints: Provide one of the following sealants:
 - a. "AC-20 FTR Acoustical and Insulation Sealant"; Pecora Corp.
 - b. "Sheetrock Acoustical Sealant"; USG Corp.
 2. Products, Concealed Joints: Provide one of the following sealants:
 - a. "BA-98"; Pecora Corp.
 - b. "Tremco Acoustical Sealant"; Tremco Inc.

D. Fire Stop Sealant: Fire stop sealant used to seal penetrations in fire rated partitions shall be a silicone-based sealant.

1. Products: Provide one of the following sealants or an acceptable equivalent:

- a. "Firestop Sealant 2000"; 3M Corp.
- b. "Pensil 100 Firestop Sealant"; Specified Technologies, Inc.

2.03 MISCELLANEOUS MATERIALS

A. Joint cleaner shall be "Xylo", or any other type of compound recommended by the sealant compound manufacturer, for the joint surfaces to be cleaned.

B. Bond breaker tape shall be polyethylene tape, or other plastic tape, as recommended by the sealant manufacturer, to be applied to sealant contact surfaces where bond to the substrate or joint filler must be avoided for the proper performance of sealant. Self-adhesive tape shall be used wherever applicable.

C. Backer rods shall be closed-cell, expanded polyethylene. The size and shape of the rod shall be that which will control the joint, form optimum shape of sealant bead on the back side, and provide a highly compressible backer to minimize the possibility of sealant extrusion when the joint is compressed.

1. Products: Provide products equivalent to one of the following backer rods:

- a. "ethafoam"; Dow Chemical Company.

2.04 COLORS

A. For concealed joints, provide manufacturer's standard color that has the best overall performance qualities for the application shown. For exposed joints, the Architect will select colors from the manufacturer's standard or non-standard colors.

PART 3 - EXECUTION

3.01 INSPECTION

A. The sealant installer shall examine the areas and conditions under which the sealants are to be installed and notify the Contractor in writing (with a copy to the Architect) of any conditions detrimental to this phase of the work, and shall not proceed until the unsatisfactory conditions have been corrected. Commencement will be construed as acceptance of the conditions.

3.02 SURFACE PREPARATION

A. Sealant material shall be applied before any adjacent coating or painting is applied; otherwise, the laboratory test for durability specified in the following paragraph (B.) shall be required.

- B. Installation of sealant over joint surfaces which have been painted, lacquered, waterproofed or treated with water repellent or other treatment or coating, shall not proceed unless a laboratory test for durability (adhesion), in compliance with Paragraph 4.3.9 of FS TT-S-00227, has successfully demonstrated that sealant bond is not impaired by the particular coating or treatment. If laboratory test has not been performed, or if test results indicate bond interference, the coating or treatment shall be removed from joint surfaces before installing sealant.
- C. Concrete and masonry joint surfaces shall be etched to remove excess alkalinity with dilute muriatic acid solution, and then sprayed with water and allowed to dry before installation, unless the sealant manufacturer's published instructions indicate that alkalinity does not interfere with sealant bond.

3.03 INSTALLATION

- A. Comply with the sealant manufacturer's published instructions, except where more stringent requirements are shown or specified, and except where the manufacturer's technical representative recommends otherwise.
- B. The joint surfaces shall be primed or sealed wherever shown or recommended by the sealant manufacturer. Primer/sealer shall not be spilled or allowed to migrate onto adjoining surfaces.
- C. Sealant backer rod shall be installed for elastomeric sealants, except where shown to be omitted or recommended to be omitted by sealant manufacturer for the application shown.
- D. Bond breaker tape shall be installed wherever required by the manufacturer's recommendations to ensure that elastomeric sealants will perform properly, or as detailed on the Drawings.
- E. Only proven installation techniques shall be employed which will ensure that sealants will be deposited in uniform, continuous ribbons without gaps or air pockets, with complete "wetting" of the joint bond surfaces equally on opposite sides. Except as otherwise indicated, sealant joints shall be filled to a slightly concave surface, slightly below adjoining surfaces. Where horizontal joints are between a horizontal surface and a vertical surface, joints shall be filled to form a slight cove, so that the joint will not trap moisture and dirt.
- F. Sealants shall be installed to depths as shown, or if not shown, as recommended by the sealant manufacturer, but within the following general limitations measured at the center (thin) section of the bead.
 - 1. For sidewalks, pavements, and similar joints sealed with elastomeric sealants and subject to traffic and other abrasion and indentation exposure, joints shall be filled to a depth equal to 75 percent of the joint width, but neither more than 5/8 inch deep nor less than 3/8 inch deep.
 - 2. For normal moving joints sealed with elastomeric sealants, but not subject to traffic, joints shall be filled to a depth equal to 50 percent of joint width, but not more than 3/8 inch nor less than 1/4 inch.
 - 3. For joints sealed with non-elastomeric sealant compounds, joints shall be filled to a depth in the range of 75 percent to 115 percent of the joint width.
- G. Sealant compounds shall not be overflowed or spilled onto adjoining surfaces or allowed to migrate into the voids of adjoining surfaces including rough textures. Masking tape or other precautionary devices shall be used to prevent staining of adjoining surfaces by either the primer, sealer and/or the sealant compound.

- H. Any excess or spillage of compounds shall be removed promptly as the work progresses. Adjoining surfaces shall be cleaned by whatever means may be necessary to eliminate evidence of spillage, without damage to the adjoining surfaces or finishes.
- I. Do not plug weep holes (if occurring).

3.04 CURE AND PROTECTION

- A. Sealant compounds shall be cured in compliance with the manufacturer's published instructions and current recommendations to obtain high early bond strength, internal cohesive strength, and surface durability.
- B. The installer shall advise the Contractor of procedures required for the curing and protection of sealants compounds during the construction period, so that they will be without deterioration or damage (other than normal wear and weathering), at the time of Final Acceptance.

END OF SECTION 07900

SECTION 08110
STEEL DOORS AND FRAMES

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This work shall include furnishing and installing all steel doors and frames completely as located and detailed on Drawings.
- B. Types of steel doors used on this Project shall include, but not be limited to:
 - 1. Flush Steel Doors.
 - 2. Steel Doors with Glass Lites and/or Louvers.

1.02 RELATED WORK

- A. CONCRETE UNIT MASONRY: Section 04220.
- B. JOINT SEALANTS: Section 07900.
- C. WOOD DOORS: Section 08210.
- D. FINISH HARDWARE: Section 08710.
- E. GLASS AND GLAZING: Section 08800.
- F. PAINTING: Section 09900.

1.03 QUALITY ASSURANCE

- A. Approved Products: As applicable, products used herein shall comply with requirements of the Florida Product Approval System as required by Florida Statute 553.842 and Florida Administrative Code 9B-72.
- B. Manufacturer: Steel doors and frames shall be manufactured by a single firm specializing in the production of this type of work.
- C. Fire-Resistance Classifications: Where fire-resistance classifications are shown or scheduled for steel doors and frame assemblies, the doors and frames shall comply with the requirements of NFPA No. 80 and shall have been tested and rated with the appropriate hardware by Underwriters Laboratories (UL). A UL label shall be provided on each door and frame so classified.
 - 1. Opening assemblies shall meet the requirements of NFPA 105 Hot Smoke Test.
 - 2. Stairwell doors and other doors indicated shall comply with the temperature-rise rating of 450 degrees F maximum in 30 minutes of fire exposure.

D. Design Criteria: Comply with the following:

1. Transmission Characteristics of Fixed Glazed Framing: Comply with requirements indicated below for transmission characteristics and test methods.
 - a. Air and Water Leakages: Air infiltration of not more than 0.06 CFM per square foot of fixed area per ASTM E 283 and no uncontrolled water penetration per ASTM E 331 at pressure differential of 6.24 psf (excluding operable door edges).
2. Thermal Design Criteria: All exterior door assemblies shall have been fabricated as thermal insulated door and frame assemblies and tested in accordance with ASTM C 236. Provide thermal-rated assemblies with a minimum U-Factor of 0.24.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's technical information and installation instructions for each type of door and frame.
- B. Shop Drawings: Submit shop drawings for the fabrication and installation of the steel doors and frames. Drawings shall include details of each frame type, elevations of door design types, glazed openings, louvers, conditions at openings, details of construction, location and installation requirements of finish hardware, and reinforcements and details of joints and connections, showing anchorage and accessory items.
 1. A schedule of doors and frames shall be provided using the same opening numbers referenced on the Drawings and the same schedule format.
 2. Submit shop drawings as a package with the submittals for other doors and for finish hardware to facilitate a coordinated review.
 3. Shop drawings shall indicate accurate dimensions of work shown. Frame returns shall allow for conditions (i.e., whether 5/8 inch gypsum board; or exposed masonry as scheduled). Except where otherwise shown, 1/4 inch caulking space shall be provided for each jamb and head abutting wall materials.
 4. Shop drawings shall list and locate all items of finished hardware furnished by other Sections of the Specifications but prepared for by the manufacturer of hollow metal doors and frames, from templates provided by the hardware supplier.

1.05 PRODUCT DELIVERY AND STORAGE

- A. Doors and frames shall be protected during transit, storage, and handling to prevent damage, soiling, and deterioration.
- B. Each door shall be packaged at the factory in a separate heavy paper carton. Each carton shall be marked for location to correspond with the Shop Drawings.
- C. Ship welded frames in bundles securely strapped or in packages.
- D. Store doors and frames at the building site under cover. Frames shall be stored in an upright position. Place the units on at least 4-inch wood sills or on floors in a manner that will prevent rust or damage. Avoid the use of non-vented plastic or canvas shelters that create a humidity chamber. If the wrapper on the door becomes wet, remove the carton immediately. Provide a 1/4-inch air space between the doors to promote air circulation.

1.06 PROJECT CONDITIONS

- A. Measurements: Obtain and verify all measurements at the buildings as required to properly fabricate and install all special door and frame requirements if and when they occur. Verify all conditions that may affect door installation.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Products: Provide one of the following:
 - 1. "Lock Seam Design"; American Steel Products.
 - 2. "Series H"; Pioneer Industries, Inc.
 - 3. "Series L"; Steelcraft/Ingersoll Rand.
 - 4. Model 707, Curries
 - 5. Or Equal per Section 01600.

2.02 STEEL FRAMES

- A. Frames shall be double rabbeted design, depth and profile as detailed and furnished with minimum 5/8-inch stop. Exterior frames shall be fabricated from 16-gauge prime quality galvanized (G 90) steel conforming to ASTM A 526. Interior frames shall be fabricated from 16-gauge prime quality steel conforming to ASTM A 366 and ASTM A 568. Frames shall be designed with integral stop and trim.
- B. Frame corners shall be mitered and continuously arc welded (both inside of mitered corners and butt edges) with all exposed welds ground and sanded smooth. Mitered corners shall be reinforced with 18-gauge channel-shaped reinforcements. Knock down frames will not be acceptable.
- C. Head members shall be 2 inches high unless otherwise indicated.
- D. Strike jambs shall be provided with three (3) holes for rubber bumpers (silencers); refer to Section 08710 - FINISH HARDWARE for furnishing and installation of silencers.

2.03 STEEL DOORS

- A. Hollow metal steel doors shall be 1-3/4 inches thick heavy-duty, hollow steel, lock seam construction. Exterior doors shall be fabricated from 18 gauge prime quality galvanized (G 90) steel conforming to ASTM A 526 or ASTM A 591. Interior doors shall be fabricated from 18-gauge prime quality steel conforming to ASTM A 366 and ASTM A 568.
- B. Door face sheets shall be formed from one sheet of metal with no seams permitted on the door face. Seams shall be permitted on the vertical edge of the door only. Welds on 2-inch centers shall occur around the perimeter of the door using the projection welding method. Tops shall be flush and closed with no holes. Top and bottom of door shall be closed with a minimum 16-gauge flush or inverted closure channel.
- C. Polystyrene foam core shall be self extinguishing, non-toxic in case of fire.
- D. The clearance for doors shall be 3/32- to 1/8-inch at jambs and heads, and 1/8- to 3/16-inch at meeting stiles of pair of doors. The lock edges of stiles shall be beveled 1/8 inch in 2 inches for steel doors.

- E. The top and bottom edges of all exterior steel doors shall be closed to provide a weather seal. This seal shall be provided as part of the door construction or by the addition of inverted steel channels or other suitable shapes welded, caulked, and sealed to the face sheets.
- F. All exterior double doors shall have a steel astragal attached to the active leaf.
- G. All double doors shall have an astragal.
- H. Louvers shall be the manufacturer's standard sight-proof stationary louvers.
- J. Provide a latch guard at all exterior metal doors.

2.04 LABELED STEEL DOORS AND FRAMES

- A. Where indicated on Drawings, furnish UL Labels with appropriate fire resistance ratings for the class of opening specified. Both doors and frame shall have labels attached. Construction details and hardware application shall be as approved by the labeling authority.
- B. All approved fire doors shall be arranged to either remain in normally closed position with suitable self-closing device or in normally open position with a fusible element or smoke detector actuated mechanism which will close the door automatically in case of fire, as indicated on Drawings and/or as required by governing authorities.
- C. Pairs of UL label fire doors shall have an overlapping steel astragal welded or bolted to the active leaf.
- D. The clearances for fire doors shall be as required by the authority having jurisdiction.
- E. Louvers shall be door manufacturer's standard as specified above; equipped with UL approved fusible link fire damper for label required.

2.05 GLAZING

- A. Glazing Stops and Beads: Stops and beads for glazed openings shall be formed from 20-gauge steel and furnished with synthetic rubber or felt gaskets. Secure beads to frames on secure side of opening with oval-head, countersunk phillips-head fasteners approximately 12 inches to 16 inches on center. Miter folded shapes at corners. Butt or miter square or rectangular beads at corners. Glazing arrangements shall accommodate glass thickness indicated.
- B. Glazing materials shall be as specified under Section 08800 - GLASS AND GLAZING. In fire rated doors provide clear fire rated glass.

2.06 DOOR LOUVERS

- A. Exterior Door Louvers: Fabricate louvers and mount flush into doors without overlapping moldings on surface of door facing sheets. Provide internal support as recommended by louver manufacturer. Prime paint after fabrication.
 - 1. Provide not less than 16 gage galvanized steel sheet. Fabricate units with stationery, weatherproof Z-shaped blades and U-shaped frames, not less than 1-3/8 inches thick. Space louver blades not more than 1-1/2 inches o.c. Assemble units by welding.
 - 2. Provide removable insect screens on interior side of frame, consisting of 18-14 aluminum wire mesh, 0.011-inch diameter, in rigid, formed metal frame.
- B. Fire-Rated Louvers: Louvers shall be the manufacturer's standard sightproof stationary louvers

constructed of inverted V-shaped or Y-shaped blades.

1. Provide manufacturer's standard insect and bird screen backup for all exterior louvers. Screens shall be removable for maintenance and cleaning.
2. Equip louvers with UL approved fusible link fire damper for label required.

2.07 FINISH

A. Shop Applied Finish:

1. Apply a primed finish to all galvanized and non-galvanized metal surfaces furnished under this Section. Clean and chemically treat metal surfaces to assure maximum paint adherence; follow with a dip or spray coat of rust-inhibitive metallic oxide, zinc chromate, or synthetic resin primer on all exposed surfaces.
2. Finished surfaces shall be smooth and free from irregularities and rough spots. Paint shall be baked, or oven dried. The time and temperature for drying shall be in accordance with manufacturer's recommendations for developing maximum hardness and resistance to abrasion.

B. Paint Finish: Other than pre-finished doors and frames, finish painting of steel doors and frames is specified under Section 09900 - PAINTING. Paint all surfaces including top and bottom.

C. Color of all steel doors and frames to be selected by Architect.

2.08 HARDWARE PROVISIONS AND REINFORCING

A. Hardware Provisions for Pressed Steel Frames:

1. Unless a different strike is noted on Hardware Schedule, frames shall have steel hinge plate reinforcement projection welded with provisions for 4-1/2 inch x 4-1/2 inch full mortise type hinges and steel strike tap plate reinforcement projection welded with provisions for Universal ANSI A115.1 or A115.2 strike.
2. Frames shall be provided for 1-1/2 pair of hinges, unless noted otherwise. Mortar guards shall be formed from 26-gauge galvanized steel and shall be welded in place.
3. Closer reinforcement shall be sleeve type installed in frame header for all doors which are indicated to receive door closers.
4. Provide metal reinforcements for all other hardware items indicated.
5. Minimum gauges of hardware reinforcing plates shall be as follows:
 - a. Hinge Reinforcements: 8 gauge, 1-1/4 x 10-inch minimum size.
 - b. Lock Reinforcements: 12 gauge.
 - c. Closer Reinforcements: 12 gauge.
 - d. Surface-Mounted Hardware: 12 gauge.

B. Hardware Provisions for Steel Doors:

1. Mortise, reinforce, drill, and tap doors at the factory to receive all mortised type hardware. Drilling and tapping for surface applied hardware shall be performed in the field. Provide

concealed metal reinforcement for surface applied hardware indicated in the Hardware Schedule.

2. Doors shall have steel integral hinge reinforcement with provisions for 4-1/2 inch x 4-1/2 inch full mortise template type hinges for 1-1/2 pair of hinges per door, unless noted otherwise.
 3. Doors shall have steel integral lock reinforcement with provisions for locksets as indicated.
 4. Doors shall have steel closer reinforcement concealed in the door for all doors which are indicated to receive closers.
 5. Minimum gauges for hardware reinforcing plates shall be as follows:
 - a. Hinge Reinforcements: 8 gauge.
 - b. Lock Reinforcements: 12 gauge.
 - c. Closer Reinforcements: 12 gauge.
 - d. Surface Mounted Hardware: 16 gauge.
 6. Provide an astragal at all double doors.
 7. Provide a latch guard at all exterior doors.
 8. Provide a weather seal and sweep at all exterior doors.
 9. Install on all exterior doors not provided with a rain hood or otherwise under cover a Pemko 346 AL Drip Cap
 10. Provide fire-rated hardware at all fire rated doors.
- C. Location of Hardware: The location of hardware in connection with hinged and other swing type hollow metal doors and frames shall be as follows, unless indicated or specified otherwise:
1. Top Hinge: To manufacturer's standard, but not greater than 5 inches from head rabbet to top of hinge.
 2. Bottom Hinge: To manufacturer's standard but not greater than 10 inches from finish floor to bottom of hinge.
 3. Intermediate Hinge: Equally spaced between top and bottom hinge.
 4. Locks (cylindrical, mortise, unit or integral): 38 inches from finish floor to center of strike.
 5. Refer to Section 08710 - FINISH HARDWARE for additional locations.
- D. Anchors:
1. All frames shall have an integral or welded on sill anchor.
 2. Furnish six (6) per frame, 10 inch long corrugated or other deformed type adjustable anchors as condition applies.
- 2.09 WORKMANSHIP
- A. All work shall be shop fabricated to required profiles by forming and welding with corners, angles, and

edges straight and sharp.

- B. Fit and fabricate accurately with corners, joints, seams and surfaces free from warp, buckles or other defects.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine the areas and conditions under which steel doors and frames are to be installed. Do not proceed with steel door and frame installation until unsatisfactory conditions have been corrected.

3.02 DOOR AND FRAME INSTALLATION

- A. General: Install standard steel doors, frames, and accessories in accordance with approved shop drawings, manufacturer's data and as herein specified.
- B. Steel Frames: Comply with provisions of SDI-105 "Recommended Erection Instructions for Steel Frames," unless otherwise indicated.
 - 1. Except for frames located at in-place drywall installations, place frames prior to construction of enclosing walls and ceilings. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is completed, remove temporary braces and spreaders leaving surfaces smooth and undamaged.
 - 2. In masonry and cast-in-place concrete construction, wall anchors shall be located at the hinge and strike levels, and frames shall be grouted solid (Jambs and Heads).
 - 3. Install fire-rated frames in accordance with NFPA Standard No. 80.
 - 4. In concrete construction, locate three (3) wall anchors per jamb at hinge and strike levels.
- C. Steel Doors: Fit steel doors accurately in frames, within clearances specified in SDI-100 "Recommended Specifications for Standard Steel Doors and Frames."
 - 1. Place fire-rated doors with clearances as specified in NFPA Standard No. 80.

3.03 GLAZING

- A. Glazing Standards: Comply with recommendations of Glass Association of North America (GANA) "Glazing Manual" and "Sealant Manual" except where more stringent requirements are indicated. Refer to those publications for definitions of glass and glazing terms not otherwise defined in this section or other referenced standards.
- B. Inspect all sash, frames, and surroundings to be glazed and verify compliance with the following:
 - 1. The frames are firmly anchored in proper position, plumb and square within 1/8 inch of nominal dimensions on approved shop drawings.
 - 2. That all rivet, screw, bolt and nail heads, welding fillets and other projections are removed from glazing rabbets to provide the specified clearances.
 - 3. That all corners and fabrication intersections are sealed, and frames are weathertight.
 - 4. That all rabbets are of sufficient depth and width to receive the glass and provide the required overlap of glass.

- B. The sizes of glass or polycarbonate sheet indicated on drawings are approximate only; determine the actual sizes required by measuring frames to receive the glass at the project site, or from guaranteed dimensions provided by the frame supplier. Dimensions for glass and glass holding surroundings shall be coordinated to provide the following minimum clearances:
 - 1. At perimeter edge of glass on all four sides, provide clearance equal to glass thickness.
 - 2. The sealer space between the face of glass and fixed or applied glazing stops shall not be less than 1/16 inch plus glass and sash tolerance, but 1/8 inch minimum.
- B. No attempt shall be made to change the size of heat strengthened or tempered glass units after they leave the factory. Nipping to remove flares or to reduce oversized dimensions of any type of glass shall not be permitted.

3.04 ADJUST AND CLEAN

- A. Examine door for scratches, dents and perforations. Hand tool or mechanically remove loose rust. Alter damaged area as required to provide filler anchorage. Treat the surface with rust neutralizing primer. Fill with metal-based filler. Prime and paint as required.
- A. Prime Coat Touch-up: Immediately after installation, sand smooth all rusted or damaged areas of prime coat and apply touch-up of compatible air-drying primer.
- B. Final Adjustments: Check and readjust operating finish hardware items, leaving steel doors and frames undamaged and in complete and proper operating condition.
- C. Cleaning: Immediately prior to final inspection and before Final Acceptance, remove all protective materials and clean all exposed members. Thoroughly clean all glass, including removal of manufacturer's labels or any other material or substance on the glass, in the event this has not been performed at a prior time. Cleaning shall be performed by the use of cleaning materials and methods that will not damage the glass or surroundings in any way.
 - 1. Do not use abrasives or harmful cleaning agents.
 - 2. Remove from the premises all waste materials and debris accumulating due to this work.

END OF SECTION 08110

SECTION 08210

WOOD DOORS

PART 1 - GENERAL

1.01 SUMMARY

- A. Provide all wood doors as shown on the Drawings, in schedules, and as herein specified.
- B. Types of doors required include the following:
 - 1. Solid Core Flush Wood Doors with Veneer Faces.
 - 2. Solid Core Flush Wood Doors with Lites and/or Louvers.
- C. Factory-preparation for hardware (pre-machining) for wood doors is included under this Section.

1.02 RELATED WORK

- A. FINISH CARPENTRY AND MILLWORK: Section 06200.
- B. STEEL DOORS AND FRAMES: Section 08110.
- C. FINISH HARDWARE: Section 08710.
- D. GLASS AND GLAZING: Section 08800.
- E. PAINTING: Section 09900.

1.03 QUALITY ASSURANCE

- A. Source Limitations: Obtain flush wood doors through one source from a single manufacturer.
- B. Reference Standards: Comply with the applicable requirements of the following standards unless otherwise indicated or specified:
 - 1. Architectural Woodwork Institute (AWI).
 - a. Architectural Woodwork Quality Standards.
 - 2. National Fire Prevention Association (NFPA).
 - a. Referenced Standards.
 - 3. Underwriters' Laboratories (UL).

- C. Quality Standard: Comply with referenced AWI Standards. Provide AWI Quality Certification Labels or an AWI letter of licensing for Project indicating that doors comply with requirements of grades specified.
- D. Fire-Rated Wood Doors: Doors complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to NFPA 252. Test pressure pursuant to Code requirements.

1.04 SUBMITTALS

- A. Product Data: Submit door manufacturer's product data, specifications, and installation instructions for each type of wood door.
 - 1. Include details of core and edge construction, trim for lite openings and louvers, and similar components.
 - 2. Include certifications as may be required to show compliance with specifications.
- B. Shop Drawings:
 - 1. Submit shop drawings indicating location and size of each wood door, elevation of each type of wood door, details of construction, location and extent of hardware blocking, fire ratings (if required), and other pertinent data.
 - 2. A schedule of wood doors shall be provided using the same opening numbers referenced on the Drawings and the same schedule format.

1.05 DELIVERY, HANDLING AND STORAGE

- A. Comply with requirements of referenced standard and manufacturer's written instructions.
- B. Package doors individually in plastic bags or cardboard cartons.
- C. Mark each door on top and bottom rail with opening number used on shop drawings.

1.06 WARRANTY

- A. Special Warranty: Submit written agreement on door manufacturer's standard form signed by manufacturer, Installer, and Contractor, agreeing to repair or replace defective doors which have warped (bow, cup, or twist) or which show telegraphing of core construction below face veneers, or do not conform to AWI tolerance limitations.
- B. The warranty shall also include re-finishing and re-installation that may be required due to repair or replacement of defective doors.
- C. Warranty shall be in effect during the following period of time after date of Substantial Completion:
 - 1. Solid Core Flush Interior Doors with Veneer Faces: Life of installation.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Products: Provide products by one of the following manufacturers:

1. Algoma Hardwoods, Inc.
2. Eggers Hardwood Products Corp.
3. Southwood Door Co.
4. Marshfield Door Systems.

2.02 MATERIALS AND COMPONENTS, GENERAL

A. Provide flush wood doors complying with applicable requirements of referenced standards for type(s) of doors indicated and as specified.

2.03 INTERIOR FLUSH WOOD DOORS

A. Solid Core Doors shown on drawings as Painted Finish:

1. Species and Cut for Door Faces: Any closed-grain hardwood of mill option.
2. Grade: AWI Custom.
3. Core Construction: PC-5 (Particleboard Core).
4. Edge Construction: Provide manufacturer's standard laminated edge construction for improved screw-holding capability and split resistance as compared to edges composed of a single layer of treated lumber.
5. Paint all surfaces including top and bottom.

B. Solid Core Doors shown on drawings as Stained Finish

1. Wood Veneer (5-Ply): WDMA I.S.1A Premium Grade Sliced Red Oak or as required, see 2.07 below.
2. Factory finish doors in accordance with WDMA G-17 Finish System Description or AWI Division 1500-S-4 – Finish System Standards. Factory finish to be water-based stain and ultraviolet (UV) cured polyurethane to comply with EPA Title 5 guidelines for Volatile Organic Compound (VOC) emissions limitations. Finish must meet or exceed performance standards of TR-6 catalyzed polyurethane. **Finish all surfaces including top and bottom.**
3. Paint interior Wood Doors PT-1/Benjamin Moore 2124-70 'Distant Grey'.

2.04 FIRE-RATED SOLID CORE WOOD DOORS

- A. Faces, Edges, and AWI Grade: Provide faces, edges, and grade to match non-rated doors in same area of building, unless otherwise indicated.
- B. Construction: Manufacturer's standard core construction to provide fire-resistance rating indicated.

2.05 LOUVERS AND LIGHT FRAMES

- A. Metal Louvers (Where Indicated): Vision-proof design. Galvanized steel, 0.0396 inch thick, hot-dip zinc coated, and factory primed for paint finish.
- B. Fire Door Louvers: Metal louvers with fusible link and closing device, listed and labeled for use in doors with fire rating of one and one-half hours and less. Galvanized steel, 0.0396 inch thick, hot-dip zinc coated and factory primed for paint finish.
- C. Wood Beads for Light Openings in Wood Doors: Same wood species as door faces. Flush rectangular bead profile.
- D. Wood-Veneered Beads for Light Openings in Fire Doors: Manufacturer's standard wood-veneered noncombustible beads matching veneer species of door faces and approved for use in doors of fire rating indicated. Include concealed metal glazing clips where required for opening size and fire rating indicated.

2.06 PREFITTING AND PREPARATION FOR HARDWARE

- A. Prefit and premachine wood doors at factory.
- B. Comply with tolerance requirements of AWI for prefitting. Machine doors for hardware requiring cutting of doors. Comply with final hardware schedules and door frame shop drawings and with hardware templates and other essential information required to ensure proper fit of doors and hardware.
- C. Take accurate field measurements of hardware mortises in metal frames to verify dimensions and alignment before proceeding with machining in factory.
- D. Openings: Cut and trim openings through doors to comply with applicable requirements of referenced standards for kinds of doors required.
 - 1. Light Openings: Trim openings with moldings of material and profile indicated.
 - 2. Louvers: Factory install louvers in prepared openings.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Installer shall examine door frames and verify that frames are correct type and have been installed as required for proper hanging of corresponding doors.

3.02 INSTALLATION

- A. Condition wood doors to average prevailing humidity in installation area prior to hanging.

- B. Refer to Section 08710 - FINISH HARDWARE for installation of hardware.
 - C. Install wood doors in accordance with manufacturer's published instructions and as indicated on Drawings.
 - D. Install fire-rated doors in corresponding fire-rated frames in accordance with requirements of NFPA 80.
 - E. Pre-fit doors: fit to frames and machine for hardware to whatever extent not previously worked at factory as required for proper fit and uniform clearance at each edge.
- 3.03 Miscellaneous
- A. Provide an astragal at all double doors (paired doors).
 - B. Clearances:
 - 1. For non-rated doors, provide clearances of 1/8-inch at jambs and heads; 1/8-inch at meeting styles for pairs of doors; and 3/4-inch from bottom of door to top of decorative floor finish or covering. Where threshold is shown and/or scheduled, provide 1/4-inch clearance from bottom of door to top of threshold, unless specific undercuts are indicated on Door Schedule.
 - 2. For fire-rated doors, provide clearances complying with NFPA 80.
 - G. Bevel non-rated doors 1/8-inch in 2-inches at lock and hinge edges.
 - H. Bevel fire-rated doors 1/8-inch in 2-inches in lock edge; trim stiles and rails only to extent permitted by labeling agency.
- 3.03 ADJUST AND CLEAN
- A. Operation: Re-hang or replace doors that do not swing or operate freely as directed by Architect.
 - B. Finished Doors: Re-finish or replace doors damaged during installation, as directed by Architect.

END OF SECTION 08210

SECTION 08300
HIGH SPEED ROLLING DOORS (IMPACT RESISTANT)

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. High-speed insulated roll-up doors. 16' wide x 12' high, Impact Rated Door Numbered 130.
- B. Wiring from electric circuit disconnect to operator to control station.

1.02 RELATED SECTIONS

- A. 05500 Metal Fabrications. Door opening jamb and head members.
- B. 06100 Rough Carpentry. Door opening jamb and head members.
- C. 08700 Hardware. Padlocks. Master Keyed cylinder.
- D. 09900 Painting. Field painting.
- E. Division 16. Electrical wiring and conduit, fuses, disconnect switches, connection of operator to power supply, and installation of control station and wiring.

1.03 REFERENCES

- A. NEMA - National Electrical Manufacturers Association.
- B. LED - Light Emitting Diode.

1.04 SYSTEM DESCRIPTION

- A. Motor type: AC drive, and variable speed with soft acceleration and braking. Mechanical release lever on side column allows door to be easily opened in the event of a power failure.

1.05 SUBMITTALS

- A. Submit the following:
 - 1. Shop Drawings: Indicate pertinent dimensioning, anchorage methods, hardware locations, and installation details.
 - 2. Product Data: Provide general construction, component connections and details, and electrical equipment, operation instructions, and information.
 - 3. Warranty: Submit sample warranty.
 - 4. Manufacturer's Installation: Indicate installation sequence and procedures, adjustment, and alignment procedures.

1.06 MAINTENANCE DATA

- A. Maintenance Data: Scheduled maintenance program available to include lubrication requirements and frequency, periodic adjustments required, scheduled maintenance suggested, manufacturer's data sheets, and equipment inter-connection diagrams.

1.07 REGULATORY REQUIREMENTS

- A. Electrical components UL listed.
- B. Electrical control panel NEMA approved.

1.08 QUALITY ASSURANCE

- A. Furnish high-speed roll doors and all components and accessories by one manufacturer.
- B. Specific door model used must have a proven track record of successful installations in similar applications of no less than 3 years. References to be provided upon request.

1.09 FIELD MEASUREMENTS

- A. Verify field measurements are as indicated on shop drawings.

1.10 COORDINATION

- A. Coordinate the work with installation of electric power and locations and sizes of conduit.

1.11 WARRANTY

- A. One-year parts, one-year labor.

PART 2 - PRODUCTS

2.01 PRODUCTS

- A. Rytec Corporation Spiral Door.
- B. Substitutions per Section 01600.
- C. Impact Rated.

2.02 MATERIALS

- A. Door Panel: double-walled, aluminum slats are 6 inches high by 1 9/16 inches thick. Width is variable. Integral rubber weatherseal between each of the panels.
- B. Side Frames: Galvanized steel side frames with full height weatherseal on both sides to seal against door panel. Dual thru-beam photo-eye standard. No exterior mounted coil cord.

- C. Bottom Bar: Extruded aluminum bottom bar with electric, reversing edge that reverses the door upon contacting an object.
- D. Counterbalance: Up to six extension springs in each side column, depending on the size of the door. Springs assist the motor in opening the door. Mechanical release lever on side column allows door to be easily opened in the event of a power failure.
- E. Drive system: 2 HP 208, 230/460 Volt, three-phase motor with variable speed AC drive which allows for soft acceleration and braking.
- F. Travel Speed: Opens at up to 60 inches per second and closes at 30 inches per second.
- G. Electrical Controls: AC-drive system with self-diagnostic capability and pre-programmed menu options. Housed in a NEMA 4 electrical enclosure with vision window. Includes cycle counter and 2 digit display. Incorporates self-adjusting limit switches. Control panel to be fully assembled, wired and tested at factory.
- H. Motion Sensor: Provide Falcon Motion Sensor
Falcon Motion Sensor: The Falcon Motion detector utilizes microwave technology that operates at 24.125 GHz (K-band frequency).
 - a. The sensor shall utilize a planar (flat antenna), and shall be capable to discriminate between vehicular traffic and pedestrians.
 - b. The sensor shall be concealed within a NEMA-4 rated plastic housing and shall have a crimp style connector to prevent water intrusion through the feed cable.
 - c. The sensor shall be fully adjustable by remote control and shall have a unidirectional sensing capability to acknowledge approaching or departing traffic only.
 - d. The sensor shall be capable to ignore traffic moving parallel to the sensor.
 - e. Sensor Dimensions: 4 inches (102 mm) wide by 3-3/4 inches (96 mm) high by 5 inches (127 mm) deep.
 - f. Mounting Height: 11.5 feet (3.5 m) and 23 feet (7.0 m) above finished floor.
 - g. Mounting heights between 6.5 feet (1.98 m) and 11.5 feet (3.5 m), use Model "Falcon-XL".
 - h. Finish: ABS & Polycarbonate with black anodized metal mount bracket.
- H. All components factory finished. Color as selected by Architect from manufacturer's standard RAL selection.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that opening sizes, tolerances, and conditions are acceptable.

3.02 INSTALLATION

- A. Install door unit assembly in accordance with manufacturer's instructions.
- B. Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.
- C. Fit and align assembly including hardware; level to plumb to provide smooth operation.

- D. Coordinate installation of electrical service. Complete wiring from disconnect to unit components.

3.03 ADJUSTING

- A. Adjust door and operating assemblies.
- B. Test and adjust door(s), if necessary, for proper operation.

3.04 CLEANING

- A. Clean door and components.

END OF SECTION 08300

SECTION 08310
ACCESS DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes:
 - 1. Non-fire rated ceiling access panels.
 - 2. Related hardware and attachments.
- B. Related Sections:
 - 1. Section 09220 - Plaster.
 - 2. Section 09250 - Gypsum Board Assemblies.
 - 3. Section 09900 – Paint.
 - 4. Division 15 - Mechanical.
 - 5. Division 16 – Electrical.

1.2 SYSTEM DESCRIPTION

- A. Design Requirements:
 - 1. Verification: Obtain specific locations and sizes for required access doors and frames from trades, including mechanical and electrical, requiring access to concealed equipment and indicate on submittal schedule.

1.3 SUBMITTALS

- A. Comply with Section 01300
- B. Shop Drawings:
 - 1. Door and panel units: Show types, elevations, thickness of metals, full size profiles of door members.
 - 2. Hardware: Show materials, finishes, locations of fasteners, types of fasteners, locations and types of operating hardware, and details of installation.
 - 3. General: Show connections of units and hardware to other Work. Include schedules showing location of each type and size of door and panel units.
- C. Product Data: Manufacturer's technical data for each type of access door and panel assembly, including setting drawings, templates, fire-resistive characteristics, finish requirements, and details of anchorage devices.
 - 1. Include complete schedule, types, locations, construction details, finishes, latching or locking provisions, and other pertinent data.
- D. Manufacturer's Installation Instructions: Indicate installation requirements and rough-in dimensions.
 - 1. Shop drawings.
 - 2. Manufacturer's literature and data.

1.4 QUALITY ASSURANCE

- A. Comply with Section 01400
- B. Single Source Responsibility: Obtain access door and panel units, and frames for entire Project from 1 source and 1 single manufacturer.

- C. Fire-Resistance Ratings: Wherever a fire-resistance classification is indicated, provide access door and panel assemblies with panel door, frame, hinge, and latch from manufacturer listed in Underwriter's Laboratories (UL), "Building Materials Directory" for rating shown.
 - 1. Provide 90 minute UL label at 2-hour rated partitions.
 - 2. Provide 3 hour label at horizontal applications, up to 24 inch wide x 36 inch high.
 - 3. Provide 2 hour label at horizontal applications greater than 24 inch wide x 36 inch high.
- D. Size Variations: Obtain Architect's acceptance and approval of manufacturer's standard size units that may vary slightly from sizes indicated on Drawings.
- E. Coordination: Provide inserts and anchoring devices that will be built into other Work for installation of access door assemblies. Coordinate delivery with other Work to avoid delay.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Comply with Section 01500
- B. Package and ship in accordance to manufacturer's recommendations.
- C. Store in compliance to manufacturer's instructions.
 - 1. Store in dry area out of direct sunlight.

1.6 WARRANTY

- A. Provide manufacturer's written warranty.
- B. Warrant materials and workmanship against defects after completion and final acceptance of Work.
 - 1. Repair defects, or replace with new materials, faulty materials or workmanship developed during the guarantee period at no expense to Owner.
 - 2. Access Panel Warranty: 1 year from date of Substantial Completion of Project.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with requirements, provide products from the following manufacturer:
 - 1. Babcock-Davis
9300 73rd Ave. N
Brooklyn Park, MN 55428
Toll Free Hotline: 888-412-3726
Toll Free Fax: 888-312-3726
Direct Phone: 763.488.9247
Direct Fax: 763.488.9248
E-Mail: info@babcockdavis.com
Internet: www.babcockdavis.com
- B. Substitutions: Comply with Section 01600
- C. Specifications and Drawings are based on manufacturer's proprietary literature from Nystrom Building Products. Other manufacturers shall comply with minimum levels of material, color selection, and detailing indicated in Specifications or on Drawings. Architect will be sole judge of appropriateness of substitutions.

2.2 MATERIALS

- A. Commercial quality, cold steel sheet with baked on rust inhibitive gray primer.

2.3 ACCESS PANELS

- A. Non rated flush access doors, Babcock-Davis B-NP series
 - 1. Door: Fabricate from 14-gauge cold rolled sheet steel.
 - 2. Frame: Fabricate from 16-gauge cold rolled sheet steel. Provide ¼" mounting holes.
B-NP - Plaster surfaces – 22-gauge galvanized plaster bead at perimeter.
 - 3. Hinge: Concealed pin type, spring loaded to allow for door removal, set to open 175 degrees.
 - 4. Key operated cylinder cam lock with two (2) keys per lock, keyed alike.
 - 5. Finish: Phosphate dipped with factory applied prime coat.

2.4 FABRICATION

- A. Manufacture each access panel assembly as an integral unit ready for installation.
- B. Welded construction: Furnish with a sufficient quantity of ¼" mounting holes to secure access panels to types of supports indicated.
- C. Furnish number of latches required to hold door in flush, smooth plane when closed.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that rough openings for door and frame are correctly sized and located.
- B. Verify mechanical and electrical requirements for ceiling or wall access panels.
- C. Verify conditions are ideal for suitable installation.

3.2 PREPARATION

- A. Advise installers of work relating to access panel installation including rough opening dimensions, locations of supports, and anchoring methods. Coordinate delivery with other work to avoid delay.

3.3 INSTALLATION

- A. Install access door and frame units per manufacturer's written instructions.
- B. Install frames plumb and level in opening. Secure rigidly in place.
- C. Position units to provide convenient access to concealed Work requiring access.
- D. Follow manufacturer's instructions for installing access panels.
- E. Set frames to proper alignment with the wall or ceiling.
- F. Position access panels for proper access to concealed equipment requiring access.

3.4 ADJUST AND CLEAN

- A. Adjust panel after installation for proper operation.
- B. Remove and replace panels or frames that are warped, bowed, or damaged.

END OF SECTION 8310

SECTION 08330
ROLLING COILING DOORS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including General and Supplementary Conditions, and Division 1 General Requirements, apply to the work of this Section.

1.02 SUMMARY

- A. The work of this Section includes the Rolling Coiling, 45 Minute-Rated, Fusible Link, Door Number 129A at Storage # 129, and the Insulated Rolling Coiling Door 132A at the Parts Department # 132.
- B. Related Sections: Other specification sections which directly relate to the work of this Section includes, but are not limited to, the following:
 - 1. Section 05500 - Miscellaneous Metal; metal framing and supports.
 - 2. Section 08710 - Finish Hardware; key cylinders for locks.
 - 3. Section 09900 - Painting; field painting.

1.03 SYSTEM DESCRIPTION

- A. Design Requirements:
 - 1. Wind Loading: Supply doors to withstand up to 100 MPH maximum wind load.
 - 2. Cycle Life:
 - a. Design doors of standard construction for normal use of up to 20 cycle per day maximum.

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's product data and installation instructions for each type of sectional door. Include both published data and any specific data prepared for this project and Sample Warranty.
- B. Shop Drawings: Submit shop drawings for approval prior to fabrication. Include detailed plans, elevations, details of framing members, required clearances, anchors, and accessories. Include relationship with adjacent materials.
- C. Closeout Submittals:
 - a. Operation and Maintenance Manual.
 - b. Certificate stating that installed materials comply with this specification.
 - c. Warranty

1.04 QUALITY ASSURANCE

- A. Manufacturer: Sectional doors shall be manufactured by a firm with a minimum of five years' experience in the fabrication and installation of sectional doors. Manufacturers proposed for use, which are not named in these specifications, shall submit evidence of ability to meet performance and fabrication requirements specified, and include a list of five projects of similar design and complexity completed within the past five years.
- B. Installer: Installation of the rolling, coiling doors shall be performed by the authorized

representative of the manufacturer.

- C. Single-Source Responsibility: Provide doors, tracks, motors, and accessories from one manufacturer for each type of door. Provide secondary components from source acceptable to manufacturer of primary components.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials and products in labeled protective packages. Store and handle in strict compliance with manufacturer's instructions and recommendations. Protect from damage from weather, excessive temperatures, and construction operations.

1.06 WARRANTY

- A. Standard Warranty: Two years from date of shipment against defects in material and workmanship.
- B. Maintenance: Submit for owner's consideration and acceptance of a maintenance service agreement for installed products.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURER

- A. Manufacturer:
- B. Or equal per Section 01600 – Substitutions.

2.02 MATERIALS

- A. Curtain:
 - 1. Slats: No. 5F, 22-gauge, Grade 40 steel, ASTM A 653 galvanized steel zinc coating.
 - 2. Bottom Bar: Two 2x2x1/8 inch (50x50x3.2 mm) structural steel angles.
 - 3. Fabricate interlocking sections with high strength nylon end locks on alternate slats each secured with two 1/4" (6.35 mm) rivets. Provide wind locks as required to meet specified wind load.
 - 4. Slat Finish:
 - a. GalvaNex™ Coating System and phosphate treatment followed by baked-on polyester powder coat, color as selected by Architect from manufacturer's standard RAL selection; minimum 2.5 mils (0.065 mm) cured film thickness; ASTM D-3363 pencil hardness: H or better.
 - 5. Bottom Bar Finish:
 - a. Steel: Phosphate treatment followed by baked-on polyester powder coat, color as selected by Architect from manufacturer's standard RAL selection; minimum 2.5 mils (0.065 mm) cured film thickness; ASTM D-3363 pencil hardness: H or better.
- B. Guides: Fabricate with structural steel angles. Provide wind lock bars of the same material when wind locks are required to meet specified wind load. The top of inner and outer guide angles to be flared outwards to form a bell mouth for smooth entry of curtain into guides. Provide removable guide stoppers to prevent over travel of curtain and bottom bar.
Top 16 1/2" (419.10 mm) of coil side guide angles to be removable for ease of curtain installation and as needed for future curtain service.
 - 1. Finish:
 - a. Steel: Phosphate treatment followed by a corrosion inhibitive baked-on zinc-rich gray polyester powder coat; minimum 2.5 mils (0.065 mm) cured film thickness.

Color as selected from manufacturer's standard RAL selection.

- C. Counterbalance Shaft Assembly:
 - 1. Barrel: Steel pipe capable of supporting curtain load with maximum deflection of 0.03 inches per foot (2.5 mm per meter) of width.
 - 2. Spring Balance: Oil-tempered, heat-treated steel helical torsion spring assembly designed for proper balance of door to ensure that maximum effort to operate will not exceed 25 lbs (110 N). Provide wheels for applying and adjusting spring torque.
- D. Brackets: Fabricate from minimum 3/16-inch (5 mm) steel plate with permanently lubricated ball or roller bearings at rotating support points to support counterbalance shaft assembly and form end closures.
 - 1. Finish:
 - a. Phosphate treatment followed by baked-on polyester powder coat, color as selected by Architect from manufacturer's standard RAL selection; minimum 2.5 mils (0.065 mm) cured film thickness; ASTM D-3363 pencil hardness: H or better.
- E. Hood: 24-gauge galvanized steel with reinforced top and bottom edges. Provide minimum 1/4-inch (6.35 mm) steel intermediate support brackets as required to prevent excessive sag.
 - 1. Finish:
 - a. GalvaNex™ Coating System and phosphate treatment followed by baked-on polyester powder coat, color as selected by Architect from manufacturer's standard RAL selection; minimum 2.5 mils (0.065 mm) cured film thickness; ASTM D-3363 pencil hardness: H or better.
- F. Weatherstripping:
 - 1. Bottom Bar: Replaceable, bulb-style, compressible EDPM gasket extending into guides.
 - 2. Guides: Vinyl strip sealing against fascia side of curtain.
 - 3. Hood: Neoprene/rayon baffle to impede air flow above coil.
 - 4. Lintel Seal: Nylon brush seal fitted at door header to impede air flow.

2.03 ACCESSORIES

- A. Locking:
 - 1. Manual Chain Hoist: Pad lockable chain keeper on guide for Door # 129A.
 - 2. Electronic controlled at Door # 131A.
- B. Vision Panels: Not used
- C. Operator and Bracket Mechanism Cover: Provide 24-gauge galvanized steel sheet metal cover to provide weather resistance at car wash. Finish to match door hood.

2.4 OPERATION

- A. Manual Chain Hoist: Provide chain hoist operator with endless steel chain, chain pocket wheel and guard, geared reduction unit, and chain keeper secured to guide.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Take field dimensions and examine conditions of substrates, supports, and other conditions under which this work is to be performed. Do not proceed with work until unsatisfactory conditions are corrected.

3.02 INSTALLATION

- A. Examine substrates upon which work will be installed and verify conditions are in accordance with approved shop drawings.
- B. Coordinate with responsible entity to perform corrective work on unsatisfactory substrates.
- C. Commencement of work by installer is acceptance of substrate.

3.03 ADJUSTING

- A. Following completion of installation, including related work by others, lubricate, test, and adjust doors for ease of operation, free from warp, twist, or distortion.

3.04 CLEANING

- A. Clean surfaces soiled by work as recommended by manufacturer.
- B. Remove surplus materials and debris from the site.

3.05 DEMONSTRATION

- A. Demonstrate proper operation to Owner's Representative.
- B. Instruct Owner's Representative in maintenance procedures.

END OF SECTION 08360

SECTION 08340
SECURITY GRILLES

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including General and Supplementary Conditions, and Division 1 General Requirements, apply to the work of this Section.

1.02 SUMMARY

- A. The work of this Section includes overhead-coiling security grilles.
- B. Related Sections: Other specification sections which directly relate to the work of this Section include, but are not limited to, the following:
 - 1. Section 08710 - Finish Hardware; key cylinders for locks.

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's product data and installation instructions for each type of security grille. Include both published data and any specific data prepared for this project.
- B. Shop Drawings: Submit shop drawings for approval prior to fabrication. Include detailed plans, elevations, details of framing members, required clearances, anchors, and accessories. Include relationship with adjacent materials.

1.04 QUALITY ASSURANCE

- A. Manufacturer: Security grilles shall be manufactured by a firm with a minimum of five years experience in the fabrication and installation of security grilles. Manufacturers proposed for use, which are not named in these specifications, shall submit evidence of ability to meet performance and fabrication requirements specified, and include a list of five projects of similar design and complexity completed within the past five years.
- B. Installer: Installation of security grilles shall be performed by an authorized representative of the manufacturer.
- C. Single-Source Responsibility: Provide grilles, guides, motors, and related primary components from one manufacturer for each type of grille. Provide secondary components from source acceptable to manufacturer of primary components.
- D. Pre-Installation Conference: Schedule and convene a pre-installation conference just prior to commencement of field operations, to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials and products in labeled protective packages. Store and handle in strict compliance with manufacturer's instructions and recommendations. Protect from damage from weather, excessive temperatures and construction operations.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURER

- A. Provide security grilles by Overhead Door Corporation
- B. Or equal per Section 01600

2.02 SECURITY GRILLES

- A. Trade Reference: 670 Series Overhead Coiling Grilles by Overhead Door Corporation
- B. Curtain: Horizontal 5/16" diameter rods with network of vertically interlocking links to form a pattern. Bottom bar shall be an extruded aluminum tubular shape.
 - 1. Material: Aluminum.
 - 2. Pattern: Brick pattern; horizontal spacing 4-1/2" on center.
- C. Finish: Components shall have the following finish.
 - 1. All non-galvanized, exposed ferrous surfaces shall receive one coat of rust-inhibitive primer.
 - 2. Aluminum: Mill finish, clear anodized finish.
- D. Guides: Extruded aluminum shapes with retainer grooves with continuous silicone treated wool-pile strips or PVC inserts to reduce noise and assist operation.
- E. Brackets: Minimum 3/16" steel to support barrel and counterbalance.
- F. Counterbalance: Helical torsion spring type. Counterbalance shall be housed in a steel tube or pipe barrel, supporting the curtain with deflection limited to 0.03" per foot of span. Counterbalance shall be adjustable by means of an adjusting tension wheel.
- G. Hood:
- H. Operation: Electric operated with key to open.
 - 1. Provide Model CDO gear-reduced commercial operator with a 1/2 HP motor.
 - 2. UL Listed Standard Voltages: 1/2HP 115VAC single phase
 - 3. Provide optional crank to open.
- J. Locking: Padlock

PART 3 – EXECUTION

3.01 PREPARATION

- A. Take field dimensions and examine conditions of substrates, supports, and other conditions under which this work is to be performed. Do not proceed with work until unsatisfactory conditions are corrected.

3.02 INSTALLATION

- A. Strictly comply with manufacturer's installation instructions and recommendations. Coordinate installation with adjacent work to ensure proper clearances and allow for maintenance.
- B. Instruct Owner's personnel in proper operating procedures and maintenance schedule.

3.03 ADJUSTING AND CLEANING

- A. Test security grilles for proper operation and adjust as necessary to provide proper operation without binding or distortion.
- B. Touch-up damaged coatings and finishes and repair minor damage. Clean exposed surfaces using non-abrasive materials and methods recommended by manufacturer of material or product being cleaned.

END OF SECTION 08340

SECTION 08360

SECTIONAL OVERHEAD DOORS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Glazed Aluminum Sectional Overhead Doors. 11' wide x 12' high, Full Vision, Impacted Rated, Sectional Doors, numbered 121A, 121B, 121C & 121D.
- B. Electric Operators and Controls.
- C. Operating Hardware, tracks, and support.

1.2 RELATED SECTIONS

- A. Section 03300 - Cast-In-Place Concrete: Prepared opening in concrete. Execution requirements for placement of anchors in concrete wall construction.
- B. Section 04810 – Concrete Unit Masonry Assemblies: Prepared opening in masonry. Execution requirements for placement of anchors in masonry wall construction.
- C. Section 05500 - Metal Fabrications: Steel frame and supports.
- D. Section 06100 – Rough Carpentry: Rough wood framing and blocking for door opening.
- E. Section 07900 - Joint Sealants: Perimeter sealant and backup materials.
- F. Section 08710 - Door Hardware: Cylinder locks.
- G. Section 09900 – Painting; Field painting.

1.3 REFERENCES

- A. [ANSI/DASMA 102](#) - American National Standard Specifications for Sectional Overhead Type Doors.

1.4 DESIGN / PERFORMANCE REQUIREMENTS

- A. Wind Loads: Design and size components to withstand loads caused by pressure and suction of wind acting normal to plane of wall as calculated in accordance with applicable code. See Structural Drawings.
- B. Wiring Connections: Requirements for electrical characteristics.
 - 1. 208 volts, single phase, 60 Hz.
- C. Single-Source Responsibility: Provide doors, tracks, motors, and accessories from one manufacturer for each type of door. Provide secondary components from source acceptable to manufacturer of primary components.

1.5 SUBMITTALS

- A. Submit under provisions of Section 01300-Submittals.

- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Shop Drawings: Indicate plans and elevations including opening dimensions and required tolerances, connection details, anchorage spacing, hardware locations, and installation details.
- D. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
- E. Operation and Maintenance Data.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum five years documented experience.
- B. Installer Qualifications: Authorized representative of the manufacturer with minimum five years documented experience.
- C. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories, Inc. acceptable to authority having jurisdiction as suitable for purpose specified.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened labeled packaging until ready for installation.
- B. Protect materials from exposure to moisture until ready for installation.
- C. Store materials in a dry, ventilated weathertight location.

1.8 PROJECT CONDITIONS

- A. Pre-Installation Conference: Convene a pre-installation conference just prior to commencement of field operations, to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Overhead Door Corp., 2501 S. State Hwy. 121, Suite 200, Lewisville, TX 75067. ASD. Tel. Toll Free: (800) 275-3290. Phone: (469) 549-7100. Fax: (972) 906-1499. Web Site: www.overhaddoor.com. E-mail: sales@overhaddoor.com.
- B. Building is in a Windborne Debris Zone above 140 mph and therefore, the Sectional Overhead Doors must be **IMPACT RESISTANT**.
- C. Requests for substitutions will be considered in accordance with the provisions of Section 01600.

2.2 GLAZED ALUMINUM SECTIONAL OVERHEAD DOORS

- A. Glazed Sectional Overhead Doors: 521 Series Aluminum Doors by Overhead Door Corporation.
 - 1. Door Assembly: Stile and rail assembly secured with 1/4 inch (6 mm) diameter through rods.
 - a. Panel Thickness: 1-3/4 inches (44 mm).

- b. Center Stile Width: 2-11/16 inches (68 mm)
 - c. End Stile Width: 3-5/16 inches (84 mm)
 - d. Intermediate Rail Pair Width: 3-11/16 inches (94 mm).
 - e. Top Rail Width:
 - 1) 3-3/4 inches (95 mm).
 - f. Bottom Rail Width:
 - 1) 4-1/2 inches (114 mm).
 - g. Aluminum Panels: 0.050 inch (1.3 mm) thick, aluminum.
 - h. Stiles and Rails: 6063 - T6 aluminum.
 - i. Springs:
 - 1) 50,000 cycles.
 - j. Glazing:
 - 1) Impact Resistant Polycarbonate (clear).
2. Finish and Color:
 - a. Anodized Finish: Clear anodized.
3. Wind Load Design: Provide Impact Resistant to meet the Design/Performance requirements specified.
4. Hardware: Galvanized steel hinges and fixtures. Ball bearing rollers with hardened steel races.
5. Lock: Interior galvanized single unit.
6. Weatherstripping:
 - a. Flexible bulb-type strip at bottom section.
 - b. Flexible Jamb seals.
 - c. Flexible Header seal.
7. Track: Provide track as recommended by manufacturer to suit loading required and clearances available.
8. Electric Motor Operation: Provide UL listed electric operator, size and type as recommended by manufacturer to move door in either direction at not less than 2/3 foot nor more than 1 foot per second. Operator shall meet UL325/2010 requirements for continuous monitoring of safety devices.
 - a. Entrapment Protection: Required for momentary contact, includes radio control operation.
 - 1) Photoelectric sensors monitored to meet UL 325/2010.
 - b. Operator Controls:
 - 1) Key operated control stations with open, close, and stop buttons.
 - 2) Surface mounting.
 - 3) Interior location.
 - c. Special Operation:
 - 1) Photocell operation.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until the openings have been properly prepared.
- B. Verify wall openings are ready to receive work and opening dimensions and tolerances are within specified limits.
- C. Verify electric power is available and of correct characteristics.
- D. If preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.

- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install overhead doors and track in accordance with approved shop drawings and the manufacturer's printed instructions.
- B. Coordinate installation with adjacent work to ensure proper clearances and allow for maintenance.
- C. Anchor assembly to wall construction and building framing without distortion or stress.
- D. Securely brace door tracks suspended from structure. Secure tracks to structural members only.
- E. Fit and align door assembly including hardware.
- F. Coordinate installation of electrical service. Complete power and control wiring from disconnect to unit components.

3.4 CLEANING AND ADJUSTING

- A. Adjust door assembly to smooth operation and in full contact with weatherstripping.
- B. Clean doors, frames and glass.
- C. Remove temporary labels and visible markings.

3.5 PROTECTION

- A. Do not permit construction traffic through overhead door openings after adjustment and cleaning.
- B. Protect installed products until completion of project.
- C. Touch-up, damaged coatings and finishes and repair minor damage before Substantial Completion.

END OF SECTION

SECTION 08441

ALUMINUM CURTAIN WALL

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Aluminum Curtain Wall Systems:

1. YKK AP Series YHC 300 OG (Outside Glazed – Insulated) Aluminum Curtain Wall System, Impact Rated.
2. Kawneer 1600 IR Wall System (Outside Glazed – Insulated). Impact Rated.

B. Related Sections:

1. Sealants: Dow Corning® 995 Structural Silicone Sealant.
2. Glass and Glazing: Refer to Division 8 Glass and Glazing Section for glass and glazing requirements.
3. Single Source Requirement: All products listed below shall be by the same manufacturer.
 - a. See section 08442 for Exterior Storefront.

1.02 SYSTEM PERFORMANCE DESCRIPTION

A. General Description: **Curtain Wall System is required to be impact resistant** and must meet Components and Cladding requirements found on the Structural Drawings.

B. Performance Requirements: Provide aluminum anodized aluminum finish curtain wall systems that comply with performance requirements indicated, as demonstrated by testing manufacturer's assemblies in accordance with South Florida Building Code Test Protocols TAS 201, TAS 202 and TAS 203.

1. Wind Loads: Completed curtain wall system shall withstand wind pressure loads normal to wall plane indicated:
 - a. Structural Performance:
 - 1) Positive Pressure: 56.7 psf.(worst case scenario)
 - 2) Negative Pressure: -61.5 psf.(worst case scenario)Note: GC to confirm minimum requirements for components and cladding as stated on structural drawings.
2. Deflection: Maximum allowable deflection in any member when tested in accordance with ASTM E 330-90 with allowable stress in accordance with AA Specifications for Aluminum Structures:
 - a. Without Horizontals: L/175 or 3/4" (19.1mm) maximum.
 - b. With Horizontals: L/175 or L/240 + 1/4" (6.4mm) for spans greater than 13'-6" (4.1m) but less than 40'-0" (12.2m).

3. Thermal Movement: Provide for thermal movement caused by 180 degrees F. (82.2 degrees C.) surface temperature, without causing buckling stresses on glass, joint seal failure, undue stress on structural elements, damaging loads on fasteners, reduction of performance, or detrimental effects.
 4. Air Infiltration: Completed curtain wall systems shall have 0.01 CFM/FT² (0.18 m³/h·m²) maximum allowable infiltration when tested in accordance with ASTM E 283-91 at differential static pressure of 6.24 PSF (299 Pa).
 5. Water Infiltration: No uncontrolled water, other than condensation, on indoor face of any component when tested in accordance with ASTM E 331-93 at test pressure differential of 20 PSF (958 Pa). Water test to be performed immediately after design pressure test.
 6. Thermal Performance: When tested in accordance with AAMA 1503.1-88 and NFRC 102:
 - a. Condensation Resistance Factor (CRF): A minimum of 71.
 - b. Thermal Transmittance U Value: 0.41 BTU/HR/FT²/°F or less.Note: The CRF for the glazed system as a whole will be affected by the characteristics of the glass specified.

1.03 SUBMITTALS

- A. General: Prepare, review, approve, and submit specified submittals in accordance with "Conditions of the Contract" and Division 1 Submittals Sections. Product data, shop drawings, samples, and similar submittals are defined in "Conditions of the Contract."
- B. Product Data: Submit product data for each type curtain wall series specified. Include Florida Product Approval Documentation.
- C. Substitutions: Whenever substitute products are to be considered, supporting technical data, samples and test reports must be submitted ten (10) working days prior to the bid date to make a valid comparison.
- D. Shop Drawings: Submit shop drawings showing layout, profiles, and product components, including anchorage, accessories, finish colors and textures.
- E. Samples: Submit verification samples for colors on actual aluminum substrates indicating full color range expected in installed system.
- F. Quality Assurance / Control Submittals:
 1. Test Reports: Submit certified test reports showing compliance with specified performance characteristics and physical properties.
 2. Installer Qualification Data: Submit installer qualification data.
- G. Closeout Submittals:
 1. Warranty: Submit warranty documents specified herein.
 2. Project Record Documents: Submit project record documents for installed materials in accordance with Division 1 Project Closeout (Project Record Documents) Section.

1.04 QUALITY ASSURANCE

- A. Qualifications:
 1. Installer Qualifications: Installer experienced (as determined by contractor) to perform work of this section who has specialized in the installation of work similar to that required for this project. If requested by Owner, submit reference list of completed projects.

2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction process.
- B. Mock-Ups (Field Constructed): Install at project site a job mock-up using acceptable products and manufacturer approved installation methods. Obtain Owner's and Architect's acceptance of finish color, and workmanship standard.
 1. Mock-Up Size: +/- 6'-0"x10'-0"
 2. Maintenance: Maintain mock-up during construction for workmanship comparison; remove and legally dispose of mock-up when no longer required.
 3. Incorporation: Mock-up may be incorporated into final construction upon Owner's approval.
- C. Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions, and manufacturer's warranty requirements

1.05 PROJECT CONDITIONS / SITE CONDITIONS

- A. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays

1.06 WARRANTY

- A. Project Warranty: Refer to "Conditions of the Contract" for project warranty provisions.
- B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under the Contract Documents.
 1. Beneficiary: Issue warranty in the legal name of the project Owner.
 2. Warranty Period: 10 years commencing on Date of Substantial Completion.
 3. Warranty Acceptance: Owner is sole authority who will determine acceptability.

PART 2 PRODUCTS

2.01 MANUFACTURERS (Acceptable Manufacturers/Products)

- A. Acceptable Manufacturers:
 1. Curtain Wall System: YKK AP YHC 300 OG Curtain Wall System.
YKK AP America Inc.
7680 The Bluffs, Suite 100
Austell, GA 30168
Telephone: (678) 838-6000;
Fax: (678) 838-6001
 2. Kawneer Aluminum Curtain Wall: 1600IR Wall System.
Kawneer Company, Inc.
555 Guthridge Court,
Technology Park/Atlanta,
Norcross, GA 30092
Telephone: (770) 449-5555
Fax: (770) 734-1560

- B. Curtain Wall Framing System:
 - 1. Description: Framing System shall be thermally improved. Horizontal and vertical members shall have a nominal face dimension of 3 inches, depth as indicated on the shop drawings. The framing system shall provide a flush glazed appearance on all sides with no protruding glass stops.
 - 2. Glazing: Manufacturer's standard silicone compatible EPDM glazing gaskets to inhibit water infiltration at the exterior and Dow Corning® 995 Structural Silicone Sealant with fixed stops at the interior; interior spacers are to be silicone.

2.02 MATERIALS

- A. Extrusions: ASTM B 221 (ASTM B 221M), 6063-T5 Aluminum Alloy.
- B. Aluminum Sheet:
 - 1. Anodized Finish: ASTM B 209 (ASTM B 209M), 5005-H14 Aluminum Alloy, 0.050" (1.27 mm) minimum thickness.
 - 2. Painted Finish: ASTM B 209 (ASTM B 209M), 3003-H14 Aluminum Alloy, 0.080" (1.95 mm) minimum thickness. (Not Used)

2.03 ACCESSORIES

- A. Manufacturer's Standard Accessories:
 - 1. Fasteners: Zinc plated steel concealed fasteners; Hardened aluminum alloys or AISI 300 series stainless steel fasteners. Joint fasteners may be concealed.
 - 2. Sealant: Non-skinning type, AAMA 803.3
 - 3. Glazing: Setting blocks, edge blocks, and spacers in accordance with ASTM C 864, shore durometer hardness as recommended by manufacturer; exterior glazing silicone compatible EPDM gaskets, in accordance with ASTM C 864, designed to lock into gasket reglet, interior by means of silicone spacer and structural silicone adhesive.
 - 4. Glazing Adhesive: Dow Corning® 995 Structural Silicone.

2.04 RELATED MATERIALS (Specified In Other Sections)

- A. Glass: Refer to Division 8 Glass and Glazing Section for glass materials.

2.05 FABRICATION

- A. Shop Assembly: Fabricate and assemble units with joints only at intersection of aluminum members with uniform hairline joints; rigidly secure, and sealed in accordance with manufacturer's recommendations.
 - 1. Hardware: Drill and cut to template for hardware. Reinforce frames and door stiles to receive hardware in accordance with manufacturer's recommendations.
 - 2. Welding: Conceal welds on aluminum members in accordance with AWS recommendations or methods recommended by manufacturer. Members showing welding bloom or discoloration on finish or material distortion will be rejected.

2.06 FINISHES AND COLORS

- A. Kynar Finish: Anodized Aluminum Finish.

PART 3 EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS / RECOMMENDATIONS

- A. Compliance: Comply with manufacturer's product data, including product technical bulletins, installation instructions, and product carton instructions.

3.02 EXAMINATION

- A. Site Verification of Conditions: Verify conditions (which have been previously installed under other sections) are acceptable for product installation in accordance with manufacturer's instructions. The Curtain Wall Contractor shall adjust his system to compensate for adjacent elements (steel, CMU, concrete slabs, aluminum panels, etc.). Proper and professional fit and finish are the Curtain Wall Installer's responsibility.

3.03 PREPARATION

- A. Adjacent Surfaces Protection: Protect adjacent work areas and finish surfaces from damage during product installation.

3.04 INSTALLATION

- A. General: Install manufacturer's system in accordance with shop drawings, and within specified tolerances.
 1. Protect aluminum members in contact with masonry, steel, concrete, or dissimilar materials using nylon pads or bituminous coating.
 2. Shim and brace aluminum system before anchoring to structure.
 3. Verify curtain wall system allows water entering system to be collected in gutters and wept to exterior. Verify weep holes are open, and metal joints are sealed in accordance with manufacturers installation instructions.
 4. Seal metal to metal curtain wall system joints using sealant recommended by system manufacturer.
 5. Any continuous joints must be uniform throughout the run.
 6. Any joint greater than 1/8" will be rejected without question.

3.05 FIELD QUALITY CONTROL

- A. Manufacturer's Field Services: Upon request, provide manufacturer's field service consisting of site visit for inspection of product installation in accordance with manufacturer's instructions.
- B. Field Test: Conduct field test to determine watertightness of curtain wall system. Conduct test in accordance with AAMA 501.2-03. Issue a short form written report to Architect as to time, conditions, and results of test.

3.06 ADJUSTING AND CLEANING

- A. Adjusting: Adjust swing doors for operation in accordance with manufacturer's recommendations.
- B. Cleaning: The General Contractor shall clean installed products in accordance with manufacturer's instructions prior to Owner's acceptance and remove construction debris from project site. Legally dispose of debris.
- C. Protection: The General Contractor shall protect the installed product's finish surfaces from damage during construction.

SECTION 08442

EXTERIOR STOREFRONT & ALUMINUM SWING ENTRANCES

PART 1 GENERAL

Furnish all necessary materials, labor, and equipment for the complete installation of the aluminum storefront system as shown on the drawings and specified herein.

1.01 SUMMARY

- A. Section includes: Aluminum Storefront Systems
 - 1. Kawneer Trifab 451 System/Impact Resistant.
- B. Related Sections:
 - 1. Sealants: Dow Corning® 995 Structural Silicone Sealant.
 - 2. Glass and Glazing: Refer to 08800 Glass and Glazing Section for glass and glazing requirements.
 - 3. Single Source Requirement: All products listed below shall be by the same manufacturer.
 - a. Section 08441 Curtain Wall
 - b. Section 08443 Interior Storefront

1.02 SYSTEM DESCRIPTION

- A. General Description: **Exterior Storefront System is required to be impact resistant but** must meet Components and Cladding requirements found on the Structural Drawings.
- B. Performance Requirements: Provide aluminum curtain wall systems that comply with performance requirements indicated, as demonstrated by testing manufacturer's assemblies in accordance with Florida Building Code Test Protocols TAS 201, TAS 202 and TAS 203.
 - 1. Air Infiltration: Completed storefront systems shall have 0.04 CFM/FT² (0.74 m³/h·m²) maximum allowable infiltration when tested in accordance with ASTM E 283-91 at differential static pressure of 6.24 psf (299 Pa).
 - 2. Water Infiltration: No uncontrolled water other than condensation on indoor face of any component when tested in accordance with ASTM E 331-93 at test pressure differential of 12 psf (575 Pa). Water test to be performed immediately after design pressure test.
 - 3. Wind Loads: Completed storefront system shall withstand wind pressure loads normal to wall plane indicated:
 - a. Exterior Walls without steel reinforcing:
 - 1) Positive Pressure: 50 psf.
 - 2) Negative Pressure: 50 psf.Note: Refer to structural drawings for required pressure as listed under Components and Cladding (S501)
 - 4. Deflection: Maximum allowable deflection in any member when tested in accordance with ASTM E 330-90 with allowable stress in accordance with AAMA Specifications for Aluminum Structures.
 - a. Without Horizontals: L/175 or 3/4" (19.1mm) maximum.
 - b. With Horizontals: L/175 or L/240 + 1/4" (6.4mm) for spans greater than 13'-6" (4.1m) but less than 40'-0" (12.2m).

5. Thermal Movement: Provide for thermal movement caused by 180 degrees F. (82.2 degrees C.) surface temperature, without causing buckling stresses on glass, joint seal failure, undue stress on structural elements, damaging loads on fasteners, reduction of performance, or detrimental effects.

1.03 SUBMITTALS

- A. General: Prepare, review, approve, and submit specified submittals in accordance with "Conditions of the Contract" and Division 1 Submittals Sections. Product data, shop drawings, samples, and similar submittals are defined in "Conditions of the Contract."
- B. Product Data: Submit product data for each type storefront series specified. Include Florida product Approval Documentation.
- C. Substitutions: Whenever substitute products are to be considered, supporting technical data, samples and test reports must be submitted ten (10) working days prior to the bid date in order to make a valid comparison.
- D. Shop Drawings: Submit shop drawings showing layout, profiles, and product components, including anchorage, accessories, finish colors and textures.
- E. Samples: Submit verification samples for colors on actual aluminum substrates indicating full color range expected in installed system.
- F. Quality Assurance / Control Submittals:
 1. Test Reports: Submit certified test reports showing compliance with specified performance characteristics and physical properties.
 2. Installer Qualification Data: Submit installer qualification data.
- G. Closeout Submittals:
 1. Warranty: Submit warranty documents specified herein.
 2. Project Record Documents: Submit project record documents for installed materials in accordance with Section 01700 Project Closeout Section.

1.04 QUALITY ASSURANCE

- A. Qualifications:
 1. Installer Qualifications: Installer experienced (as determined by contractor) to perform work of this section who has specialized in the installation of work similar to that required for this project. If requested by Owner, submit reference list of completed projects.
 2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction process.

1.05 PROJECT CONDITIONS / SITE CONDITIONS

- A. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays.

1.06 WARRANTY

- A. Project Warranty: Refer to "Conditions of the Contract" for project warranty provisions.
- B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under the Contract Documents.
 - 1. Beneficiary: Issue warranty in the legal name of the project Owner.
 - 2. Warranty Period: Manufacturer's Standard Warranty commencing on Date of Substantial Completion.
 - 3. 10-year warranty on the anodized finish.

PART 2 PRODUCTS

2.01 MANUFACTURERS (Acceptable Manufacturers/Products)

- A. Acceptable Manufacturers:
 - 1. YKK
YKK AP America Inc.
7680 The Bluffs, Suite 100
Austell, GA 30168
Telephone: (678) 838-6000
 - 2. Kawneer Trifab 451:
Kawneer Company, Inc.
555 Guthridge Court,
Technology Park/Atlanta,
Norcross, GA 30092
Telephone: (770) 449-5555
 - 3. Aluminum Swing Entrance: YKK **Impact Resistant** Swing Doors.
 - 4. Approved equal per Section 1600
- B. Storefront Framing Systems:
 - 1. Description: Center set, exterior flush glazed; jambs and vertical mullions continuous; head, sill, intermediate horizontal attached by screw spline joinery. Continuous and wept sill flashing.
 - 2. Components: Manufacturer's standard extruded aluminum mullions, entrance doors, framing, and indicated shapes, perimeter anchor fillers and steel reinforcing as required.
 - 3. Glazing: Manufacturer's standard glazing stops with EPDM glazing gaskets to prevent water infiltration at the exterior and Dow Corning® 995 Structural Silicone Sealant with fixed stops at the interior.
- C. Heavy Duty Swing Doors:
 - 1. Description: 4-11/16" x 2-3/8" thick.
 - 2. Corner Construction: Fabricate door corners joined by concealed reinforcement secured with screws, and sigma deep penetration welding.
 - 3. Glazing: Manufacturer's standard glazing stops with EPDM glazing gaskets at the exterior and Dow 995 Structural Silicone with fixed stops at the interior.
 - 4. Weather-Stripping: Manufacturer's standard elastomer type in replaceable rabbets for stiles and rails.

5. Hardware:
 - (1-1/2 to 2) pair of Grade 1 mortise butt hinges per leaf. Ball bearing 4-1/2" x 4" Brass US 26D finish.
 - (1) Adams Rite MS1850 three-point hook bolt lock on active leaf or single door. (1) Adams Rite two-point lock on inactive leaf.
 - (1) keyed cylinder with thumb turn on the inside.
 - Smart Series 1" diameter pull/push.
 - LCN 4041 surface mounted closers w/o hold open.
 - Airtight threshold.
 - Provide Astragal for all paired doors.

2.02 MATERIALS

- A. Extrusions: ASTM B 221 (ASTM B 221M), 6063-T5 Aluminum Alloy.
- B. Aluminum Sheet:
 1. Anodized Finish: ASTM B 209 (ASTM B 209M), 5005-H14 Aluminum Alloy, 0.050" (1.27 mm) minimum thickness.

2.03 ACCESSORIES

- A. Manufacturer's Standard Accessories:
 1. Fasteners: Zinc plated steel concealed fasteners; Hardened aluminum alloys or AISI 300 series stainless steel exposed fasteners, countersunk, finish to match aluminum color.
 2. Perimeter Sealant: Non-skinning type, AAMA 803.3.
 3. Glazing: Exterior by means of EPDM glazing gaskets designed to lock into gasket reglet. Interior by means of silicone spacer and Structural Silicone Adhesive.
 4. Glazing Adhesive: Dow Corning® 995 Structural Silicone.

2.04 RELATED MATERIALS

- A. Glass: Refer to Section 08800 Glass and Glazing for glass materials.

2.05 FABRICATION

- A. Shop Assembly: Fabricate and assemble units with joints only at intersection of aluminum members with uniform hairline joints; rigidly secure, and sealed in accordance with manufacturer's recommendations.
 1. Hardware: Drill and cut to template for hardware. Reinforce frames and door stiles to receive hardware in accordance with manufacturer's recommendations.
 2. Welding: Conceal welds on aluminum members in accordance with AWS recommendations or methods recommended by manufacturer. Members showing welding bloom or discoloration on finish or material distortion will be rejected.

2.06 FINISHES AND COLORS

- A. Anodized Finish: YKK AP America Anodized Plus® Finish:
 1. Clear Anodized Aluminum: YKK AP YS1N with clear protective composite coating.

PART 3 EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS / RECOMMENDATIONS

- A. Compliance: Comply with manufacturer's product data, including product technical bulletins, installation instructions, and product carton instructions. The latest installation instructions are available at www.ykkap.com.

3.02 EXAMINATION

- A. Site Verification of Conditions: Verify conditions (which have been previously installed under other sections) are acceptable for product installation in accordance with manufacturer's instructions. Storefront Contractor shall make adjustments to his system to compensate for adjacent elements (steel, CMU, concrete slabs, aluminum panels, etc.). Proper and professional fit and finish are the Storefront Installer's responsibility.

3.03 PREPARATION

- A. Adjacent Surfaces Protection: Protect adjacent work areas and finish surfaces from damage during product installation.
 - 1. Aluminum Surface Protection: Protect aluminum surfaces from contact with lime, mortar, cement, acids, and other harmful contaminants.

3.04 INSTALLATION

- A. General: Install manufacturer's system in accordance with shop drawings, and within specified tolerances.
 - 1. Shim and brace aluminum system before anchoring to structure.
 - 2. Provide sill flashing at exterior storefront systems. Extend extruded flashing continuous with slice joints; set in continuous beads of sealant.
 - 3. Verify storefront system allows water entering system to be collected in gutters and wept to exterior. Verify metal joints are sealed in accordance with the manufacturer's instructions.
 - 4. Seal metal to metal storefront system joints using sealant recommended by system manufacturer.
 - 5. Any continuous joints must be uniform throughout the run.
 - 6. Any joint greater than 1/8" will be rejected without question.

3.05 FIELD QUALITY CONTROL

- A. Manufacturer's Field Services: Upon request, provide manufacturer's field service consisting of site visit for inspection of product installation in accordance with manufacturer's instructions.
- B. Field Test: Conduct field test to determine watertightness of storefront system. Conduct test in accordance with AAMA 501.2-03.

3.06 ADJUSTING AND CLEANING

- A. Adjusting: Adjust swing doors for operation in accordance with manufacturer's recommendations.
- B. Cleaning: The General Contractor shall clean installed products in accordance with manufacturer's instructions prior to owner's acceptance, and remove construction debris from project site. Legally dispose of debris.
- C. Protection: The General Contractor shall protect the installed product's finish surfaces from damage during construction.

END OF SECTION 08442

SECTION 08443

INTERIOR ALUMINUM STOREFRONT

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes: Aluminum Storefront: Interior application only.
 - 1. YKK AP Series YES 45 FS Storefront System (Monolithic Glazing)
 - 2. Kawneer Tri-Fab 450/451
- B. Related Sections:
 - 1. Sealants: Refer to Division 7 Joint Treatment Section for sealant requirements.
 - 2. Glass and Glazing: Refer to Section 08800 Glass and Glazing for glass and glazing requirements.
 - 3. Single Source Requirement: All products listed below shall be by the same manufacturer.
 - a. Section 08441 Curtain Wall
 - d. Section 08442 Exterior Storefront

1.02 SYSTEM PERFORMANCE DESCRIPTION

- A. Performance Requirements: Provide aluminum storefront systems that comply with performance requirements indicated, as demonstrated by testing manufacturer's assemblies in accordance with test method indicated.
 - 1. Wind Loads: Storefront system shown is intended for use on interior application only.
 - 2. Deflection: Maximum allowable deflection in any member when tested in accordance with ASTM E 330-90 with allowable stress in accordance with AA Specifications for Aluminum Structures.
 - a. Without Horizontals: $L/175$ or $3/4"$ (19.1mm) maximum.
 - b. With Horizontals: $L/175$ or $L/240 + 1/4"$ (6.4mm) for spans greater than 13'-6" (4.1m) but less than 40'-0" (12.2m).
 - 3. Thermal Movement: Provide for thermal movement caused by 180 degrees F. (82.2 degrees C.) surface temperature, without causing buckling stresses on glass, joint seal failure, undue stress on structural elements, damaging loads on fasteners, reduction of performance, or detrimental effects.
 - 4. Air Infiltration: When tested in accordance with ASTM E 283-91 at differential static pressure of 6.24 PSF (299 Pa), completed storefront systems shall have maximum allowable infiltration of 0.02 CFM/FT² (0.37 m³/h·m²).
 - 5. Water Infiltration: No uncontrolled water other than condensation on indoor face of any component when tested in accordance with ASTM E 331-93 at test pressure differential of 10 PSF (479 Pa).

1.03 SUBMITTALS

- A. General: Prepare, review, approve, and submit specified submittals in accordance with "Conditions of the Contract" and Division 1 Submittals Sections. Product data, shop drawings, samples, and similar submittals are defined in "Conditions of the Contract."
- B. Product Data: Submit product data for each type of storefront series specified.
- C. Substitutions: Whenever substitute products are to be considered, supporting technical data, samples, and test reports must be submitted ten (10) working days prior to bid date in order to make a valid comparison.

- D. Shop Drawings: Submit shop drawings showing layout, profiles, and product components, including anchorage, accessories, finish colors and textures.
- E. Samples: Submit verification samples for colors on actual aluminum substrates indicating full color range expected in installed system.
- F. Quality Assurance / Control Submittals:
 - 1. Test Reports: Submit certified test reports showing compliance with specified performance characteristics and physical properties.
 - 2. Installer Qualification Data: Submit installer qualification data.
- G. Closeout Submittals:
 - 1. Warranty: Submit warranty documents specified herein.
 - 2. Project Record Documents: Submit project record documents for installed materials in accordance with Division 1 Project Closeout (Project Record Documents) Section.

1.04 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Installer Qualifications: Installer experienced (as determined by contractor) to perform work of this section who has specialized in the installation of work similar to that required for this project. If requested by Owner, submit reference list of completed projects.
 - 2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction process.
- B. Mock-Ups (Field Constructed): Install at project site a job mock-up using acceptable products and manufacturer approved installation methods. Obtain Owner's and Architect's acceptance of finish color, and workmanship standard.
 - 1. Mock-Up Size:
 - 2. Maintenance: Maintain mock-up during construction for workmanship comparison; remove and legally dispose of mock-up when no longer required.
 - 3. Incorporation: Mock-up may be incorporated into final construction upon Owner's approval.
- C. Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions, and manufacturer's warranty requirements.

1.05 PROJECT CONDITIONS / SITE CONDITIONS

- A. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays.

1.06 WARRANTY

- A. Project Warranty: Refer to "Conditions of the Contract" for project warranty provisions.

- B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under the Contract Documents.
1. Beneficiary: Issue warranty in the legal name of the project Owner.
 2. Warranty Period: Manufacturer's Standard Warranty commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS (Acceptable Manufacturers/Products)

- A. Acceptable Manufacturers:
1. Storefront System: YKK AP YES 45 FS Storefront System.
YKK AP America Inc.
7680 The Bluffs, Suite 100
Austell, GA 30168
Telephone: (678) 838-6000
 2. Kawneer:
Kawneer Company, Inc.
555 Guthridge Court,
Technology Park/Atlanta,
Norcross, GA 30092
Telephone: (770) 449-5555
- B. Storefront Framing System:
1. Description: Center set, flush glazed; jambs and vertical mullions continuous; head, sill, intermediate horizontal attached by screw spline joinery.
 2. Components: Manufacturer's standard extruded aluminum expansion mullions, 90-degree corner posts, three-way corner post, entrance door framing, and indicated shapes.

2.02 MATERIALS

- A. Extrusions: ASTM B 221 (ASTM B 221M), 6063-T5 Aluminum Alloy.
- B. Aluminum Sheet:
1. Anodized Finish: ASTM B 209 (ASTM B 209M), 5005-H14 Aluminum Alloy, 0.050" (1.27 mm) minimum thickness.

2.03 ACCESSORIES

- A. Manufacturer's Standard Accessories:
1. Fasteners: Zinc plated steel concealed fasteners; Hardened aluminum alloys or AISI 300 series stainless steel exposed fasteners, countersunk, finish to match aluminum color.
 2. Sealant: Non-skinning type, AAMA 803.3
 3. Glazing: Setting blocks, edge blocks, and spacers in accordance with ASTM C 864, shore durometer hardness as recommended by manufacturer; Glazing gaskets in accordance with ASTM C 864.

2.04 RELATED MATERIALS (Specified In Other Sections)

- A. Glass: Refer to Section 08800 Glass and Glazing for glass materials.

2.05 FABRICATION

- A. Shop Assembly: Fabricate and assemble units with joints only at intersection of aluminum members with uniform hairline joints; rigidly secure and sealed in accordance with manufacturer's recommendations.
1. Hardware: Drill and cut to template for hardware. Reinforce frames and door stiles to receive hardware in accordance with manufacturer's recommendations.
 2. Welding: Conceal welds on aluminum members in accordance with AWS recommendations or methods recommended by manufacturer. Members showing welding bloom or discoloration on finish or material distortion will be rejected.

2.06 FINISHES AND COLORS

- A. Anodized Finish: YKK AP America Anodized Plus® Finish:
1. Clear: YKK AP YS1N with clear protective composite coating.

PART 3 EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS / RECOMMENDATIONS

- A. Compliance: Comply with manufacturer's product data, including product technical bulletins, installation instructions, and product carton instructions. Latest Installation Manual can be found at www.ykkap.com.

3.02 EXAMINATION

- A. Site Verification of Conditions: Verify conditions (which have been previously installed under other sections) are acceptable for product installation in accordance with manufacturer's instructions. Storefront Contractor shall adjust his system to compensate for adjacent elements (steel, CMU, concrete slabs, aluminum panels, etc.). Proper and professional fit and finish are the Storefront Installer's responsibility.

3.03 PREPARATION

- A. Adjacent Surfaces Protection: Protect adjacent work areas and finish surfaces from damage during product installation.
1. Aluminum Surface Protection: Protect aluminum surfaces from contact with lime, mortar, cement, acids, and other harmful contaminants.

3.04 INSTALLATION

- A. General: Install manufacturer's system in accordance with shop drawings, and within specified tolerances.
1. Protect aluminum members in contact with masonry, steel, concrete, or dissimilar materials using nylon pads or bituminous coating.
 2. Shim and brace aluminum system before anchoring to structure.
 3. Provide sill flashing at exterior storefront systems. Extend extruded flashing continuous with splice joints; set in continuous beads of sealant.
 4. Verify storefront system allows water entering system to be collected in gutters and wept to exterior. Verify metal joints are sealed in accordance with manufacturers installation instructions.
 5. Locate expansion mullions where indicated on reviewed shop drawings.
 6. Seal metal to metal storefront system joints using sealant recommended by system manufacturer.
 7. Any continuous joints must be uniform throughout the run.

8. Any joint greater than 1/8" will be rejected without question.

3.05 FIELD QUALITY CONTROL

- A. Manufacturer's Field Services: Upon request, provide manufacturer's field service consisting of site visit for inspection of product installation in accordance with manufacturer's instructions.
- B. Field Test: Conduct field test to determine watertightness of storefront system. Conduct test in accordance with AAMA 501.2-03.

3.06 ADJUSTING AND CLEANING

- A. Adjusting: Adjust swing doors for operation in accordance with manufacturer's recommendations.
- B. Cleaning: The General Contractor shall clean installed products in accordance with manufacturer's instructions prior to owner's acceptance and remove construction debris from project site. Legally dispose of debris.
- C. Protection: The General Contractor shall protect the installed product's finish surfaces from damage during construction.

END OF SECTION 08443

SECTION 08710

Door Finish Hardware

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes hardware for doors specified in “Hardware Sets”.
- B. Related Divisions:
 - 1. Division 03 Concrete
 - 2. Division 06 Rough & Finish Carpentry
 - 3. Division 07 Joint Sealants
 - 4. Division 08 Openings
 - 5. Division 09 Finishes
 - 6. Division 10 Specialties

1.02 REFERENCES

- A. American National Standards Institute/Builders Hardware Manufacturers Association (ANSI):
 - 1. ANSI/BHMA A156.1 Butts & Hinges (2016)
 - 2. ANSI/BHMA A156.2 Bored & Preamsembled Locks & Latches (2017)
 - 3. ANSI/BHMA A156.3 Exit Devices (2020)
 - 4. ANSI/BHMA A156.4 Door Controls – Closers (2019)
 - 5. ANSI/BHMA A156.5 Cylinders and Input Devices for Locks (2020)
 - 6. ANSI/BHMA A156.6 Architectural Door Trim (2015)
 - 7. ANSI/BHMA A156.7 Template Hinge Dimensions (2016)
 - 8. ANSI/BHMA A156.8 Door Controls – Overhead Stops and Holders (2015)
 - 9. ANSI/BHMA A156.12 Interconnected Locks & Latches (2018)
 - 10. ANSI/BHMA A156.13 Mortise Locks & Latches (2017)
 - 11. ANSI/BHMA A156.18 Materials & Finishes (2020)
 - 12. ANSI/BHMA A156.21 Thresholds (2019)
 - 13. ANSI/BHMA A156.22 Door Gasketing Systems (2017)
 - 14. ANSI/BHMA A156.26 Continuous Hinges (2017)
 - 15. ANSI/BHMA A156.28 Keying Systems (2018)
- B. International Code Council/American National Standards Institute (ICC/ANSI)/ADA:
 - 1. ICC/ANSI A117.1 Standards for Accessible and Usable Buildings and Facilities.
- C. Door and Hardware Institute (DHI):
 - 1. DHI Publication – Abbreviations and Symbols (2019).
 - 2. DHI Publication – Installation Guide for Doors and Hardware (2020).
 - 3. DHI Publication – Sequence and Format of Hardware Schedule (2019).
- D. National Fire Protection Agency (NFPA):
 - 1. NFPA 70 National Electrical Code.
 - 2. NFPA 80 Standard for Fire Doors and Other Opening Protectives.
 - 3. NFPA 105 Standard for the Installation of Smoke Door Assemblies.

1.03 SUBMITTALS

- A. Submit in accordance with Conditions of the Contract and Division 01 Administrative Requirements and Submittal Procedures Section.
- B. Shop Drawings:
 - 1. Schedule hardware in vertical format using the DHI publication Sequence and Formatting for the Hardware Schedule.

2. Include abbreviations and symbols page to include manufacturers' abbreviations, finish code descriptions, and fastener abbreviations including descriptions according to the DHI publication Abbreviations and Symbols.
3. Detail headings referencing the Architect's heading, opening number, locations, fire rating, handing, degree of opening, and description of the opening elements. Include Voltage, amperage, and operational descriptions for openings that have electrified hardware.
4. Coordinate final door hardware schedule with doors, frames, and related work listing proper sizing of hardware, addressing door thickness, handing, function, mounting accessories, and finish of hardware.
5. List related door devices specified in other Sections for each opening.
6. Architectural Hardware Consultant (AHC), as certified by DHI, who will affix seal attesting to completeness and correctness, including the review of the hardware schedule prior to submittal.

C. Product Data:

1. Furnish manufacturers' catalog sheets on design, grade, and function of items listed in hardware schedule. Submit only relevant information and circle or highlight the technical information including: model numbers, sizing information, voltage and amperage requirements, options and accessories required, means of fastening, listings of fire-rated applications, and finishes.

E. Templates:

1. Within fourteen days of receiving approved door hardware submittals submit complete list of templates for each hardware item to the opening manufacturers and the installers. Include detailed lists of the hardware location requirements for mortised and surface applied hardware.

F. Closeout Submittals: Include the following information as well as highlight and flag fire rated openings for annual inspections:

1. Cover page with required information:
 - a. Project name
 - b. Hardware supplier's name and contact information.
 - c. Date of substantial completion.
2. Final record hardware schedule.
3. Product Data.
4. Keying Schedule.
5. Operating and Maintenance Manual.
6. Warranty Information.

1.04 QUALITY ASSURANCE

- A. Hardware supplier shall employ an Architectural Hardware Consultant (AHC) as certified by DHI and a member of the seal program who will be available at reasonable times during course of work for Project hardware consultation.
- B. Where openings are required to be accessible door hardware shall conform to ICC/ANSI A117.1.
- C. Fire Rated Door Assemblies: Where fire-rated door assemblies are indicated, provide door hardware complying with NFPA 80 that are listed and/or labeled by a qualified testing agency for fire-protection ratings indicated.
- D. Smoke and Draft Control Door Assemblies: Where smoke and draft control doors are required, provide door hardware that meets requirements of assemblies in compliance with NFPA 105.
- E. Door hardware certified to ANSI/BHMA standards as noted, manufacturer must participate and be listed in BHMA Certified Products Directory.
- F. Substitution requests shall be submitted in compliance with Division 01: create a comparison chart that includes the testing information as well as the warranty for both the specified product and the proposed substitution. Include the reason for requesting the substitution, clear catalog copy highlighting the proposed product and options, compliance statement, technical data, product warranty and lead time, to show how the proposed can meet or exceed established level of design, function, and quality.
 1. Items listed with no substitute manufacturers have been requested by the Owner to meet existing standard and will not be reviewed for substitution unless the product is no longer available.

G. Meetings: Comply with requirements in Division 01 Section "Project Meetings."

1. Keying Meeting

- a. Within fourteen days of receiving approved door hardware submittals, contact Owner to establish a keying conference. Include keying meeting decisions into final keying schedule submittal after reviewing the following, but not limited to:
 - i. Function of the building, flow of traffic, individual area's purpose, and degree of security.
 - ii. Lock functions and operation.
 - iii. Preliminary key system schematic diagram.
 - iv. Verify existing keyway(s), and/or proposed keyway(s)
 - v. Visual key and cylinder identification
 - vi. Quantity of keys required including master level keys, change keys, and keys per lock.
 - vii. Review the key control system.
 - viii. Determine the recipient and contact information for the delivery of keys and accessories.

2. Pre-installation Meeting

- a. Convene meeting within fourteen days of receiving approved door hardware submittals. Participants from all affected buildings trades shall attend. Minimum participants should include: Contractor, installer, material supplier, and manufacturer representatives.
- b. Inspect and discuss preparatory work performed by other trades.
- c. Include in-conference decisions regarding proper installation methods and procedures for receiving and handling hardware.
- d. Review and finalize construction schedule and verify availability of materials, installer's personnel, equipment, and facilities needed to make progress and avoid delays.
- e. Review required testing, inspecting, and certifying procedures.

H. Installer Qualifications: Specialized in performing installation of this Section and have five years minimum documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Pack each item complete with necessary parts and fasteners in manufacturer's original packaging.
- B. Mark hardware that is not bulk packed with architect's opening number, hardware set number, and item number for each type of hardware. Include keyset symbols and corresponding hardware component for keyed products. Mark hardware that is bulk packed with manufacturers' part number and reference all hardware sets associated.
- C. Deliver hardware to the job site according to the phasing agreed upon in the pre-installation meeting. Inventory the delivery with the supplier's assistance. Immediately note shortages and damages on the shipping receipts and bill of lading. Coordinate replacement or repair with the supplier.
- D. Deliver permanent keys, cores, and related accessories directly to Owner via registered mail or overnight package service. Establish the instructions for delivery to Owner at "Keying Conference."
- E. Provide a clean, dry, and secure room for hardware delivered. Shelve hardware off the floor and with larger items of hardware stored on pallets. Arrange locksets and keyed cylinders by opening number. Organize the balance of hardware by brand, model of hardware, and hardware set number. Leave the door markings of the hardware visible for installers.
- F. Waste Management and Disposal: Separate waste materials for use or recycling in accordance with Division 01.

1.06 WARRANTY

- A. General Warranty: Comply Division 01 for Warranty requirements.
- B. Special Warranty: Warranties specified in this article will not deprive Owner of other rights.
 1. Ten years for manual door closers.
 2. Five years for locks.
 3. Five years for exit devices.

1.07 MAINTENANCE

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

PART 2 – PRODUCTS

2.01 MATERIALS

A. General:

1. Produce hardware units of basic metal and forming method using manufacturer's standard metal alloy, composition, temper, and hardness, but in no case of lesser (commercially recognized) quality than specified within this specification section for applicable hardware units for finish designations indicated.

B. Fasteners:

1. Furnish screws for installation with each hardware item. Use only fasteners that are furnished by the hardware manufacturer to meet the manufacturer's templating requirements, warranty and NFPA 80 requirements.
2. Provide Phillips flat-head screws except as otherwise indicated.
3. Finish exposed screws to match hardware finish or, if exposed in surfaces of other work, to match finish of this other work as closely as possible including "prepared for paint" surfaces to receive painted finish.
4. Use machine screws with lead expansion shields at hardware mounting to masonry walls and floors.
5. Wood screw with plastic anchors at drywall applications without reinforcement and wood screws at applications with reinforcements.
6. Provide concealed fasteners for hardware units that are exposed when door is closed except to the extent no standard units of type specified are available with concealed fasteners.
 - a. Do not use thru-bolts for installation where bolt head or nut on opposite face is exposed in other work unless their use is the only means of reinforcing the work adequately to fasten the hardware securely.
 - b. Where thru-bolts are used as a means of reinforcing the work, provide sleeves for each thru-bolt or use sex nut fasteners.
7. At exterior openings furnish stainless-steel fasteners for exposed fasteners, for example thresholds and screw-applied weatherstripping.

2.02 CONVENTIONAL HINGES

- A. Hinges, electric hinges, and self-closing hinges of one manufacturer as listed for continuity of design and consideration of warranty.

B. Standards: Products to be certified and listed by the following:

1. Butts and Hinges: ANSI/BHMA A156.1.
2. Template Hinge Dimensions: ANSI/BHMA A156.7.
3. Self-Closing Hinges: ANSI/BHMA A156.17.

C. Butt Hinges:

1. Hinge weight and size unless otherwise indicated in hardware sets:
 - a. Doors up to 36" wide and up to 1-3/4" thick provide hinges with a minimum thickness of .134" and a minimum of 4-1/2" in height.
 - b. Doors over 36" wide up to 48" wide and up to 1-3/4" thick provide hinges with a minimum thickness of .145" and a minimum of 5" in height.
 - c. Doors greater than 1-3/4" thick provide hinges with a minimum thickness of .190" and a minimum of 5" in height.
 - d. Width of hinge is to be minimum required to clear surrounding trim.
 - e. Doors considered to be low to medium frequency use would require standard weight hinges and medium to high frequency use would require heavy weight hinges.
2. Base material unless otherwise indicated in hardware sets:
 - a. Exterior Doors: 304 Stainless Steel, Brass or Bronze material.
 - b. Interior Doors: Steel material.
 - c. Fire Rated Doors: Steel or 304 Stainless Steel materials.
 - d. Stainless Steel ball bearing hinges to have stainless steel ball bearings. Steel ball bearings are unacceptable.
3. Quantity of hinges per door unless otherwise stated in hardware sets:

- a. Doors up to 60" in height provide 2 hinges.
 - b. Doors 60" up to 90" in height provide 3 hinges.
 - c. Doors 90" up to 120" in height provide 4 hinges.
 - d. Doors over 120" in height add 1 additional hinge per each additional 30" in height or fraction thereof.
 - e. Dutch doors provide 4 hinges up to 120" in height and 1 additional per each additional 30" in height or fraction thereof.
4. Hinge design and options unless otherwise indicated in hardware sets:
- a. Hinges are to be of a square corner five-knuckle design, flat button tips and have ball bearings unless otherwise indicated in hardware sets.
 - b. Out-swinging lockable and access-controlled doors are required to have Non-Removable Pins (NRP) to prevent removal of pin while door is in closed position.
 - c. When full width of opening is required, use hinges that are designed to swing door completely from opening when door is opened to 95 degrees.
- D. Acceptable Manufacturers:
1. Hager
 2. PBB
 3. McKinney

2.03 ALUMINUM GEARED CONTINUOUS HINGES

- A. Continuous hinges of one manufacturer as listed for continuity of design and consideration of warranty.
- B. Standards: Products to be certified and listed by ANSI/BHMA A156.26 Grade 1.
- C. Determine final model numbers and accessories required using the following criteria:
1. Door inset in relation to the frame face.
 2. Door thickness and weight.
 3. At fire rated openings provide hinges that carry a UL certification, up to and including 90-minute applications for wood doors and up to 3-hour applications for metal doors and provide studs as required by the manufacturer's listings.
 4. Provide heavy-duty hinges for high frequency and exterior applications.
 5. When full width of opening is required, use hinges that are designed to swing door completely from opening when door is opened to 95 degrees.
 6. Size length of hinge to equal the actual door height unless otherwise stated in hardware sets.
- D. Material and Design:
1. Base material: Anodized aluminum manufactured from 6063-T6 material; unexposed working metal surfaces be coated with TFE dry lubricant.
 2. Bearings:
 - a. Continuous hinges are to have a minimum spacing between bearings of 2-9/16". Typical door from 80" to 84" in height to have a minimum of 32 bearings.
- E. Acceptable Manufacturers:
1. Hager
 2. National Guard Products
 3. Select

2.04 MANUAL FLUSH BOLTS

- A. Flush bolts of one manufacturer as listed for continuity of design and consideration of warranty.
- B. Standards: Manufacturer to be listed by the following: Auxiliary Hardware: ANSI/BHMI A156.16.
- C. Labeled openings: Provide automatic or constant latching flush bolts per hardware schedule for inactive leaf of pairs of doors. Provide dust proof strikes for bottom bolt.

D. Non-Labeled openings: Provide two flush bolts for inactive leaf of pairs of doors per hardware schedule. Provide extension rods so that the center line of the top flush bolt is not more than 78” above the finish floor. Provide dust proof strike from bottom bolt.

E. Acceptable Manufacturers:

Hager
Rockwood
Trimco

2.05 CYLINDRICAL STANDARD DUTY CYLINDRICAL LOCKS AND LATCHES

A. Locks and latches of one manufacturer as listed for continuity of design and consideration of warranty.

B. Standards: Product to be certified and listed by following:

1. ANSI/BHMA A156.2 Series 4000 Certified to Grade 2.
2. UL/cUL Labeled and listed for functions up to 3 hours for single doors up to 48” in width and up to 96” in height.
3. UL10C/UBC 7-2 Positive Pressure Rated.

C. Lock and latch function numbers and descriptions of manufacturer’s series as listed in hardware sets.

D. Material and Design:

1. Lock and latch chassis to be zinc dichromate for corrosion resistance.
2. Keyed functions to be of a freewheeling design to help resist against vandalism.
3. Non-handed, field reversible.
4. Thru bolt mounting with no exposed screws.
5. Levers, zinc cast and plated to match finish designation in hardware sets.
6. Roses made of wrought brass or stainless-steel material.

E. Latch and Strike:

1. Stainless steel latch bolt with minimum of 1/2” throw and deadlocking for keyed and exterior functions. Provide 3/4” latch bolt for pairs of fire-rated doors where required by door manufacturer. Standard backset to be 2-3/4” and adjustable faceplate to accommodate a square edge door or a standard 1/8” beveled edge door.
2. Strike is to fit a standard ANSI A115 prep measuring 1-1/4” x 4-7/8” with proper lip length to protect surrounding trim.

F. Options:

1. Doors requiring lead line protection – provide locks with 1/16” lead applied to lock and 1/16” lead wrapped around latch bolt.
2. Provide knurled levers on entry side of doors that are potentially dangerous to visually impaired persons.

G. Acceptable Manufacturers:

Hager
Schlage
Best

2.06 MORTISE HEAVY DUTY MORTISE LOCKS AND LATCHES

A. Locks and latches of one manufacturer as listed for continuity of design and consideration of warranty.

B. Standards: Product to be certified and listed by following:

1. ANSI/BHMA A156.13 Series 1000 Certified to Grade 1 for Operational and Security.
2. UL/cUL Labeled and listed up to 3 hours for single doors up to 48” in width and up to 96” in height.
3. UL10C/UBC 7-2 Positive Pressure Rated.
4. ICC/ANSI A117.1.

C. Lock and latch function numbers and descriptions of manufacturer’s series as listed in hardware sets.

D. Material and Design:

1. Lock cases from fully wrapped, 12-gauge steel, zinc dichromate for corrosion resistance.
2. Non-handed, field reversible without opening lock case.
3. Break-away spindles to prevent unlocking during forced entry or vandalism.
4. Levers, zinc cast, forged brass or stainless steel and plated to match finish designation in hardware sets.
5. Sectional Roses, solid brass or stainless-steel material and have a minimum diameter of 2-7/16".
6. Armor fronts, self-adjusting to accommodate a square edge door or a standard 1/8" beveled edge door.

E. Latch and Strike:

1. Stainless steel latch bolt with minimum of 3/4" throw and deadlocking for keyed and exterior functions.
2. Strike is to fit a standard ANSI A115 prep measuring 1-1/4" x 4-7/8" with proper lip length to protect surrounding trim.
3. Deadbolts to be 1-3/4" total length with a minimum of a 1" throw and 3/4" internal engagement when fully extended and made of stainless-steel material.

F. Acceptable Manufacturers:

Hager
Best
Sargent

2.07 INTERCONNECTED LOCKS AND LATCHES

A. Locks and latches of one manufacturer as listed for continuity of design and consideration of warranty.

B. Standards: Product to be certified and listed by following:

1. ANSI/BHMA A156.12 Series 5000 Certified to Grade 2.
2. UL/cUL Labeled and listed for functions up to 3 hours for single doors up to 48" in width and up to 96" in height.
3. UL10C/UBC 7-2 Positive Pressure Rated.
4. ICC/ANSI A117.1

C. Lock and latch function numbers and descriptions of manufacturer's series as listed in hardware sets.

D. Material and Design:

1. Lock and latch chassis to be zinc dichromate for corrosion resistance.
2. Keyed functions to be of a freewheeling design to help resist against vandalism.
3. Non-handed, field reversible.
4. Levers, zinc cast and plated to match finish designation in hardware sets.
5. Roses, solid brass or stainless-steel material and have a minimum diameter of 2-1/2".

E. Acceptable Manufacturers:

Hager
Schlage
Sargent

2.08 EXIT DEVICES

A. Exit Devices of one manufacturer as listed for continuity of design and consideration of warranty. Touchpad type finish to match balance of door hardware.

B. Standards: Manufacturer to be certified and/or listed by the following:

1. BHMA Certified ANSI A156.3 Grade 1.
2. UL/cUL Listed for up to 3 hours for "A" labeled doors.
3. UL10C/UBC 7-2 Positive Pressure Rated.
4. UL10B Neutral Pressure Rated.
5. UL 305 Listed for Panic Hardware.
6. 2007 Florida Building Code Certification Number: FL9481.1.

C. Material and Design:

1. Provide exit devices with actuators that extend a minimum of one-half of door width.

2. Where trim is indicated in hardware sets provide the lever design to match design of lock levers.
3. Exit device to mount flush with door.
4. Latch bolts:
 - a. Rim device – 3/4” throw, Pullman type with automatic dead-latching, stainless steel
 - b. Surface vertical rod device – Top 1/2” throw, Pullman type with automatic dead-latching, stainless steel. Bottom 1/2” throw, Pullman type, held retracted during door swing, stainless steel.
5. Fasteners: Wood screws, machine screws, and thru bolts.

D. Lock and Latch Functions: Function numbers and descriptions of manufacturer’s series and lever styles indicated in door hardware sets.

E. Acceptable Manufactures:

Hager
Von Duprin
Sargent

2.09 CYLINDERS AND KEYING

A. Cylinders of one manufacturer as listed for continuity of design and consideration of warranty.

B. Products to be certified and listed by the following:

1. Auxiliary Locks: ANSI/BHMA A156.5

C. Cylinders:

1. Provide cylinders matched to the types required for hardware that has a locking function and for keyed electronic functions. Furnish with appropriate collars, cams, and tailpieces to fit and operate associated hardware. Stacking collars is not acceptable, a single collar of proper size is required.
2. Manufacturer’s standard tumbler type six-pin conventional cylinder.
3. Provide concealed key control (CKC) at cylinder by stamping or permanently marking the keyset symbol in a location on the cylinder that is concealed when installed.

D. Keying:

1. Provide a new factory registered key system.
2. Provide a bitting list to Owner of combinations as established and expand to twenty-five percent for future use or as directed by Owner.
3. Keys to be shipped directly to the Owner’s Representative as established during the keying conference.
 - a. Package the keys in individual envelopes, grouped by keyset symbol, and label envelopes with project name, factory registry number, and keyset symbol.
4. Stamp large bow key blanks with visual key control (keyset symbol) and “Do Not Duplicate”.
5. Provide construction keyed cylinders as required per the keying meeting.
6. Single seven-pin key will operate both conventional cores and SFIC small format interchangeable cores.

E. Acceptable Manufacturers:

Hager
Schlage
Sargent

2.10 PUSH/PULL PLATES AND BARS

A. Push/Pull plates and bars of one manufacturer as listed for continuity of design and consideration of warranty.

B. Standards: Manufacturer to be certified by the following:

1. Architectural Door Trim: ANSI/BHMA A156.6.
2. Americans with Disabilities Act Accessibility Guidelines (ADAAG).

C. Push plates: .050” thick, square corner and beveled edges with countersunk screw holes. Width and height as stated in hardware sets.

D. Acceptable Manufacturers:

Hager
Rockwood
Trimco

E. Pull Plates: .050” thick, square corner and beveled edges. Width and height as stated in hardware sets, 1” diameter pull, with clearance of 2-1/2” from face of door.

F. Acceptable Manufacturers:

Hager
Rockwood
Trimco

2.11 CLOSERS

A. Closers of one manufacturer as listed for continuity of design and consideration of warranty. Unless otherwise indicated on hardware schedule, comply with manufacturer’s recommendations for size of closer, depending on width of door, frequency of use, atmospheric pressure, ADAAG requirements, and fire rating.

B. Standards: Manufacturer to be certified by the following:

1. BHMA Certified ANSI A156.4 Grade 1.
2. ADA Complaint ANSI A117.1.
3. UL/cUL Listed up to 3 hours.
4. UL10C Positive Pressure Rated.
5. UL10B Neutral Pressure Rated.

C. Material and Design:

1. Provide aluminum or cast iron, as specified, non-handed bodies with full plastic covers.
2. Closers will have separate staked adjustable valve screws for latch speed, sweep speed, and backcheck.
3. Provide Tri-Pack arms and brackets for regular arm, top jamb, and parallel arm mounting.
4. Double heat-treated steel, tempered springs.
5. Precision machined heat-treated steel piston.
6. Triple heat-treated steel spindle.
7. Full rack and pinion operation.

D. Mounting:

1. Out-swing doors surface parallel arm mount closers except where noted on hardware schedule.
2. In-swing doors surface regular arm mount closers except where noted on hardware schedule.
3. Provide brackets and shoe supports for aluminum doors and frames to mount fifth screw.
4. Furnish drop plates where top rail conditions on door do not allow for mounting of closer and where backside of closer is exposed through glass.

E. Size closers in compliance with requirements for accessibility (ADAAG). Comply with following maximum opening force requirements.

1. Interior hinged openings: 5.0 lbs.
2. Fire-rated and exterior openings are to be adjusted to have minimum opening force allowable by authority having jurisdiction.

F. Fasteners: Provide self-reaming, self-tapping wood and machine screws, and sex nuts and bolts for each closer.

G. Acceptable manufacturers:

Hager
Norton
Sargent

2.12 PROTECTIVE TRIM

- A. Protective trim of one manufacturer as listed for continuity of design and consideration of warranty.
- B. Size of protection plate: single doors, size two inches less door width (LDW) on push side of door, and one inch less door width on pull side of door. For pairs of doors, size one inch less door width (LDW) on push side of door, and 1/2 inch on pull side of door. Adjust sizes to accommodate accompanying hardware, such as, edge guards, astragals, and others.
 - 1. Kick Plates 10" high or sized to door bottom rail height.
 - 2. Mop Plates 4" high.
 - 3. Armor Plates 36" high.
- C. Products to be certified and listed by the following:
 - 1. Architectural Door Trim: ANSI/BHMA A156.6.
 - 2. UL.
- D. Material and Design:
 - 1. 0.050" gage stainless steel.
 - 2. Corners square, polishing lines, or dominant direction of surface pattern so they run across door width of plate.
 - 3. Bevel top, bottom, and sides uniformly leaving no sharp edges.
 - 4. Countersink holes for screws. Space screw holes so they are no more than eight inches CTC, along a centerline not over 1/2" in from edge around plate. End screws maximum of 0.53" from corners.
- E. UL label stamp required on protection plates when top of plate is more than 16 inches above bottom of door on fire rated openings. Verify door manufacturer's UL listing for maximum height and width of protection plate to be used.

F. Acceptable Manufacturers:

Hager
Trimco
Burns

2.13 STOPS AND HOLDERS

- A. Stops and holders of one manufacturer as listed for continuity of design and consideration of warranty.
- B. Wall Stops: Provide door stops wherever necessary to prevent door or hardware from striking an adjacent partition or obstruction. Provide wall stops when possible. Door stops and holders mounted in concrete floor or masonry walls have stainless steel machine screws and lead expansion shields.
- C. Products to be certified and listed by the following:
 - 1. Auxiliary Hardware: ANSI/BHMA A156.16.
- D. Acceptable Manufacturers:

Hager
Rockwood
Burns
- E. Overhead Stops and Holders: Provide overhead stops and holders for doors that open against equipment, casework sidelights and other objects that would make wall stops/holders and floor stops/holders inappropriate. Provide sex bolt attachments for mineral core wood door applications.
- F. Products to be certified and listed by the following:
 - 1. Overhead Stops and Holders: ANSI/BHMA A156.8 Grade 1.

G. Acceptable Manufacturers:

Hager
Glynn Johnson
Sargent

2.14 THRESHOLDS

- A. Thresholds of one manufacturer as listed for continuity of design and consideration of warranty.
- B. Set thresholds for exterior and acoustical openings in full bed of sealant with lead expansion shields and stainless-steel machine screws complying with requirements specified in Division 07 Section "Joint Sealants: Notched in field to fit frame by hardware installer. Refer to Drawings for special details.
- C. Standards: Manufacturer to be certified by the following:
 - 1. Thresholds: ANSI/BHMA A156.21.
 - 2. American with Disabilities Act Accessibility Guidelines (ADAAG).

D. Acceptable Manufacturers:

Hager
K.N. Crowder
Reese

2.15 DOOR GASKETING AND WEATHERSTRIP

- A. Door gasketing and weatherstrip of one manufacturer as listed for continuity of design and consideration of warranty.
- B. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing where indicated on hardware schedule. Provide noncorrosive fasteners for exterior applications.
 - 1. Perimeter gasketing: Apply to head and jamb, forming seal between door and frame.
 - 2. Meeting stile gasketing: Fasten to meeting stiles, forming seal when doors are in closed position.
 - 3. Door bottoms: Apply to bottom of door, forming seal with threshold or floor when door is in closed position.
 - 4. Sound Gasketing: Cutting or notching for stop mounted hardware not permitted.
 - 5. Drip Guard: Apply to exterior face of frame header. Lip length to extend 4" beyond width of door.
- C. Products to be certified and listed by the following:
 - 1. Door Gasketing and Edge Seal Systems: ANSI/BHMA A156.22.
 - 2. BHMA certified for door sweeps, automatic door bottoms, and adhesive applied gasketing.
- D. Smoke-Labeled Gasketing: Comply with NFPA 105 listed, labeled, and acceptable to Authorities Having Jurisdiction, for smoke control indicated.
 - 1. Provide smoke-labeled gasketing on 20-minute rated doors and on smoke rated doors.
- E. Fire-Rated Gasketing: Comply with NFPA 80 listed, labeled, and acceptable to Authorities Having Jurisdiction, for fire ratings indicated.
- F. Refer to Section 08 1416 Wood Doors for Category A or Category B. Comply with UBC 7-2 and UL10C positive pressure where frame applied intumescent seals are required.

G. Acceptable Manufacturers:

Hager
K.N. Crowder
Reese

2.16 SILENCERS

- A. Where smoke, light, or weather seal are not required, provide three silencers per single door frame, two per double door frame and four per Dutch door frame.
- B. Products to be certified and listed by the following:
 - 1. Auxiliary Hardware: ANSI/BHMA A156.16

C. Acceptable Manufacturers:

Hager

Rockwood
Trimco

2.17 FINISHES

- A. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if within range of approved samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within range of approved samples.
- B. Comply with base material and finish requirements indicated by ANSI/BHMA A156.18 designations in hardware schedule.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Examine doors and frames, with installers present, for compliance with requirements for installation tolerances, labeled fire-rated construction, wall and floor construction, and other conditions affecting performance.
- B. Where hardware will be installed directly on walls inspect applications for blocking material of sufficient type and size for hardware.
- C. Notify Architect via a prepared written report and endorsed by installer of any discrepancies between the door schedule, door types, drawings, and scheduled hardware. List conditions detrimental to application, to the proper and timely completion of the work and performance of the hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.02 INSTALLATION

- A. Install hardware using manufacturers' recommended fasteners and installation instructions, at height locations and clearance tolerances that comply with:
 - 1. NFPA 80
 - 2. NFPA 105
 - 3. ICC/ANSI A117.1
 - 4. DHI Publication – Installation Guide for Doors and Hardware
 - 5. Approved shop drawings
 - 6. Approved hardware schedule
- B. Install soffit mounted gaskets prior to other soffit mounted hardware ensuring a continuous seal around the perimeter of the opening without cutting or notching.
- C. Locate surface mounted door closers on stairwell side of stair doors, interior side of exterior openings, or on the room side of openings, unless it is a sterile room.
- D. Locate wall mounted bumper to contact the operating trim. Verify that pushbuttons of locksets do not contact the stop and inadvertently lock the door.
- E. Mount armor, mop, and kick plates flush with the bottom of the door and centered horizontally on the door.
- F. Notch thresholds with no larger than a 1/32-inch gap matching the frame profile. Set in a full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants" forming a tight seal between threshold and mounting surface. Caulk and seal the entire perimeter to prevent water leakage. Remove excess sealants immediately and clean the area thoroughly.
- G. Do not install surface mounted items until finishes have been completed on substrates involved. Set unit level, plumb and true to line location.

3.03 FIELD QUALITY CONTROL

- A. Schedule a final walk through to inspect hardware installation ten (10) business days before final acceptance of the Owner. Visually inspect for proper fasteners and verify that doors open, close, latch properly, and that openings are installed to meet NFPA 80 and ANSI A117.1 requirements. Correct deficiencies, including missing hardware immediately. Provide a written report detailing discrepancies of each opening within five (5) business days of the walk through.
- B. Prior to receiving certificate of occupancy have doors inspected by a Certified Fire and Egress Door Assembly Inspector (CFDAI), as certified by Intertek (ITS), submit a written report to the Owner and Contractor. Doors failing inspection must be adjusted, modified, or replaced to be within appropriate code requirements without delay.

3.04 ADJUSTMENT, CLEANING, AND DEMONSTRATING

- A. Prior to final adjustments, the HVAC system must be completed and balanced. Test that all openings meet ANSI A117.1 for closer opening pressure, closing speed, latching, and hardware operating forces. Replace items that cannot be adjusted to operate freely and smoothly or as intended for application.
- B. Prior to final walk-through inspection, clean adjacent surfaces soiled by hardware installation. Clean finish hardware per manufacturer's instructions after final adjustments have been made. Remove all protection and replace items that cannot be cleaned to manufacturer's level of finish quality.
- C. Demonstration and training will be conducted as per the following sessions. All sessions will be recorded and turned over to the Owner for future use.
 - 1. Hardware Maintenance: Conduct a training class for building maintenance personnel demonstrating the adjustment, operation, and maintenance of ALL hardware. Special tools for finish hardware to be turned over and demonstrated usage at the meeting.
 - 2. Key control system: Train the Owner's designated representative on the key control system demonstrating the permanent file keys, duplicate loaner keys, key receipts, key envelopes, key change identification sheets, bitting lists, tags, and labels. When key management software is provided training will be provided for the setup and usage of the software.

3.05 PROTECTION

- A. Leave manufacturer's protective film intact and, protect exit devices, locks, and surface mounted hardware with kraft paper or bubble wrap. Cover fire labels at painted products that bear a label with magnetic or masking tape. Keep protection in place until time of final cleaning and adjustment.

3.06 HARDWARE SET SCHEDULE

- A. Door hardware items have been placed in sets which are intended to be a guide of design, grade, quality, function, operation, and performance.
 - 1. Review products that may require mounting accessories to meet door, frame, and swing conditions as these final details vary from manufacturer to manufacturer and provide as required.
 - 2. Where additional items of hardware are required for completion of the Work, a written statement of such omission, error, or other discrepancy is required to be submitted to the Architect, prior to bid date for clarification via an addendum.
 - 3. Abbreviations listed below do not appear in the manufacturer's literature, for any other abbreviations refer to manufacturer's literature.:
 - a. LDW = Less than Door Width
 - b. LAR = Length as Required
 - c. QTY = Quantity
 - d. CTC = Centerline to Centerline
 - e. BT = Back-to-Back mounting
 - f. FEC = Flush End Cap

B. Manufacturer List

Code	Manufacturer
	By Others
HA	Hager

Code	Manufacturer
SLCT	Select

C. Option List

Code	Description
ADA Turn	ADA Thumb Turn
H	HANDICAP CLEARANCE (3")

3.07 HARDWARE SCHEDULE

Set #AL 01

Doors: 100, 100A, 103, 104, 104A, 105, 107, 117, 118, 119, 120, 121, 121A, 121B, 121C, 121D, 121E, 121F, 121G

1 Cylinder(s)	3901/3902 as req'd	US26D	HA
1 Balance of Hardware	By Door/Frame Mfr./Supplier		

Set #01

Doors: 123A, 129A, 130

1 Hardware	By Door Mfr./Supplier
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Set #02

Doors: 115, 127

1 Continuous Hinge(s)	SL18HD x LAR	CL	SLCT
1 Exit Device(s)	4501 RIM FEC	US32D	HA
1 Night Latch Exit Trim(s)	45NL AUG	US26D	HA
1 Rim Cylinder(s)	3901	US26D	HA
1 Closer(s)	5100 HDCS	ALM	HA
1 Kick Plate(s)	190S 10" x 2" LDW	US32D	HA
1 Threshold	520S N x LAR	MIL	HA
1 Weatherstrip	881S N x LAR	MIL	HA
1 Sweep(s)	750S N x LAR	CLR	HA
1 Rain Drip Cap	810S x LAR	MIL	HA

Hardware set is intended as a guide. Confirm with door and frame manufacturer to ensure all required ratings are met.

Set #03

Doors: 123, 130A

1 Continuous Hinge(s)	SL18HD x LAR	CL	SLCT
1 Corridor Lockset	3856 SECT AUG ADA Turn	US26D	HA
1 Closer(s)	5100 HDCS	ALM	HA
1 Kick Plate(s)	190S 10" x 2" LDW	US32D	HA
1 Threshold	520S N x LAR	MIL	HA
1 Weatherstrip	881S N x LAR	MIL	HA
1 Sweep(s)	750S N x LAR	CLR	HA
1 Rain Drip Cap	810S x LAR	MIL	HA

Set #03

Hardware set is intended as a guide. Confirm with door and frame manufacturer to ensure all required ratings are met.

Set #04

Doors: 129, 131

1	Continuous Hinge(s)	SL18HD x LAR	CL	SLCT
1	Storeroom Lockset	3881 SECT AUG ADA Turn	US26D	HA
1	Closer(s)	5100 HDCS	ALM	HA
1	Kick Plate(s)	190S 10" x 2" LDW	US32D	HA
1	Threshold	520S N x LAR	MIL	HA
1	Weatherstrip	881S N x LAR	MIL	HA
1	Sweep(s)	750S N x LAR	CLR	HA
1	Rain Drip Cap	810S x LAR	MIL	HA

Hardware set is intended as a guide. Confirm with door and frame manufacturer to ensure all required ratings are met.

Set #05

Doors: 132

2	Continuous Hinge(s)	SL18HD x LAR	CL	SLCT
2	Surface Bolt(s)	276D 12"	US26D	HA
1	Storeroom Lockset	3881 SECT AUG ADA Turn	US26D	HA
1	Overhead Stop(s) Inactive Leaf	7016 SRF	US32D	HA
1	Closer(s) Active Leaf	5100 HDCS	ALM	HA
2	Kick Plate(s)	190S 10" x 1" LDW	US32D	HA
1	Threshold	520S N x LAR	MIL	HA
1	Weatherstrip	881S N x LAR	MIL	HA
2	Sweep(s)	750S N x LAR	CLR	HA
1	Astragal	874S N x LAR	MIL	HA
1	Rain Drip Cap	810S x LAR	MIL	HA

Hardware set is intended as a guide. Confirm with door and frame manufacturer to ensure all required ratings are met.

Set #06

Doors: 123B

3	Hinge(s)	BB1279 4 1/2" x 4 1/2" NRP	US26D	HA
1	Office Lockset	3550 AUG	US26D	HA
1	Closer(s)	5200 HDCS	ALM	HA
1	Kick Plate(s)	190S 10" x 2" LDW	US32D	HA
1	Threshold	413S x LAR	MIL	HA
1	Seal	726 x LAR	S	HA
1	Sweep(s)	750S N x LAR	CLR	HA

Set #07

Doors: 124

3	Hinge(s)	BB1279 5" x 4 1/2"	US26D	HA
1	Storeroom Lockset	3580 AUG	US26D	HA
1	Closer(s)	5200	ALM	HA
1	Kick Plate(s)	190S 10" x 2" LDW	US32D	HA
1	Convex Wall Stop(s)	232W	US32D	HA
1	Seal	726 x LAR	S	HA

Set #08

Doors: 128

3 Hinge(s)	BB1168 4 1/2" x 4 1/2"	US26D	HA
1 Classroom Lockset	3570 AUG	US26D	HA
1 Closer(s)	5200	ALM	HA
1 Kick Plate(s)	190S 10" x 2" LDW	US32D	HA
1 Convex Wall Stop(s)	232W	US32D	HA
1 Threshold	413S x LAR	MIL	HA
1 Seal	726 x LAR	S	HA
1 Sweep(s)	750S N x LAR	CLR	HA

Set #09

Doors: 108

4 Hinge(s)	BB1168 4 1/2" x 4 1/2"	US26D	HA
1 Classroom Lockset	3570 AUG	US26D	HA
1 Closer(s)	5200	ALM	HA
1 Kick Plate(s)	190S 10" x 2" LDW	US32D	HA
1 Convex Wall Stop(s)	232W	US32D	HA

Set #10

Doors: 106, 112, 116, 122

4 Hinge(s)	BB1279 4 1/2" x 4 1/2"	US26D	HA
1 Office Lockset	3550 AUG	US26D	HA
1 Concave Wall Stop(s)	236W	US32D	HA
3 Silencers	307D	GREY	HA

Set #11

Doors: 110, 111, 126

4 Hinge(s)	BB1168 4 1/2" x 4 1/2"	US26D	HA
1 Push Plate(s)	30S 8" x 16"	US32D	HA
1 Pull Plate	H 34J 4" x 16"	US32D	HA
1 Closer(s)	5200	ALM	HA
1 Kick Plate(s)	190S 10" x 2" LDW	US32D	HA
1 Mop Plate(s)	190S 4" x 1" LDW	US32D	HA
1 Convex Wall Stop(s)	232W	US32D	HA
3 Silencers	307D	GREY	HA

Set #12

Doors: 125

3 Hinge(s)	BB1279 4 1/2" x 4 1/2"	US26D	HA
1 Privacy Set w/ Indicator	3796 AUG	US26D	HA
1 Closer(s)	5200	ALM	HA
1 Kick Plate(s)	190S 10" x 2" LDW	US32D	HA
1 Mop Plate(s)	190S 4" x 1" LDW	US32D	HA
1 Convex Wall Stop(s)	232W	US32D	HA
1 Seal	726 x LAR	S	HA

Set #13

Doors: 102, 114

4 Hinge(s)	BB1279 4 1/2" x 4 1/2"	US26D	HA
1 Storeroom Lockset	3580 AUG	US26D	HA
1 Closer(s)	5200	ALM	HA
1 Kick Plate(s)	190S 10" x 2" LDW	US32D	HA
1 Convex Wall Stop(s)	232W	US32D	HA
3 Silencers	307D	GREY	HA

Set #14

Doors: 109

4 Hinge(s)	BB1279 4 1/2" x 4 1/2" NRP	US26D	HA
1 Storeroom Lockset	3580 AUG	US26D	HA
1 Closer(s)	5200	ALM	HA
1 Kick Plate(s)	190S 10" x 2" LDW	US32D	HA
1 Convex Wall Stop(s)	232W	US32D	HA
3 Silencers	307D	GREY	HA

SECTION 08800
GLASS AND GLAZING

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This work includes the furnishing and fabrication of all glass and glazing materials required for the following:
 - 1. Aluminum Curtain Wall
 - 2. Aluminum Storefront
 - 3. Exterior Storefront
 - 4. Vision Lites Indicated.
- B. Definitions:
 - 1. "Glass" includes both primary and fabricated glass products as described in FGMA "Glazing Manual."
 - 2. "Glazing" includes glass installation and materials used to install glass.
- C. All exterior glazing must meet/exceed Florida Building Code wind resistance requirements for Project Location (Normal 117 mph, Ultimate 150), see the Structural Drawings.

1.02 RELATED WORK

- A. JOINT SEALANTS: Section 07900.
- B. ALUMINUM CURTAIN WALL: Section 08441.
- C. ALUMINUM STOREFRONT: Section 08443.
- D. EXTERIOR ALUMINUM STOREFRONT: Section 08442.

1.03 QUALITY ASSURANCE

- A. Approved Products: As applicable, products used herein shall comply with requirements of the Florida Product Approval System as required by Florida Statute 553.842 and Florida Administrative Code 9B-72.
- B. Design Criteria: Provide glass and glazing that has been produced, fabricated, and installed to withstand normal temperature changes, wind loading, impact loading (where applicable), without failure of sealants or gaskets to remain watertight and airtight, deterioration of glass and glazing materials, and other defects in the work.
 - 1. Comply with Florida Building Code requirements for wind loading.
 - 2. Comply with Florida Building Code requirements for impact resistance.
- C. Provide monolithic glazed assemblies that have been produced and fabricated to comply with

requirements for system performance characteristics specified herein as demonstrated by testing manufacturer's corresponding stock systems.

- D. Single Source Responsibility: Provide materials obtained from one source for each type of glass and glazing product indicated.
- E. Source Quality Control: All glass shall bear the manufacturer's identifying label.
- F. Safety Glazing Standard:
 - 1. Where safety glass is indicated or required by authorities having jurisdiction, provide type of products indicated which comply with ANSI Z 97.1, and testing requirements of 16 CFR Part 1201 for category II materials.
 - 2. Comply with Florida Statutes - Chapter 553, Part III, Safety Performance Specifications and Methods of Test for Safety Glazing Used in Buildings.
 - 3. Subject to compliance with requirements, provide safety glass permanently marked with certification label of Safety Glass Certification Council (SGCC) or other certification agency acceptable to authorities having jurisdiction.
- G. Reference Standards: Comply with provisions of the following, unless otherwise indicated or specified:
 - 1. American Architectural Manufacturers Association (AAMA):
 - a. AAMA 800 Voluntary Specifications and Test Methods for Sealants.
 - 2. American National Standards Institute (ANSI):
 - a. ANSI Z 97.1 Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test.
 - 3. American Society for Testing and Materials (ASTM):
 - a. ASTM C 1036 Standard Specification for Flat Glass.
 - b. ASTM C 1048 Standard Specification for Heat-Treated Flat Glass - Kind HS, Kind FT Coated and Uncoated Glass.
 - c. ASTM E 774 Standard Specification for Sealed Insulating Glass Units.
 - 4. Code of Federal Regulations (CFR):
 - a. 16 CFR 1201 Safety Standard for Architectural Glazing Materials.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's technical data for each glazing material and fabricated glass product required, including installation and maintenance instructions.
- B. Samples: Submit two (2) 12-inch square samples of each type of glass to be installed, and two (2) 12 inch lengths of each type of gasket to be used in the work.
- C. Guarantee: Submit a sample copy of the specified guarantee.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Product Delivery: Deliver glass to the job site in suitable containers that will provide protection from weather and breakage.
- B. Storage and Handling: Comply with manufacturer's published directions and as required to prevent edge damage to glass, and damage to glass and glazing materials from effects of moisture including condensation, of temperature changes, of direct exposure to sun, and from other causes; and keep glass free from contamination by materials capable of staining material.

1.06 PROJECT CONDITIONS

- A. Measurements: Sizes for glass and polycarbonate sheet shall be measured from the actual installed openings, frames, and doors.
- B. Environmental Requirements: Perform glazing when ambient temperature is above 40 degrees F., and on dry surfaces only.
- C. Sequence, Scheduling: Schedule glass sheet deliveries to coincide with glazing schedules.

1.07 GUARANTEE

- A. Special Project Guarantee: Provide a five (5) year written guarantee against defects in materials and workmanship, commencing on the date of Substantial Completion.

1.08 SAFETY AND TEMPERED GLASS LOCATIONS

- A. Provide safety or tempered glass:
 - 1. Where any exposed individual pane is greater than 9 square feet.
 - 2. Where the exposed bottom edge is less than 18" above a walking surface.
 - 3. In all operable units.
 - 4. Adjacent to doors.
 - 5. Within 24" of a door swing.
 - 6. As otherwise required in Chapter 24 of FBC 2004.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Products: Subject to compliance with requirements, provide products of one of the following manufacturers:
 - 1. PPG Industries, Inc. (PPG).
 - 2. Pilkington Building Products North America (Pilkington).
 - 3. Guardian Industries (Guardian).
 - 4. Old Castle Building Envelope

2.02 GLASS TYPES

- A. Glass Standards: Comply with the following:

1. Primary Glass Standard: Provide primary glass that complies with ASTM C 1036 requirements, including those indicated by reference to type, class, quality, and, if applicable; form, finish, mesh, and pattern.
 2. Heat-Treated Glass Standard: Provide heat-treated glass which complies with ASTM C 1048 requirements, including those indicated by reference to kind, condition, type, quality, and, if applicable; form, finish, and pattern.
- B. Clear Float Glass: Type I (transparent glass, flat), Class 1 (clear), Quality Q3 (glazing select), 1/4 inch thick unless otherwise indicated or specified. All interior glass unless otherwise noted.
- C. Exterior Glazing to have a U-value of 0.29 and a SHGC of 0.25 or better.
- E. Exterior Glass (Except for Curtain Wall from 0' to 10' above first floor): Provide insulated glass composed of the following: Total assembly 1" thick.
1. Outboard Glass Layer: Solarban® 60, 1/4 inch
 2. 1/2" Air Gap
 3. Inboard Glass Layer: Clear float heat-treated glass, 1/4 inch.
- F. Exterior Glass (Curtain Wall from 0' to 10' above first floor): Provide insulated glass composed of the following: Total assembly 1" thick.
1. Outboard Glass Layer: Clear float heat-treated glass, 1/4 inch.
 2. 1/2" Air Gap
 3. Inboard Glass Layer: Clear float heat-treated glass, 1/4 inch.

2.03 GLAZING MATERIALS

- A. General: Comply with the following:
1. Comply with recommendations of sealant and glass manufacturers for selection of glazing materials that have performance characteristics suitable for applications indicated and conditions at time of installation.
 2. Select glazing materials with proven compatibility with surfaces contacted in the installation and under service conditions indicated, as demonstrated by testing and field experience
- B. Glazing Sealants:
1. Silicone Glazing Sealant: Single component elastomeric silicone sealant complying with ASTM C 920, Type S, Grade NS; class and modulus as specified herein to suit installation conditions.
 2. Colors: Provide color of exposed sealants as selected by Architect/Engineer from manufacturer's standard colors.
 3. Class 50 Low-Modulus Products: Provide one of the following glazing sealants:
 - a. "SilPruf SCS2000"; GE Silicones.

- b. "864"; Pecora Corporation.
 - c. "Omniseal"; Sonneborn, Div. of ChemRex, Inc.
 - d. "Spectrem 3"; Tremco.
4. Class 50 Medium-Modulus Products: Provide one of the following glazing sealants:
- a. "799"; Dow Corning Corporation.
 - b. "SilPruf NB SCS9000"; GE Silicones.
 - c. "865"; Pecora Corporation.
- C. Preformed Butyl-Polyisobutylene Glazing Tape: Blend of butyl polyisobutylene rubber with a solid content of 100 percent, in extruded tape form, complying with AAMA 807.1, packaged on rolls with a release paper on side, with or without continuous spacer rod as recommended by manufacturers of tapes and glass for application indicated.
1. Products: Provide one of the following glazing tapes:
 - a. "PTI 606"; H.B. Fuller Company.
 - b. "PTI 303"; H.B. Fuller Company.
 - c. "Tremco 440 Tape"; Tremco, Inc.
 - d. "MBT-35"; Tremco, Inc.
 - e. "Extru-Seal"; Pecora Corp.
- D. Glazing Gaskets:
1. Dense Elastomeric Compression Seal Gaskets: Molded or extruded neoprene or EPDM gaskets of profile and hardness required to maintain watertight seal; complying with ASTM C 864, Option 1.
 2. Cellular Elastomeric Preformed Gaskets: Extruded or molded closed cell, integral-skinned neoprene of profile and hardness required to maintain watertight seal; complying with ASTM C 509, Type II; black.
 3. Products: Provide products by one of the following manufacturers:
 - a. D.S. Brown Co.
 - b. Maloney Precision Products Co.
 - c. Tremco, Inc.
- E. Setting Blocks: Neoprene, EPDM, or silicone blocks are required for compatibility with glazing sealants, 80 to 90 Shore A durometer hardness.
- F. Spacers: Neoprene, EPDM or silicone blocks, or continuous extrusions, as required for compatibility with glazing sealant, of size, shape, and hardness recommended by glass and sealant manufacturers for application indicated.

- G. Edge Blocks: Neoprene, EPDM or silicone blocks as required for compatibility with glazing sealant, of size and hardness required to limit lateral movement (side-walking) of glass.
- H. Cleaners, Primers, and Sealers: Type recommended by sealant or gasket manufacturer.

2.04 SEALED INSULATING GLASS UNITS

- A. Not Used.

2.05 FABRICATION

- A. Sizes: Fabricate glass and glazing material to sizes required for glazing openings indicated, with edge clearances and tolerances complying with recommendations of glass manufacturer. Provide thicknesses indicated or, if not otherwise indicated, as recommended by glass manufacturer for application indicated.
- B. Tong Marks: Provide tempered glass produced by manufacturer's special process, which eliminates tong marks, for locations and installation condition where tong marks would otherwise be exposed. No exposed tong marks shall be permitted.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Refer to Sections noted above for installation of glass and glazing materials, unless otherwise specified.
- B. Comply with combined written instructions of manufacturers, glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.
- C. Glazing channel dimensions, as indicated on Drawings, provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances. Adjust as required by Project conditions during installation.
- D. 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.
- E. Protect glass from contact with contaminating substances resulting from construction operations, including weld splatter. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended by glass manufacturer.

END OF SECTION 08800

SECTION 09201
FURRING AND LATHING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope:

1. Provide metal furring, metal lath, and accessories for portland cement plaster areas indicated.

1.02 RELATED WORK

- A. COLD FORMED METAL FRAMING: Section 05400.
- B. INSULATION: Section 07200.
- C. PORTLAND CEMENT PLASTER: Section 09220.

1.03 QUALITY ASSURANCE

- A. Approved Products: As applicable, products used herein shall comply with requirements of the Florida Product Approval System as required by Florida Statute 553.842 and Florida Administrative Code 9B-72.

B. Erector's Qualifications:

1. Installation shall be performed only by a qualified installer with at least five (5) years experience in installations of a similar nature.

C. Reference Standards:

1. American Society for Testing and Materials (ASTM):
 - a. Reference Standards.
2. Federal Specifications (FS):
 - a. Referenced Standards.

1.04 SUBMITTALS

A. Product Data:

1. Submit manufacturer's product specifications and installation instructions for each product, including data showing compliance with specification requirements.

B. Samples:

1. Provide three (3) samples of lath, screws and washers used for lath attachment.

1.05 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. All runners, furring and lathing materials shall be delivered to the jobsite in undamaged condition, without bends, breaks, or other distortions.
- B. Deliver lath to the job site in bundles and store neatly, stacked flat, in a dry space protected from the elements.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Metal Runners and Furring:

1. Steel runner and furring channels shall comply with the requirements of ASTM C 645.
2. Runner Channels:
 - a. 16-gauge hot-dipped galvanized steel; 1-1/2 inch with 19/32 flange width.
3. Hat Shaped Screwable Furring Channels (Hat Shaped): (Basis of standard, use others below under 4. and 5, if required due to circumstances)
 - a. 18-gauge minimum hot-dipped galvanized steel, 7/8-inch deep with 1-3/8-inch-wide screwable surface, and with 1/2-wide wing flanges.
4. Furring Channels:
 - a. 16-gauge hot-dipped galvanized steel; 1-1/2 inch with 19/32 flange width weighing not less than 500 lbs. per thousand lineal feet.
5. Z-Shaped Furring Sections:
 - a. One and one half inch deep by two-inch overall hot-dipped galvanized steel.
 - b. Two-inch deep by two-inch overall hot-dipped galvanized steel (where required)
6. Furring Channel Clips:
 - a. Manufacturer's standard for use intended.
7. Metal Studs:
 - a. Minimum 18 gauge hot-dipped galvanized steel, 6", "C" type. See structural drawings.

B. Metal Lathing:

1. Expanded metal lath shall be copper alloy steel, hot-dipped galvanized, conforming ASTM C 847, and of the following type and minimum weight:

Type	Lbs. per Sq. Yd.
Diamond Mesh Lath	3.4
Ribbed Mesh Lath	4.0

2. All metal lath shall be backed with a heavy asphalt saturated paper firmly attached to the back surface. Paper shall conform to Federal Specification UU-B-790, Type I, Grade C, Style 2.

C. Wire:

1. Hangar Wire: (as may be required)
 - a. No. 8 gauge, minimum, galvanized wire.
2. Tie Wire:
 - a. No. 16-gauge, minimum, galvanized soft annealed steel wire.

D. Hanger Anchorage Devices:

1. Screws, clips, bolts or other devices applicable to the indicated method of structural anchorage for ceiling hangers and whose suitability for use intended has been proven through standard construction practices or by certified test data. Size devices for 3 x calculated hanger loading except size direct pull-out concrete inserts for 5 x calculated hanger loading.
2. Screws with washers used for metal lath attachment shall be sized to prevent pull through. Screws shall be driven through plywood (or DensGlass) to studs at 6" o.c.

E. Plaster Accessories:

1. Casing Beads:
 - a. Casing beads shall be solid zinc, square-edge style, with expanded flanges and removable protective tape. Provide casing beads at all dissimilar materials edge, or as provided in Section 09220.

F. Vapor Barrier

- a. Provide Tyvek Stucco Wrap as a Vapor Barrier in areas where lath is installed over DensGlass sheathing. Note: this is in addition to paper backing required by 2.01 B above.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Properly lay out ceiling hangers to avoid conflict with building structure, mechanical and electrical ducts, conduit, piping and equipment. Do not place ceiling framing until all pipes, conduits, ducts, and similar items are in place.

3.02 INSTALLATION

A. Metal Runners, Furring, Lathing, and Accessories:

1. Erect metal runners, furring and lath as required for plaster work at locations indicated on Drawings, in accordance with ASTM C 1063, except as otherwise specified herein.
2. Furnish and install wood blocking or metal plate back-up or install back-up plates furnished by supplier of wall-mounted items, for the attachment of all surface-attached items. Back-up material shall be of sufficient size to accommodate the fastening device and shall be rigidly attached.
3. Secure hangers to structural support by connecting directly to structure where possible, otherwise connect to inserts, clips or anchorage of fasteners as indicated.
4. In addition to hanger wires, place 3/4 inch furring channels vertically at 4'-0" centers along carrying channels, firmly secured to carrying channels and to overhead slab or steel members.
5. Use 3/4 inch lathing channels (cross-furring) across carrying channels when using metal lath.
6. Provide additional bracing for wind uplift on exterior soffits as indicated on the Drawings.
7. Fur across all exposed pipes, around ducts and similar items. Form beam, soffits, offsets, bulkheads, and frame-out for openings in ceilings where they are required. Coordinate with electrical and mechanical ceiling work. Provide carrying and lathing channels as conditions require. Do not nail furring to ducts.

B. Metal Lath:

1. Metal lath shall be attached to metal stud framing and/or furring channels by screws with waffle washers not to exceed 6-inch spacings. Washers to be sized to prevent pull through. Submit samples of lath, washer and screws for approval.
2. Diamond mesh lath shall be lapped at sides not less than 1/2-inch. Rib metal lath with edge ribs greater than 1/8" in depth shall be lapped at sides by nesting outside ribs. Rib metal lath with edge ribs no greater than 1/8-inch in depth shall be lapped 1/2-inch at sides or outside ribs shall be nested.
3. All metal lath shall be lapped not less than 1-inch at ends.
4. Stucco mesh shall be lapped one diamond at sides and ends. Where end laps do not occur at supports, they shall be laced or tied with hot-dipped galvanized steel wire.
5. All lath shall terminate against wall or soffits unless otherwise indicated on Drawings.

C. Plaster Accessories:

1. Install casing beads at every intersection of plaster and other materials.
2. Where plastered ceilings abut masonry walls, leave casing bead approximately 1/8 inch from the wall surface to allow for caulking. Install perforated vent strip where indicated.
3. Set accessories plumb, level and true to line, with a tolerance of 1/8-inch in 10-feet.

END OF SECTION 09201

SECTION 09220

PORTLAND CEMENT PLASTER (STUCCO)

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope:

1. Provide portland cement plaster horizontal surfaces complete as indicated on Drawings and herein specified.

1.02 RELATED WORK

- A. UNIT MASONRY: Section 04220.
- B. COLD FORMED METAL FRAMING: Section 05400.
- C. INSULATION: Section 07200.
- D. FURRING AND LATHING: Section 09201.
- E. PAINTING: Section 09900.

1.03 DESIGN CRITERIA

A. Allowable Tolerances:

1. For flat surfaces, do not exceed 1/4-inch in 8-feet for bow or warp of surface, and for plumb and/or level.

1.04 QUALITY ASSURANCE

- A. Approved Products: As applicable, products used herein shall comply with requirements of the Florida Product Approval System as required by Florida Statute 553.842 and Florida Administrative Code 9B-72.

B. Reference Standards:

1. American Society for Testing and Materials (ASTM):
 - a. Referenced Standards.
2. Portland Cement Association (PCA):
 - a. PCA "Plasterer's Manual," except where more detailed or more stringent requirements are indicated.

1.05 SUBMITTALS

A. Product Data:

1. Submit manufacturer's product specifications and installation instructions for each product, including data showing compliance with specification requirements.

B. Samples:

1. Submit samples indicative of proposed finish to the Architect for review and approval.
2. Approved samples shall become the basis of comparison for all plaster work.
3. Submit samples and identify proposed locations for all plaster trim pieces

1.06 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. All manufactured materials shall be delivered in the original packages, containers, or cartons, bearing the brand name and manufacturer's identification, and stored in a dry space, protected from the elements and from damage to containers.

1.07 JOB CONDITIONS

A. Protection of Surfaces:

1. Use all means necessary to protect the work and materials of this Section before, during and after installation; and to protect the work and materials of other trades from moisture deterioration and soiling which may occur from plastering operations.
2. Provide temporary covering or other provisions as may be necessary to minimize harmful spattering of plaster on other work.
3. Do not apply plaster immediately before or during a rainstorm.

B. Environmental Conditions:

1. Warm Weather Requirements:
 - a. Protect plaster against uneven and excessive evaporation and from strong flows of dry air, both natural and artificial.
2. Ventilation shall be provided to properly dry the plaster during and subsequent to its application.

PART 2 - PRODUCTS

2.01 CEMENT PLASTER MATERIALS

A. General:

1. Except as otherwise indicated, provide standard products recommended by the manufacturer for the application indicated, complying with ASTM C 926.

B. Cement:

1. Portland Cement shall conform to ASTM C 150, Type I, and be of same source to insure uniformity throughout entire project. Approved types of plasticity agents may be added to portland cement in the manufacturing process or when mixing; but in no case shall the amount of plasticity agent exceed ten percent (10%) of the volume of cement in the plaster mix.
- C. Lime:
 1. Lime shall be dry Hydrated Lime, ASTM C 206, Type S.
- D. Aggregates:
 1. Inorganic aggregates used for plaster shall conform to ASTM C 35 except that graduation of locally produced sand shall be such that the fineness modulus is between 1.20 and 2.35.
- E. Water:
 1. Water shall be clean and free from injurious amounts of oils, acids, alkalis, salts, organic materials, or substances that may be deleterious to the plaster or to any metal in the plaster.
- F. Integral Waterproofer:
 1. SEC #1 as manufactured by SEC Manufacturing Company, or approved equal.
- G. Bonding Agents (if indicated or required):
 1. Bonding agents, integral or surface-applied, shall be used in accordance with the manufacturer's directions.
- H. Skim Coat
 1. Provide E.I.F.S. type skim coat such as "Primus" by Dryvit Systems, Inc. or approved equal.
 2. Primus is a 100% polymer-based product, which is field mixed in a 1 to 1 ratio by weight with Portland cement to produce Primus mixture. Provide Sand Textured Finish.

2.02 PLASTER TRIM, EDGES, STOPS, BEADS

- A. Basis of Design: PVC Accessories as manufactured by Plastic PC Components, Inc., <http://www.plasticcomponents.com> or approved equal. Provide "slip joint" type where plaster encounters differing (change in) substrates. Provide:
 1. #2227 3/4" Channel Reveal to form pattern shown on Drawing A111
 2. #2227C 3/4" Channel Reveal Intersection
 3. CB-58-16 Casing Bead / Starter Trac® where plaster field terminates at ACM or gypsum board.
 4. Other pieces deemed necessary by installer.Submit samples and identify proposed locations for all plaster trim pieces.

2.03 MIXING AND PROPORTIONING PORTLAND CEMENT PLASTER

- A. All plaster mix ingredients shall be mixed in a mechanical mixer with the minimum amount of water

needed to produce a plaster of workable consistency. Plaster shall be mixed for a minimum of two (2) minutes or until all ingredients are uniform in color after all ingredients are in the mixer.

B. Plaster ingredients shall be mixed in the following proportions:

1. Three (3) Coat Application:

Coat	Portland Cement by volume	Lime by volume	Aggregates	Integral Waterproofer
1st (base)	1	- - -	3-1/2	- - -
2nd (brown)	1	15% max.	2	1 qt. per bag of cement

3rd (finish) Refer to Specification section 09960 for Tex-Cote.

PART 3 - EXECUTION

3.01 INSPECTION

A. Examine the areas and conditions under which this Work is to be performed. Correct conditions detrimental to the proper and timely completion of this Work. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Prior to application, ensure mechanical and electrical services behind surfaces to receive cement plaster have been tested and approved.

B. Ensure masonry is sound and metal lath has been properly installed and rigidly secured.

C. Place metal accessories true to lines and levels.

3.03 PLASTER APPLICATION

A. General:

1. Refer to Drawings for extent and locations of areas to receive plaster.

2. Portland cement plaster (stucco) application shall be performed by skilled mechanics experienced in this type of work. All work shall be properly rodded true and straight, flush with grounds applied in strict accordance with ASTM C 926 and with the recommendations of the PCA "Plasterer's Manual," unless otherwise indicated.

3. Do not use materials which are caked or lumpy, or which are dirty or contaminated by foreign materials. Use only clean water, free from impurities which might impair the plaster work; do not use water which has been used to clean tools. Do not use excessive water in the mixing and application of plaster materials.

4. Sequence plastering applications with other work in accordance with recognized industry standards. Delay application of finish coat until adjoining work has been completed, wherever possible.

5. Screed plaster work at all angles, arises, corners, and every eight (8) feet on surfaces. Place screeds to true grounds; scrape screeds and grounds clean. All finished surfaces shall be straight, true, and plumb. Form corners, angles, and intersections accurately, in

perfect line, every angle true and full.

B. Thickness:

1. Portland cement plaster (stucco) shall be applied in thicknesses as follows:

Plaster Base	First (Base) Coat	Second (Brown) Coat	Third (Finish) Coat	Total Thickness
Masonry	3/8"	1/4"	*	3/4" Min.
Metal Lath	3/8"	1/4"	*	3/4" Min.

* Per E.I.F.S. type skim coat manufacture's recommendations.

C. Methods:

1. First (Base) Coat:
 - a. Apply first (base) coat to masonry and/or metal lath with sufficient pressure to form a good key. Bring to plumb, true, even surface, rough in texture. When sufficiently set, float scratch with dry float. Cross scratch evenly to form bond for second (brown) coat.
2. Second (Brown) Coat:
 - a. Apply second (brown) coat as soon as first (base) coat has set sufficiently to carry the weight (approximately 3 hours). Float or rod to true, even surface and keep moist until application of third (finish) coat.
3. Third (Finish) Coat:
 - a. Finish coat to be Sand Textured E.I.F.S. type skim coat (Primus or equal). After mixing, the working time of Primus mixture is approximately 1 hour depending on ambient conditions. Under average drying conditions [21 °C (70 °F), 55% R.H.], protect work from rain for at least 24 hours. Air and surface temperature for application of Primus mixture must be 4 °C (40 °F) or higher and must remain so for a minimum of 24 hours. Surfaces must not be below 4 °C (40 °F) or painted and must be clean, dry, structurally sound and free of efflorescence, grease, oil, form release agents and curing compounds. Thoroughly mix the Primus with Type I or Type II Portland cement at a 1 to 1 ratio by weight. Allow the mixture to set for 5 minutes. Re-temper, adding a small amount of water to achieve the desired workability. Clean tools with water while Primus mixture is still wet. Primus must be stored at 4 °C (40 °F) or above in tightly sealed containers out of direct sunlight. Clean potable water may be added to adjust workability. Do not add water until after the cement is thoroughly mixed. Do not overwater. Use only Type I or Type II gray or white Portland cement.

D. Curing:

1. Damp cure portland cement plaster (stucco) as follows:
 - a. Surfaces shall be protected from the sun, hot-dry winds, or excessive ventilation using canvas, cloth, or plywood barriers; then kept moist with a fog spray of water until proper hydration takes place; usually 48-hours for temperatures ranging 50-degrees and above.

- b. Do not damage finished surface by water erosion during damp curing operation.

3.04 CUTTING AND PATCHING

- A. Cut, patch, repair and point-up portland cement plaster (stucco) as required and as necessary to accommodate other work. Repair cracks and indented surfaces. Point-up finish plaster surfaces around items which are built into or penetrate plaster surfaces. Repair or replace plaster work to eliminate blisters, buckles, check cracking, dry outs, efflorescence, excessive pinholes, and similar imperfections. Repair or replace the work as necessary to comply with specified tolerances and required visual effects. Follow E.I.F.S. skim coat finish manufacture's recommendations for repairs.

3.05 PROTECTION

- A. Remove temporary covering and other provisions made to minimize splattering of plaster on other work. Repair surfaces which have been stained, marred or otherwise damaged during plastering work.

END OF SECTION 09220

SECTION 09250
GYP SUM WALLBOARD

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope:

1. This Section includes the furnishing and installation of gypsum wallboard and related accessories as indicated on the Drawings and specified herein.

1.02 RELATED WORK

- A. UNIT MASONRY: Section 04220.
- B. COLD FORMED METAL FRAMING: Section 05400
- C. ROUGH CARPENTRY: Section 06100.
- D. FINISH CARPENTRY: Section 06200.
- E. PAINTING: Section 09900.

1.03 QUALITY ASSURANCE

- A. Where work is indicated for fire-resistance ratings, including those required to comply with governing regulations, the materials and installation shall be identical to those applicable assemblies which have been tested and approved by recognized authorities, including Underwriters' Laboratories and Factory Mutual Insurance Corporation.
- B. The requirements of Gypsum Association (GA) Standard 216 shall apply where applicable, except where more detailed or more stringent requirements are indicated, including the recommendations of the manufacturer.
- C. A maximum of 1/8 inch offsets between planes of board faces, and 1/4 inch in 8 feet for plumb, level, warp, and bow shall be allowed.
- D. The materials shall be from one (1) manufacturer, and the source of brands of materials shall not be changed during construction.

1.04 SUBMITTALS

A. Product Data:

1. Submit manufacturer's technical information and installation instructions for each manufactured product.

1.05 PRODUCT DELIVERY AND STORAGE

- A. Materials shall be delivered in sealed containers and bundles, fully identified with the manufacturer's name brand, type and grade. Materials shall be stored in a dry, well-ventilated space, protected from the weather, under cover, and off the ground.
- B. Gypsum wallboard shall not be stored for more than one (1) month.

PART 2 - PRODUCTS

2.01 METAL SUPPORT MATERIALS

- A. The requirements of GA-203 shall apply where applicable, except where more detailed or stringent requirements are indicated, including the recommendation of the manufacturer.
 - 1. Refer to Section 05400 - COLD FORMED METAL FRAMING.
- B. Materials:
 - 1. Furring members shall be ASTM C 645, 25-gauge, hat-shaped, galvanized channel, 1-1/2inch deep 16" on center, or, 3-5/8" 25 gauge galvanized metal studs at 16" on center for walls requiring R-8 or greater insulation.
 - 2. Manufacturer's standard galvanized steel studs of size and shape, indicated, with nominal 1-5/8" flange. See drawings for gauge but in no case provide less then 3-5/8" 25 gauge at 16" on center.
 - 3. Fasteners shall be of type and size recommended by the manufacturer for the substrate and application as indicated.
 - 4. Screws attaching gypsum board to metal studs shall be corrosion resistant No. 6 Phillips, bugle head drywall screws designed for fastening to metal, of 1 inch size for single ply and longer for greater thickness of gypsum board.

2.02 GYPSUM BOARD

- A. Gypsum board shall be 5/8 inch thick except as otherwise shown on Drawings, conforming to ASTM C 36, of maximum available lengths to minimize end joints.
- B. Fire-rated gypsum board, indicated on the Drawings as "Type-X" or "Firecode" or "fire rated", shall comply with ASTM C 36 for fire-rated type gypsum board.
- C. Water Resistant Type where indicated and/or required in toilet rooms, janitor's closet, and other "wet" areas shall conform to ASTM C 630. DO NOT use water resistant board for ceilings in "wet" areas; use regular gypsum board with paint (primer and two coats semi-gloss enamel). Refer to Section 09900 - PAINTING. Use 5/8" cement board as backer at all porcelain / ceramic wall tile.
- D. Products: Provide products by one of the following manufacturers:
 - 1. GP Gypsum Corporation.
 - 2. Gold Bond Building Products, Div. National Gypsum Company.
 - 3. United States Gypsum Company.

2.03 ACCESSORIES

- A. Casing beads shall be solid zinc of type for securing through face of tapered edge, and embedding and taping to conceal surface flange. U-moldings and channel-shaped plaster/stucco type casing beads are NOT acceptable.
 - 1. Products: Provide one of the following:
 - a. "D-200 Series L Bead"; Dale Industries, Inc.
 - b. "No. 200 Wallboard Casing"; Gold Bond Building Products, Div. National Gypsum Company.
 - c. "Sheetrock 200 Series"; United States Gypsum Co.
- B. Corner beads shall be of standard type of solid zinc with perforated surface flanges to be attached through each gypsum face and concealed by embedding, of sizes for pertinent application.
 - 1. Products: Provide one of the following:
 - a. "Drywall Corner Bead"; Dale Industries, Inc.
 - b. "Gold Bond Wallboard Cornerbead"; Gold Bond Building Products, Div. National Gypsum Company.
 - c. "Dur-a-Bead Corner Bead"; United States Gypsum Co.
- C. Control joints shall be one-piece, formed with vee-shaped slot per Figure 1 in ASTM C 1047, with slot opening covered with removable strip.

2.04 ADHESIVE

- A. Product: Provide "Wallboard/Panel Adhesive," or "MC Adhesive," by Gold Bond Building Products, Div. National Gypsum Company.

2.05 JOINT TREATMENT MATERIALS

- A. Joint tapes shall be plain or perforated complying with ASTM C 475.
- B. Joint compound shall be adhesive, with or without fillers complying with ASTM C 475. Provide in dry powder form or pre-mixed ready for application as follows:
 - 1. Single-Compound: Provide manufacturer's single-component compound for both bedding and finishing joints.
 - 2. Two-Compound Treatment: Provide compatible joint compounds: one compound for bedding and other compound for finishing joints.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine the areas and conditions under which the gypsum board is to be installed. Do not proceed with gypsum wallboard work until unsatisfactory conditions have been corrected.

3.02 INSTALLATION OF GYPSUM WALLBOARD

- A. Comply with GA-216, unless the manufacturer's published instructions or requirements for fire-resistance ratings are more stringent.

- B. Wall boards shall be installed horizontally to avoid end-butt joints wherever possible. Locate end joints over supports and stagger in alternate courses of board.

3.03 INSTALLATION OF GYPSUM BOARD TRIM ACCESSORIES

- A. Where feasible, trim accessory flanges shall be anchored using same fasteners as required to fasten gypsum board to the supports. Otherwise, flanges shall be fastened by nailing or stapling.
- B. Metal corner beads shall be installed at all external corners of gypsum board work with fasteners, driven down to be fully concealed by joint compound.
- C. Continuous casing beads shall be installed wherever gypsum board terminates in visible locations (and is not concealed by extending behind other materials), abutting to other materials such as masonry, windows, etc.
- D. Install control joints at locations indicated, or if not indicated, at spacings and locations required by referenced gypsum board application and finish standard, and approved by the Architect for visual effect.

3.04 GYPSUM BOARD FINISHING

- A. Exposed drywall surfaces shall be finished with joints, corners, and exposed edges reinforced or trimmed as specified, and with all joints, fastener heads, trim accessory flanges and surface defects filled with joint compound in accordance with manufacturer's recommendations for smooth flush surfaces. True, level, or plumb lines shall be formed, without joints, fastener heads, flanges of trim accessories, or defects visible after application for field-applied paint finish.
- B. Joint tape shall be used to reinforce joints formed by tapered edges or butt ends of drywall units, and at interior corners and angles, with tape set in joint compound and skim coat applied over tape on application. Where open spaces of more than 1/16 inch width occur between abutting drywall units, joints shall be filled with joint compound and allowed to dry before application of joint tape.
- C. After mixing, joint compounds shall not be used if recommended pot-life time has expired. Drying time between applications of joint compound shall be in accordance with manufacturer's recommendations for relative humidity and temperature levels at time of application, in no case allowing less than 24 hours drying time between applications of joint compound. Not less than three (3) separate coats of joint compound shall be applied over joints, fasteners heads and metal flanges. Except at sound-rated or fire-rated applications, joint compound treatment is not required above suspended ceilings where partitions are shown to extend to structural deck.
- D. Dimpled heads and other depressions in wallboard surfaces, shall be finished with two (2) coats topping compound.
- E. All openings around pipes, fixtures, ducts, etc. shall be sealed flush with water-proof, non-hardening, sealant compound. Penetrations of fire-resistance assemblies shall be sealed with fire-resistant sealant in accordance with Section 07900 - JOINT SEALANTS.
- F. All joints, corners, dimples, etc., shall be finished with joint compound and topping compound as directed by the compound manufacturer, leaving all wallboard surfaces smooth and ready for paint finish.

3.05 FINISH

- A. In general, provide a "LEVEL 4" finish throughout. Provide minimum 4' x 4' sample area representative of proposed finish for Architect's review and approval.
- B. Provide a "LEVEL 5" finish on all surfaces to receive gloss paint.

- C. Provide a "LEVEL 5" finish on all walls to receive magnetic paint.

3.06 METAL STUDS

- A. Install metal framing system in strict accordance with manufacturer's printed or written instruction and recommendations. Employ authorized installers approved by the manufacturer to do all installation work.
- B. Install continuous tracks sized to match stud depth. Align tracks accurately to layout at base and tops of studs. Secure tracks as recommended by stud manufacturer for type of construction involved, except do not exceed 24" o.c. spacing for nail or power driven fasteners, or 16" o.c., for other types of attachments. Provide fasteners at corners and at ends of tracks.
- C. Install studs vertically in the runners, 16 inches on centers. Provide additional framing and headers at all openings as required.
- D. Where required, temporary bracing shall be provided until erection is completed.
- E. Resistance to bending and rotation about the minor axis shall be provided by mechanical lateral bracing where required.

END OF SECTION 09250

SECTION 09300

TILE WORK

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Furnish and install all tile work as indicated on Drawings.
- B. Types of tile work, in general, shall include the following:
 - 1. Porcelain floor and wall tile.

1.02 RELATED WORK

- A. GYPSUM WALLBOARD: Section 09250.
- B. VINYL COMPOSITION TILE: Section 09650.
- C. CARPET TILE: Section 09300.
- D. PAINTING: Section 09900.

1.03 QUALITY ASSURANCE

- A. Installer's Qualifications: Installation shall be performed only by a qualified installer with at least five (5) years' documented experience in installations of a similar nature.
- B. Reference Standards: Comply with provisions of the following, unless otherwise indicated or specified:
 - 1. Tile Council of America (TCA):
 - a. Handbook for Ceramic Tile Installation.
 - 2. American National Standards Institute (ANSI):
 - a. ANSI A108.10 "Specifications for Installation of Grout in Tile Work."
 - b. ANSI A118.4 "Specifications for Latex-Portland Cement Mortar."
 - c. ANSI A137.1 "Specifications for Tile."
 - 3. American Society for Testing and Materials (ASTM):
 - a. Referenced Standards.

- C. Source of Materials: Provide materials obtained from one source for each type and color of grout and setting materials.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's technical information and installation instructions for materials required, except bulk materials.
- B. Shop Drawings: Submit shop drawings indicating tile patterns and locations and widths of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces. Locate precisely each joint and crack in tile substrates by measuring, record measurements on shop drawings, and coordinate them with tile joint locations, in consultation with Architect.
- C. Samples: Submit samples of the following:
 - 1. Samples for each type of tile and for each color and texture required, not less than 12 inches square, on plywood or hardboard backing and grouted.
 - 2. Samples shall be representative of all color range extremities and individually identified by numbers placed on the samples.
 - 3. Installed materials shall match approved samples.
- D. Installer Qualifications: Submit documented evidence of installer's qualifications.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. All tiles shall be graded and containers grade-sealed in accordance with minimum grade specifications established in ANSI A137.1.
- B. Deliver and store packaged materials in original containers with seals unbroken and labels intact until the time of use. Store and handle materials in a manner to prevent damage or contamination with water or foreign matter.

1.06 JOB CONDITIONS

- A. Always protect the adjoining surfaces and the work of other trades.
- B. Maintain environmental conditions and protect work during and after installation to comply with referenced standards and manufacturer's printed recommendations.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Products:
 - 1. Tiles, Base, and Trim:
 - a. Provide products and sizes indicated on Drawings for all tile work.
 - 2. Grout:

- a. Bostik.
- b. Mapei Corp.
- c. Laticrete International, Inc.

2.02 MATERIALS, GENERAL

A. Porcelain Tile: Porcelain floor tile, wall tile, base, caps, coves, and all trim required:

1. Standard Grade conforming to ANSI A137.1.
2. Size: Refer to Drawings and/or to be selected.
3. Products: Refer to ID Drawings.
 - a. Cove base shall be minimum 1 inch x 1 inch x 2 inches. Provide at all restrooms and sanitary areas.
 - b. Wall Accent Strips: As shown on ID Drawings and/or to be selected.
 - c. Provide bullnose shape at door frames and outside corners (or acceptable joint).
 - d. Provide a bullnose at the top course of all walls to receive tile wainscot unless otherwise noted.
4. Colors: Refer to ID Drawings and/or to be selected.
5. Factory mount floor tile into units or sheets to facilitate handling and installation.

2.03 TILE AND SETTING AND GROUTING MATERIALS

A. Latex-Portland Cement Mortar: ANSI A118.1, composition as follows:

1. Manufacturer's standard latex additive (water emulsion), serving as replacement for part or all of gauging water, combined at job site with prepackaged dry mortar mix supplied or specified by latex additive manufacturer.

B. Latex-Portland Cement Grout: ANSI A118.6, composition as follows:

1. Manufacturer's standard latex additive (water emulsion) serving as replacement for part or all of gauging water, combined at job site with prepackaged dry grout mix supplied or specified by latex additive manufacturer.
2. Colors to be selected by Architect or interior designer from manufacturer's standard range.
3. Products: Provide one of the following:
 - a. "Hydroment Ceramic Tile Grout" with "Hydroment Multi-Purpose Acrylic Latex #425"; Bostik.

- b. "Laticrete Floor Grout and Joint Filler (Sanded)" and "Laticrete Dry-Set Wall Grout (Unsanded)" with "Laticrete Latex Grout Admix"; Laticrete International, Inc.
- c. "KER 200 Sanded Grout" for joints 1/8 inch or wider and "KER 800 Unsanded Grout" for joints less than 1/8 inch wide; Mapei Corp.

2.04 MISCELLANEOUS MATERIALS

A. One-Part Mildew Resistant Silicone Sealant:

- 1. ASTM C 920; Type S; Grade NS; Class 25; Uses NT, G, A, and as applicable to nonporous joint substrates indicated, O; formulated with fungicide for sealing interior ceramic tile corners, and joints in and around ceramic tile with plumbing fixtures.
- 2. Products: Provide one of the following:
 - a. "Chem-Calk 900"; Bostik.
 - b. "Dow Corning 786"; Dow Corning Corp.
 - c. "Sanitary 1700"; GE Silicones.

B. Tile Cleaner: Product specifically acceptable to manufacturer of tile and grout manufacturer for application indicated and as recommended by the Ceramic Tile Institute of America (CTI).

C. Isolation Sheet: Provide a full coverage of an Isolation Sheet under all tile. NobleSeal TS composite sheet membrane manufactured by Noble Company of non-plasticized Chlorinated Polyethylene (CPE), nominal thickness of 30 mils, flexible synthetic elastomer with fabric laminated on both surfaces. Conforms to Thin-Bed waterproof membrane standard ANSI A118.10. Meets Heavy Duty Service requirements per ASTM C-627.

PART 3 - EXECUTION

3.01 INSPECTION AND PREPARATION

- A. Prior to commencement of work, all substrates to receive tile work shall be inspected to assure that the surfaces are ready for tile application. All surfaces shall be dry, clean and free of oily or waxy films. Do not proceed with work until surfaces and conditions comply with requirements indicated in referenced tile installation standard.
- B. Do not start work until Electrical and Mechanical work in or behind tile work have been installed.

3.02 INSTALLATION, GENERAL

- A. ANSI Tile Installation Standard: Comply with applicable parts of ANSI 108 series of tile installation standards included under "American National Standard Specifications for the Installation of Tile."
- B. TCA Installation Guidelines: TCA "Handbook for Tile Installation;" comply with TCA installation methods indicated or, if not otherwise indicated, as applicable to installation conditions shown.
- C. Determine location of all movement joints before starting tilework. Provide Isolation Sheet under all tile areas.
- D. Extend tile work into recesses and under or behind equipment and fixtures, to form a complete covering without interruptions, except as otherwise shown. Terminate work neatly at obstructions, edges, and corners without disruption of pattern or joint alignments. Extend accent tiles to abut door jambs. Use bullnose tiles at door jambs and outside corners (or acceptable corner joint).
- E. 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 that plates, collars or covers overlap tile. Ensure that cut tiles occur in the most inconspicuous locations.
- F. Jointing Pattern: Unless otherwise shown, lay tile in grid pattern. Align joints when adjoining tiles on floor, base, walls, and trim are same size. Layout tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths, unless otherwise shown. Joints in floor tile and vertical joints in wall tile shall match.
- G. Grout tile to comply with ANSI A108.10, using grout materials indicated.
 - 1. Mix and install proprietary components to comply with grout manufacturer's directions.
- H. Provide Isolation Sheet over all slab/under tile.

3.03 INSTALLATION METHODS

- A. Install Tile to comply with requirements indicated below for setting bed methods, ANSI, and TCA installation methods related to types of substrate construction.
- B. Tile Floors:
 - 1. Latex-Portland Cement Mortar and Grout: ANSI A108.5.
 - a. Concrete Subfloors, Interior: TCA F113.
- C. Ceramic Tile Walls, Base, and Manufactured Trim:
 - 1. Latex-Portland Cement Mortar and Grout: ANSI A108.5.
 - a. Concrete Masonry Units, Interior: -TCA W202.
- D. Substrate.
 - A. Provide Cementitious Backer Units: ANSI A118.9, where indicated on the drawings, and elsewhere as required for walls as recommended substrate for tile.
 - 1. 5/8 inch (12 mm) WonderBoard Backerboard

3.04 CLEANING AND PROTECTION

- A. Upon completion of placement and grouting, clean all tile surfaces so they are free of foreign matter.
- B. Unglazed tile may be cleaned with acid solutions only when permitted by tile and grout manufacturer's printed instructions, but not sooner than 14 days after installation. Protect metal surfaces, cast iron and vitreous plumbing fixtures from the effects of acid cleaning. Flush the surface with clean water before and after cleaning.
- C. Leave finished installation clean and free of cracked, chipped, broken, unbonded, or otherwise defective tile work.
- D. When recommended by tile manufacturer, apply a protective coat of neutral protective cleaner to completed tile walls and floors. Protect installed tile work with Kraft paper or other heavy covering during construction period to prevent damage and wear.
- E. Prohibit foot and wheel traffic from using tiled floors for at least 3 days after grouting is completed.

3.05 EXTRA STOCK

- A. Upon completion of work, deliver to the Owner extra tile of size and color used on the job, for use in future repair and maintenance work. Furnish tile in original boxes, properly marked, in quantities as listed below and in types and colors as directed.
 - 1. Floor and Wall Tile: 3 percent of total quantity of each color or an absolute minimum of six pieces each.

END OF SECTION 09300

SECTION 09510
ACOUSTICAL CEILINGS

PART 1 - GENERAL

1.01 SUMMARY

- A. Furnish and install all acoustical panels and suspension systems for acoustical ceilings complete as indicated on the Drawings and specified herein.
- B. Review Architectural, Mechanical and Electrical Drawings for layout, location, and pattern of acoustical panels, location of recessed light fixtures, ceiling diffusers, and grilles, details of suspension system, details of change of level, details at ceiling penetrations, access door locations, special edge treatment, and all necessary connections to work of other trades.

1.02 RELATED WORK.

- A. MECHANICAL SYSTEMS: Division 15.
- B. LIGHTING FIXTURES: Division 16.

1.03 QUALITY ASSURANCE

- A. Installer Qualifications: Installation shall be performed only by a qualified installer with at least five (5) years documented experience in installations of a similar nature, and as approved by the manufacturer and Architect.
- B. Design Criteria:
 - 1. All finish materials specified under this Section shall have a minimum Class A flame spread rating of 25 or less when tested in accordance with ASTM E 84.
 - 2. The Acoustical grid system shall conform to structural classifications of ASTM C 635, and those established by the Ceiling and Interior Systems Construction Association (CISCA).

1.04 SUBMITTALS

- A. Product Data: Submit product data for each type of product specified.
- B. Shop Drawings: Submit complete shop drawings. Shop drawings shall indicate sizes and layout of ceiling panels and suspension system component details. Manufacturer's names and product data shall be clearly indicated on all shop drawings.
- C. Samples: Submit three (3) full-size samples of each kind of acoustical material proposed for use including suspension system. Each sample shall bear a label indicating the type, quality, and color of the material, and shall bear the manufacturer's name.
- D. Installer Qualifications: Submit documented evidence of installer's qualifications.

1.05 PRODUCT, DELIVERY, STORAGE AND HANDLING

- A. The materials shall be delivered to the site in the manufacturer's original, unopened, labeled containers, or packages. Materials shall be stored in enclosed areas with same temperature and humidity conditions as areas in which materials are to be installed.
- B. All packages under this Section shall be properly marked on the outside with the identification of the material contained in the packages, so that they may be readily identified with the location to be used.

1.06 PROJECT CONDITIONS

- A. Mechanical and electrical equipment and fixture installers shall furnish all necessary supports for their materials independent of, and prior to, installation of suspended grid systems.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Acoustical Ceiling Panels:

- 1. Basis of Design/Description:
 - a. ACT-1: Armstrong – Ultima 1986
Size: 24" x 60"
Color: White
Description: Tegular – Reveal Edge
Grid: 9/16" Interlude Grid
 - b. ACT-2: Armstrong – Ultima 1912A
Size: 24" x 24"
Color: White
Description: Tegular
Grid: 9/16" Interlude Grid
- 2. Compliance Standard: ASTM E 1264.

B. Metal Suspension System:

- 1. Description: ASTM C 635 Heavy-duty structural classification. Main tees and cross tees roll formed from cold-rolled steel sheet, hot-dip galvanized according to ASTM A 653 (G30), with metal caps on flanges.
 - a. Color: White
- 2. Dimensions: System to consist of main tees and cross tees, built to snap together modules of size indicated for installation of lay-in acoustical ceiling panels.
- 3. Accessories shall be specifically designed as an integral part of the suspension system, and shall be installed in accordance with manufacturer's published recommendations.
 - a. Attachment Devices: Size for 5 times the design load indicated in ASTM C 635, Table 1, "Direct Hung," unless otherwise indicated.

- b. Wire Hangers, Braces, and Ties: Zinc-coated carbon steel wire complying with ASTM A 641, Class 1 zinc coating, soft temper. Provide minimum 12 gauge diameter wire.
 - c. Metal Edge Moldings and Trim: Shall be fabricated from sheet metal of same material, finish, and color as that used for exposed flanges of tee.
4. There shall be no exposed fasteners.

2.02 FABRICATION

- A. Suspension system components shall be designed to support the ceiling assembly indicated on project Drawings with maximum deflection of 1/360 of the span, including appropriate load-carrying capacity for acoustical panels, light fixtures, and HVAC elements, and shall be 1-1/2 inch high double-web intermediate main tees with 1-1/8 inch or 1-1/2 inch high cross tees.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine the areas and conditions under which the acoustical ceiling system is to be installed. Do not proceed with acoustical ceiling work until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Installation of acoustical ceilings shall be in strict accordance with the manufacturer's published instructions, unless otherwise specified.
- B. Install acoustical ceiling panels in a true and even plane, in straight line course laid out symmetrically about center lines of ceiling or panel. Border panels shall not be less than 6 inches wide. Unless shown otherwise on reflected ceiling plan Drawings, the work shall be so laid out that border panels shall be of the same width on opposite sides and fit neatly against vertical surfaces.
- C. Suspend main tees from structure by not less than 12-gauge, galvanized wire located not over 4 feet on center, attached to the acoustical panel suspension system from the structural system above. Do not suspend grid system from metal deck, HVAC ducts, electrical conduit, or plumbing lines. Use trapeze-type hangers at HVAC ducts over 4 feet wide. Joint cross tees shall be located by routs in web of transverse cross tees. Main tees and cross tees shall rest on angle moldings at walls. Tabs of cross tees intersecting cross tees shall remain unbent.
- D. Keep finished surface of acoustical ceiling panels free of soiling and left in a condition acceptable to Owner. Replace all damaged units at no cost to Owner.
- E. All suspension grid components damaged during construction activities shall be replaced prior to panel installation.

3.03 EXTRA STOCK

- A. Furnish to the Owner prior to Final Acceptance, extra stock of acoustical materials, consisting of a minimum of 2 percent of the area of each size, type, and thickness installed on the job. Properly package, seal, and identify stock materials.

SECTION 09650
VINYL COMPOSITION TILE

PART 1 - GENERAL

1.01 SUMMARY

A. Scope:

1. Provide all labor, equipment and materials necessary to install resilient flooring, base and accessories complete as located and detailed on Drawings.

1.02 RELATED WORK

- A. TILE WORK: Section 09300.
- B. CARPETING: Section 09680.
- C. PAINTING: Section 09900.

1.03 QUALITY ASSURANCE

A. Installer's Qualifications:

1. Installation shall be performed only by a qualified installer with at least five (5) years experience in installations of a similar nature.

1.04 SUBMITTALS

A. Product Data:

1. Submit manufacturer's technical data for each type of resilient flooring and accessory for review by the Architect.

B. Samples:

1. Submit the following samples of each type, color and pattern of resilient flooring required, showing full range of color and pattern variations.
 - a. Full size tile samples.
 - b. 2-1/2" long samples of resilient base and flooring accessories.
 - c. Other materials as requested.

C. Maintenance Instructions:

1. Submit manufacturer's recommended maintenance practices for each type of resilient flooring and accessory required.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to Site in manufacturer's original unopened containers with manufacturer's brand name and color clearly marked thereon, and store in conformity with manufacturer's recommendations.

1.06 JOB CONDITIONS

- A. Maintain minimum temperature of 65-degrees F in spaces to receive resilient flooring for at least 48 hours prior to installation, during installation, and for not less than 48 hours after installation. Stored resilient flooring materials in spaces where they will be installed for at least 48 hours before beginning installation.
- B. Install flooring and accessories after other finishing operations, including painting, have been completed. Do not install flooring over concrete slabs until the latter have been cured and are sufficiently dry to achieve bond with adhesive as determined by resilient flooring manufacturer's recommended bond and moisture test.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Vinyl Composition Tile:
 - 1. 12" X 12", 1/8" gage, vinyl composition tile: FS-SS-T-312 B (1), Type IV, Composition 1.
 - 2. Manufacturer and Colors: Refer to Drawings or as selected by Architect.
- B. Resilient Base: (See Drawings)
 - 1. Vinyl base, 1/8" gage, FS SS-W-40, Type II, with matching end stops and preformed or molded corner units.
 - 2. Rubber Base, ASTM F 1861.
 - 3. Manufacturer and Colors: Refer to Drawings or as selected by Architect.
 - 4. Use set-on cove.
 - 5. Not Used.
 - 6. Supply in 96'-0" rolls.
- C. Static Dissipative SDT:
 - 1. Provide Armstrong Static Dissipative VCT in computer server and / or data room.

- D. Adhesives (Cements):
 - 1. Waterproof stabilized type as recommended by flooring manufacturer to suit material and substrate conditions.
- E. Resilient Edge Strips:
 - 1. Vinyl 1" X 1/8" thick beveled.
- F. Concrete Slab Primer:
 - 1. Non-staining type as recommended by flooring manufacturer.
- G. Leveling and Patching Compounds:
 - 1. Latex type as recommended by flooring manufacturer.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Inspect subfloor surfaces to determine that they are satisfactory for flooring installation. Subfloor surface shall be smooth and free from cracks, holes, ridges or coatings preventing adhesive bond, and other defects impairing performance or appearance.
- B. Perform bond and moisture tests on concrete subfloors to determine if surfaces are sufficiently cured and dry as well as to ascertain presence of curing compounds.
- C. Do not allow resilient flooring work to proceed until subfloor surfaces are satisfactory.
- D. Do not start work until painting (where applicable) has been substantially completed.

3.02 PREPARATION

- A. Prepare subfloor surfaces as follows:
 - 1. Use leveling and patching compounds as recommended by resilient flooring manufacturer for filling small cracks, holes and depressions in subfloors.
 - 2. Remove coatings from subfloor surfaces that will prevent adhesive bond, include curing compounds incompatible with resilient flooring adhesives, paint, oils, waxes and sealers.
- B. Broom clean or vacuum surfaces to be covered, and inspect subfloor.
- C. Apply concrete slab primer, if recommended by flooring manufacturer, prior to application of adhesive. Apply in compliance with manufacturer's directions.

3.03 INSTALLATION

A. Installation General:

1. Install flooring using method indicated in strict compliance with manufacturer's printed instructions. Extend flooring into toe spaces, door reveals, and into closets and similar openings.
2. Scribe, cut and fit resilient flooring to permanent fixtures, built-in furniture and cabinets, pipes, outlets and permanent columns, walls and partitions.
3. Maintain reference markers, holes or openings that are in place or plainly marked for future cutting by repeating on finish flooring as marked on subfloor. Use chalk or other non-permanent marking device.
4. Install flooring on covers for telephone and electrical ducts, and similar items occurring within finished floor areas. Maintain overall continuity of color and pattern with pieces of flooring installed on these covers. Tightly cement edges to perimeter of floor around covers and to covers.
5. Tightly cement flooring to subbase without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, or other surface imperfections. Hand roll resilient flooring at perimeter of each covered area to assure adhesion.

B. Installation of Tile Floors:

1. Lay tile from center marks established with principal walls, discounting minor offsets, so that tile at opposite edges of room area of equal width. Adjust as necessary to avoid use of cut widths less than 1/2 tile at room perimeters. Lay tile square to room axis, unless otherwise shown.
2. Match tiles for color and pattern by using tile from cartons in same sequence as manufactured and packaged if so numbered. Cut tile neatly around all fixtures. Broken, cracked, chipped, or deformed tiles are not acceptable.
3. Adhere tile flooring to substrates using full spread of adhesive applied in compliance with flooring manufacturer's directions.

C. Installation of Accessories:

1. Apply wall base to walls, columns, pilasters, casework and other permanent fixtures in rooms or areas where base is required. Install base in lengths as long as practicable, with preformed corner units, or fabricated from base materials with mitered or coped inside corners. Tightly bond base to substrate throughout length of each piece, with continuous contact at horizontal and vertical surfaces.
 - a. On masonry surfaces, or other similar irregular substrates, fill voids along top edge of resilient wall base with manufacturer's recommended adhesive filler material.
2. Install resilient edging strips at edges of flooring which would otherwise be exposed.

Place resilient edge strips tightly butted to flooring and secure with adhesive.

3.04 CLEANING AND PROTECTION

- A. Perform following operations immediately upon completion of resilient flooring:
1. Sweep or vacuum floor thoroughly.
 2. Do not wash floor until time period recommended by resilient flooring manufacturer has elapsed to allow resilient flooring to become well-seated in adhesive.
 3. Damp-mop floor being careful to remove black marks and excessive soil.
 4. Remove excess flooring adhesive or other surface blemishes, using appropriate cleaner recommended by resilient flooring manufacturer.
 5. Strip and Wax floor using products recommended by tile manufacturer. Floor is to have high gloss shine on date of Owner occupation.
- B. Protect flooring against damage during construction period to comply with resilient flooring manufacturer's directions.
1. Protect resilient flooring against damage from rolling loads for initial period following installation by covering with plywood or hardboard. Use dollies to move stationary equipment or furnishing across floors.
 2. Cover resilient flooring with undyed, untreated building paper until inspection for Final Acceptance.
 3. Replace all damaged tile and base at no cost to Owner.

3.05 EXTRA STOCK

- A. Deliver stock of maintenance materials to Owner. Furnish maintenance materials from same manufactured lot as materials installed and enclosed in protective packaging with appropriate identifying labels.
1. Tile Flooring: Furnish not less than one (1) box for each 50 boxes or fraction thereof, for each type, color, pattern and size installed.
 2. Base: Four feet (4') per building of each type installed.

END OF SECTION 09650

SECTION 09690
CARPET TILE

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. Carpet Tile
2. Installation

B. Related Documents: Drawings and general provisions of the Contract, including:

1. General and Supplementary Conditions
2. Division 1 Specification Sections

1.02 SUBMITTALS

A. Shop Drawing showing columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required as well as direction of carpet pile and pattern, location of edge moldings and edge bindings shall be submitted to the Architect for approval prior to installation.

B. Carpet schedule using same room designations indicated on drawings.

C. Product Data: Provide data on specified products, describing physical and performance characteristics, sizes, patterns, colors available, and method of installation.

D. Selection Samples: Submit manufacturer's complete set of color samples for Architect's initial color selection.

E. Verification Samples: Submit two 18" x 18" samples illustrating color and pattern for each carpet material specified.

F. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

G. Maintenance Data: Include maintenance procedures, recommendations for maintenance materials and equipment, and suggested schedule for cleaning.

H. Manufacturer's Carpet Warranty.

I. Certification of Recycled Content and verification of reclamation and recycling program.

J. Certifications: Manufacturer to submit copies of the following independent laboratory reports showing compliance with requirements per these methods outlined in Part 2 of this document. Submitted results shall represent average results for production goods of the specified style.

1. ASTM E-648 Flooring Radiant Panel
2. ASTM E-662: Smoke Density
3. AATCC 134: Electrostatic Propensity
4. CRI TM-102: Fluorine Analysis
5. ASTM D-3936: Delamination
6. Other from methods specified in Part 2

1.03 QUALITY ASSURANCE

A. Manufacturer Qualifications

1. Company specializing in manufacturing specified carpet with minimum 6 years documented experience.
2. Upon request, manufacturer to provide representative to assist in project start-up and to inspect installation while in process and upon completion. Representative will notify designated contact if any installation instructions are not followed.
3. Single Source Responsibility: Obtain each type of carpet from one source and by a single manufacturer.

B. Installer Qualifications

1. Flooring contractor must be certified by the carpet manufacturer prior to bid.
2. Flooring contractor to be a specialty contractor normally engaged in this type of work and shall have prior experience in the installation of these types of materials.
3. Not Used
4. Flooring contractor possessing Contract for the carpet installation shall not subcontract the labor without written approval of the Project Manager.
5. Flooring contractor will be responsible for proper product installation, including floor testing and preparation as specified by the carpet manufacturer and JOB CONDITIONS herein.
6. Flooring contractor to provide Owner a written installation warranty that guarantees the completed installation to be free from defects in materials and workmanship for a period of one year after job completion.

1.04 DELIVERY, STORAGE, & HANDLING

A. Deliver materials to the site in manufacturer's original packaging listing manufacturer's name, product name, identification number, and related information.

B. Store in a dry location, between 60 degrees F and 80 degrees F and a relative humidity below 65%. Protect from damage and soiling. Store in pallet form as supplied by Manufacturer. Do not stack pallets.

C. Make stored materials available for inspection by the Owner's representative.

D. Store materials in area of installation for minimum period of 48 hours prior to installation.

1.05 PROJECT CONDITIONS

A. Sub-floor preparation is to include all required work to prepare the existing floor for installation of the product as specified in this document and Manufacturer's installation instructions.

B. The maximum amount of moisture evacuation from the floor is 3.0 pounds per 1,000 square feet in 24 hours. The acceptable pH level of the substrate is between 7.0 and 9.0. The flooring subcontractor is responsible for floor testing.

C. All material used in sub-floor preparation and repair shall be recommended by the carpet manufacturer and shall be chemically and physically compatible with the carpet system being bid.

D. Maintain minimum 65 degrees F ambient temperature and 65% Relative Humidity for 72 hours prior to, during, and 48 hours after installation.

E. Do not install carpet until space is enclosed and weatherproof, wet-work in space is

completed and nominally dry, work above ceilings is complete, and ambient temperature and humidity conditions are and will be continuously maintained at values near those indicated for final occupancy.

1.06 EXTRA MATERIALS

A. Provide additional 5% of each type, color, and pattern furnished; product to be boxed and, when necessary, palletized. Coordinate storage location with owner.

B. Deliver all unused carpet and large scraps to Owner for "attic stock."

PART 2 – PRODUCTS

2.01 RECYCLED CONTENT

A. Product must contain a minimum of 30% recycled content by weight. This percentage is calculated by dividing the weight of recycled content in one square yard of finished carpet by the total weight of one square yard of finished carpet and multiplying by 100. [(Recycle Content Weight) / (Total Product Weight) x 100] per FTC Marketing Guides 16 C.F.R. § 260.7 (e)1. Additionally, product must contain a minimum of 20% recycled carpet by weight.

B. Recycled content must be certified by a neutral, independent, third party organization such as Scientific Certification Systems. Product must carry product label certifying overall recycled content (including post-industrial and post-consumer content). Report percentage of postindustrial and post-consumer recycled content as a percentage of total product weight and the source(s) of recycled content.

C. Product must have a minimum 10% post-consumer recycled content by weight from recycled post consumer carpet. This ensures that carpet is diverted from landfills for the production of the product and that virgin resource use in the product is reduced.

D. Product must be available inclusive of 100% recycled content secondary backing with no upcharge. The secondary backing must contain at least 75% recycled carpet of which a minimum of 25% shall be post consumer carpet.

1. Recycled content and post consumer content must not be subject to availability. Post industrial and post consumer recycled content of product installed must be the same as those required by Project requirements.

2. Also, Recycled content must be expressed as an exact percentage or a range. Statements such as "up to 60%" recycled content are not acceptable.

3. Recycled content products provided must have equal or better performance and cost no more than comparable virgin products.

4. Product's recycled content must comply with FTC Guides 16 CFR Part 260.7 (e) in that normal by-products in product manufacturing which are normally reused within the original manufacturing process, or waste by-products that would not normally enter the waste stream do not constitute as either post consumer or post industrial recycled content.

5. Manufacturer must fully comply with FTC Part 260 "Guides for the Use of Environmental Marketing Claims," with respect to advertising, labeling, and product inserts, catalogs and sales presentations of all its carpet products submitted and sold. Certification signed by an officer of the manufacturer stating the manufacturer complies with these guides maybe required for submittal upon request.

2.02 PRODUCT RECYCLABILITY

A. Product must meet FTC guides for recyclability and must be one hundred percent (100%) closed-loop recyclable back into carpet. Products containing both recyclable and nonrecyclable components, manufacturer must adequately report which portions of the product are recyclable per FTC guides 16 CFR section 260.7(d). Note: A manufacturer cannot claim that a product or any portion of a product that is incinerated is recyclable, even if incineration is used to produce heat and power (i.e. waste-to-energy) per FTC guides 16 CFR section 260.7 (d) example 3.

B. Recyclability of product installed must be the same as those required by Project requirements.

2.03 RECYCLING PROGRAM

A. Manufacturer must have a collection and recovery system for product and a fully established, currently operational recycling program at time of bid per FTC guides Section 260.7 (d).

1. Manufacturer must have product a take back program and be able to reclaim and recycle 100% of installed product back into carpet at time of bid. Manufacturer should be able to recover and recycle similarly constructed carpet. Recycling process must be available for viewing. Claiming a product is recyclable based on future expectation of technology, equipment, process or availability of that product, as feedstock is not acceptable.
2. Collection and recycling program must be verified by an independent, neutral third party organization, such as Scientific Certification Systems.
3. Manufacturer must have written guarantee that 100% of the recovered product will be recycled and that no portion of the product will be land filled or incinerated (including waste-to-energy).

2.04 ENVIRONMENTALLY PREFERABLE PRODUCT

A. Carpet must be certified as an Environmentally Preferable Product (EPP) by a neutral, independent, third party organization such as Scientific Certification Systems. Carpets must carry an EPP carpet label certifying the its Environmental Preferability. Products carrying EPP carpet labels will be given higher preference than those carrying only an EPP fiber label.

2.05 INDOOR AIR QUALITY

A. Product must have low VOC, factory applied, "dry" adhesive.

B. Product, inclusive of floor covering adhesive, must meet CRI's Green Label Plus (GLP) Indoor Air Quality requirements for carpet only. Environmental chamber testing per ASTM D-5116.

C. Product, inclusive of pre-applied adhesive must off gas less than:

0.5 mg/sq. meter per hour of Total Volatile Organic Compound (TVOC);

0.05 mg/sq. meter per hour of formaldehyde;

0.4 mg/sq. meter per hour of styrene; and

0.05 mg/sq. meter per hour of 4-Phenyl Cyclohexene (4-PC)

1. Submit documentation showing CRI Green Label Plus (GLP) Certification Number for carpet (inclusive of adhesive). [If results for carpet testing are not inclusive of adhesive, submit Green Label Plus documentation for carpet and Green Label Plus documentation for adhesive].
2. Indoor air quality results of the product installed must be same as those specified by the Project requirements.
3. Product as installed to be securely attached to the floor in compliance with Americans with Disabilities Act (ADA), Section 4.5.3.

2.06 MANUFACTURER'S ENVIRONMENTAL COMMITMENT

A. A manufacturer's environmental commitment will be reflected by its corporate culture and measured by the goals, policies and programs that have been instituted to improve the environmental performance of its operations. Evidence of this commitment must include:

1. All products produced by the manufacturer must meet FTC guides for recyclability and be 100% recyclable in a fully established, currently operational recycling program 16 CFR section 260.7 (d).
2. All products produced by the manufacturer, including recycled content products, must be 100% closed-loop recyclable back into carpet.
3. Manufacturer must show evidence of a positive and continuing improvement in source reduction and the reduction of energy, water, and waste and air emissions.
4. Manufacturer to provide a statement from the U.S. EPA that carpet tile meets the Guidelines of Presidential Executive Order 13101 for recycled content.

2.07 CARPET WARRANTY

A. Warranty to be sole source responsibility of the Manufacturer. Second source warranties and warranties that involve parties other than the carpet manufacturer are unacceptable.

B. If the product fails to perform as warranted when properly installed and maintained, the affected area will be repaired or replaced at the discretion of the Manufacturer.

C. Chair pads are not required, but are recommended for optimum textural performance. Absent the use of chair pads, more intensive maintenance will be required for areas in direct contact with chair caster traffic, and some degree of appearance change is to be expected.

D. Warranty shall be for a specifically defined non-prorated period of fifteen years. Lifetime" warranties are not acceptable.

A. The non-prorated fifteen-year warranty shall specifically warrant against:

1. Excessive Surface Wear: More than 15% loss of pile fiber weight
2. Excessive Static Electricity: More than 3.0 kV per AATCC 134
3. Resiliency Loss of the Backing: More than 10% loss of backing resiliency
4. Delamination
5. Edge Ravel
6. Zippering

B. Tuft Bind warranty in lieu of edge ravel and zippering is not acceptable.

C. Manufacturer to provide a written warranty that 100% of carpeting returned to manufacturer for recycling will be recycled and that no portion of the carpet will be land filled or incinerated.

2.08 FIBER

A. See Section 2.11

2.09 BACKING CHARACTERISTICS

A. Primary Backing: Synthetic Non-Woven.

B. Secondary Backing: ER3 – 100% Recycled Content

1. Density (ASTM D-1667): Min. 65 lbs/cu ft +/- 5%
2. Standard Size: 18" x 18"; 24" x 24"; or 36" x 36"
3. Fiberglass Reinforced
4. Fully fused secondary backing system that will not delaminate

C. Adhesive System: RS

1. Low VOC, factory applied "dry" adhesive applied to backing and cured during manufacturing

2.10 PERFORMANCE CHARACTERISTICS

A. Test reports for the following performance assurance testing to be submitted upon request. Submitted results shall represent average results for production goods of the referenced style.

All products must meet requirements listed below.

1. Palm Toyota 09690-71. Flooring Radiant Panel
ASTM E-648 / NFPA 253: Class 1 (CRF: 0.45 watts/sq cm or greater)
2. Federal Flammability
CPSC FF 1-70: Passes
3. Smoke Density
ASTM E-662 / NFPA 258: < 450 Flaming Mode
4. Electrostatic Propensity
AATCC 134 (Step & Scuff): 3.0 kV or less
5. Static Coefficient of Friction
ASTM C-1028: Passes ADA Requirements for Accessible Routes (minimum 0.60)
6. Delamination of Secondary Backing of Pile Floor Coverings
ASTM D-3936: No Delamination
7. Lightfastness
AATCC 16E: > 4 @ 100 hours
8. Vetterman Drum
ASTM D-5417: Minimum 3 @ 22,000 cycles
9. Dimensional Stability
Aachen / ISO 2551: Maximum Change +/- 0.149%

2.11 MANUFACTURING SPECIFICATIONS

A. Manufactured by Collins & Aikman Floorcoverings

1. Toyota 2 ER3 Tile RS
Color: Toyota 2 – 62007
- A. Construction: Stratatec® Patterned Loop
- B. Gauge: 5/64
- C. Stitch Rate: 9.8 pile units / inch
- D. Tuft Density: 127.4 tufts/sq inch
- E. Pile Height Average: 0.187 inch
- F. Fiber System: Antron® Legacy Nylon with Static Control & Ensure
- G. Dye Method: Yarn Dyed
- H. Total Weight: 132.5 oz/sq yd +/- 5%
- I. Total Product Recycled Content (based on Total Weight) 34.7%
- J. Total Product Post-Consumer Content (based on Total Weight) Min 10%

B. Substitutes/Alternates

Subject to compliance with all requirements, "or equal" must match the selected colors, have similar aesthetic appearance and tuft density, factory-applied "dry" adhesive, equivalent EPP and recycled content certification labels and recyclability. Substitution sample and submittals must be submitted for written approval of quality and color at least ten days prior to bid to be considered. Sample of proposed substitute must be inclusive of both the face and proposed backing (color-only sample not acceptable).

2.05 ACCESSORIES

- A. Materials recommended by Manufacturer for patching, leveling, priming, etc.
- B. Adhesives: Products to be supplied with a low VOC, factory applied, "dry" adhesive for "peel and stick" installation.
- C. Base, Carpet Edge, and Transition Strips: As specified in applicable sections.
 - 1. Base: Manufacturer: Johnsonite 1/8" Rubber
 Style: Cove at VCT, Straight at Carpet
 Color: See Drawing A421
 - 2. Transitions: Provide Schluter Systems in Satin Anodized Aluminum finish. Flooring subcontractor to submit recommendations for each transition on a case by case basis.

PART 3 EXECUTION

3.01 EXAMINATION / PREPARATION

- A. Prepare sub-floor to comply with criteria established in Manufacturer's installation instructions. Use only preparation materials that are acceptable to the Manufacturer.
 - 1. Remove all deleterious substances from substrate(s) that would interfere with or be harmful to the installation.
 - 2. Remove sub-floor ridges and bumps. Fill cracks, joints, holes, and other defects.
 - 3. "Ramp up" sub-floor as required to allow flush transition to non-carpet surfaces. Ramp to be extended as required (in excess of 2'-0") to make ramp as inconspicuous as possible.
- B. Verify that sub-floor is smooth and flat within specified tolerances and ready to receive carpet.
- C. Verify that substrate surface is dust-free and free of substances that would impair bonding of product to the floor.
- D. Verify that concrete surfaces are ready for installation by conducting moisture and pH testing. Results must be within limits recommended by Manufacturer.
- E. There will be no exceptions to the provisions stated in the Manufacturer's installation instructions.

3.02 INSTALLATION - GENERAL

- A. Install product in accordance with Manufacturer's installation instructions.
- B. Where demountable partitions or other items are indicated for installation on top of finished carpet tile floor, install carpet tile before installation of these items.
- C. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings.
- D. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- E. Install borders parallel to walls.

F. Roll with appropriate roller for complete contact of carpet with mill-applied adhesive to sub-floor. Carpet to be securely adhered in accordance with ADA requirements (Section 4.5.3).

G. Trim carpet neatly at walls and around interruptions.

H. Completed carpet is to be smooth and free of bubbles, puckers, and other defects.

3.03 PROTECTION & CLEANING

A. Remove excess adhesive and/or other from floor and wall surfaces without damage.

B. All rubbish, wrappings, debris, trimmings, etc. to be removed from site and disposed of properly.

C. Clean and vacuum carpet surfaces using a beater brush/bar commercial vacuum.

D. After each area of carpet is installed, protect from soiling and damage by other trades.

END OF SECTION 09690

SECTION 09720

VINYL WALLCOVERING SYSTEM

Part 1: General

1.1 Scope

Furnish a vinyl wallcovering as specified in the contract documents.

1.2 Sample

Submit a sample of each type and color to be installed for the architect's approval.

1.3 Certificate of Compliance

Submit manufacturer's certification that wallcovering furnished meets or exceeds the Interior Designer's specification requirements.

1.4 Warranties

Furnish a written warranty against defective workmanship that may develop within one (1) year from date of installation and 5 years against manufacturing defects.

1.5 Product Delivery, Storage and Handling

Deliver vinyl wallcovering and adhesive to the job site in unbroken or undamaged containers and clearly marked with the supplier's identification label. Store vinyl wallcoverings in a flat position to avoid damage to rollends. Store materials in a clean, dry storage area with temperature maintained above 55° F with normal humidity. DO NOT CROSS STACK THIS MATERIAL.

1.6 Project Conditions

Areas where wallcovering will be installed shall have a constant minimum temperature of not less than 60° F for at least seven days prior to and throughout installation period and for seven days thereafter.

Part 2: Products

2.1 Vinyl Wallcovering

Shall meet Federal Specification CCC-W-408A and the CFFA-W-101-D Quality Standard for Vinyl Coated Fabric Wallcovering. The wallcovering Type I, Type II or Type III desired shall be specified. The vinyl wallcovering shall contain mildew inhibitors.

2.2 Burning Characteristics

The manufacturer shall certify at the time of shipment that the materials furnished meet the published flame spread and smoke development Fire Hazard Classification Rating(s) of those products when tested according to ASTM-E84 Tunnel Test.

2.3 UL Label

All products shall be UL labeled assuring complete compliance with all specifications and requirements through continuous inspection by UL inspectors.

2.4 Fire Detection Characteristics

The vinyl wallcovering, when available, shall contain the Early Warning Effect formulation which provides early warning to potential fire conditions. The vinyl wallcovering shall contain thermoparticulating ingredients which, when heated to approximately 300° F emit a colorless, odorless vapor that activates ionization smoke detectors when installed according to manufacturer's specifications. Evidence of the Early Warning Effect shall be based on the ASTM E603 standard guide for room fire experiments.

2.5 Protective Coatings

The vinyl wallcovering shall have a protective coating applied to its surface to minimize migration of stains into the vinyl and therefore, offer stain protection from a variety of staining agents and provide greater ease of cleanability.

2.6 Adhesive

The adhesive used must be the manufacturer's recommended adhesive and must contain mildew inhibitors.

2.7 Primers

The primer used must be the manufacturer's recommended primer.

Part 3: Execution

3.1 Inspection

- A. The installer shall inspect all areas and conditions under which vinyl wallcoverings are to be installed. The installer shall notify the contractor and architect in writing of any conditions detrimental to the proper and timely completion of the installation; work will proceed only when conditions have been corrected and accepted by the installer.
- B. Substrate shall be checked with a suitable "Moisture Meter." Moisture shall not exceed 4%.

3.2 Surface Preparation

- A. Wall surfaces shall be free from defects and imperfections that could show through the finished covered surface.
- B. Sand-finished plaster shall be smoothed, cinder or cement blocks shall be plastered, or otherwise rendered smooth, and old wallcoverings shall be removed.
- C. For new drywall construction, the manufacturer's recommended primer should be used before application of wallcovering for ease of future removal when redecorating.
- D. Glossy surfaces shall either be sanded to a dull surface, or a coat of manufacturer's recommended primer applied prior to installation of wallcovering.
- E. If there is any evidence of mildew, it must be removed, and the wall surface treated to inhibit further mildew growth.
- F. All painted surfaces should be evaluated for the possibility of pigment bleed-through. If there is any possibility, a coat of sealer, recommended by manufacturer, should be applied before application of the wallcovering.

- G. Do not install vinyl wallcovering over oil-based wood stains as a bleed-through may occur.

3.3 Installation

- A. Wallcovering shall be installed by experienced workers and contractors in strict accordance with the manufacturer's printed instructions using vinyl wallcovering adhesive recommended by the manufacturer (WHEAT PASTE SHALL NOT BE USED). It is absolutely imperative that the installer read the manufacturer's instruction sheet in each roll before installing the vinyl wallcovering. Permanent building lights shall be available for installation.
- B. The installer, before cutting, shall examine pattern and color and determine that they are the correct pattern and color as specified.
- C. Installer shall install each roll in sequence starting with largest roll number and each strip in same sequence as cut from roll. If the pattern is not random, examine for repeat design. Some patterns should be lined up, matched, or reversed for best results. If necessary, trim selvage deep enough to assure color uniformity.
- D. After application of three strips, an inspection should be made and if there are any variations in color or pattern which are felt to be excessive, the wallcovering distributor or manufacturer's representative should be notified for his inspection before any further wallcovering is installed.
- E. Always bring material six (6) inches around inside and outside corners being sure to fur into corners to avoid bridging or spanning.
- F. The wallcovering should be smoothed to the hanging surface with a stiff bristled sweep brush or a flexible broad-knife to eliminate air bubbles.
- G. Remove excess adhesive along finished seam immediately after each wallcovering strip is applied. Use of clean, warm water, a natural sponge and clean towels are recommended for this use. It is very important to change water often to maintain cleanliness.

3.4 Clean-up Completion

Upon completion of work, remove surplus materials, rubbish, and debris, resulting from the wallcovering installation. Leave areas in neat, clean, and orderly condition.

END OF SECTION 09720

SECTION 09900

PAINTING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope:

1. This Section includes the surface preparation and application of painting and related work in locations indicated on the Drawings and specified herein.
 - a. Review all work to be accomplished with project representative to prevent misunderstandings.
 - b. Furnish all services, tools and equipment as needed.
 - c. Furnish and install all materials and labor necessary to paint the surfaces as specified herein.
 - d. Submit a "Partial Waiver of Lien" from the paint supplier prior to each draw and a full "Waiver of Lien" prior to final payment to render the project free of any liens.
 - e. Do not sub-contract or assign any portion of this work without Owner's prior written approval.
 - f. Work in general includes surface preparation, surface repair, caulking, sealants, patching and application of the paint coating to the substrates and systems outlined in this specification.
2. All paint products shall be provided by a single manufacturer.
3. Provide sample wall representative of proposed painting system(s) for Architect's and/or Owner's review and approval. Approved sample wall shall become the basis of comparison for all painting work.

1.02 RELATED WORK

- A. CONCRETE UNIT MASONRY: Section 04810.
- B. METAL FABRICATIONS: Section 05500.
- C. FINISH CARPENTRY AND MILLWORK: Section 06200.
- D. JOINT SEALANTS: Section 07900.
- E. STEEL DOORS & FRAMES: Section 08110.
- F. PORTLAND CEMENT PLASTER (STUCCO): Section 09220.
- G. GYPSUM WALLBOARD: Section 09250.
- H. TILE WORK: Section 09300.
- I. TEX-COTE EXTERIOR COATINGS: Section 09960

1.03 QUALITY ASSURANCE

- A. All surfaces of fabricated items that are left unfinished by the requirements of other Sections shall be painted under this Section. All work specified in this Section shall be in addition to shop and mill coats, priming and field coats which are specified in other Sections.
- B. Perform all touching up of shop coats and field coats of paint on structural steel and miscellaneous steel or iron as required and/or specified.
- C. Aluminum, steel, stainless steel, copper, bronze, chromium plating, nickel, monel metal, lead, lead coated copper and other surfaces with factory finishes shall not be painted or finished, except as otherwise specified.
- D. Remove and re-finish or otherwise correct in a manner approved by the Architect all work under this Section which peels, crazes, blisters, fails to adhere or otherwise fails to properly serve its intended purpose at no additional cost to the Owner.
- E. Paint only in dry weather when the temperature is 50 degrees Fahrenheit or higher. Stop exterior work early to permit paint film to set up before condensation caused by night temperature drops occur. Do not begin painting until the surfaces are moisture free.
- F. Do not varnish or enamel in direct sunlight.
- G. Keep the paint at room temperature.
- H. Sweep dust, dirt, and debris away before painting.
- I. Execute work in accordance with label directions. Coating applications shall be made in strict conformance to this specification and to the manufacturer's paint instructions on the labels and product data sheets.
- J. Paint only dry wood (less than 15% moisture). Cementitious substrates' moisture content shall not exceed 25% prior to coating application.
- K. All work shall be accomplished by skilled workmen familiar with and trained to do this type of work; moreover, they shall be qualified to operate or use the equipment and rigging needed to accomplish this work.
- L. All equipment shall be in sound working condition and must meet all OSHA Safety Standards. All workmen shall be aware of and trained in the operation of all safety equipment required for this Project.
- M. Materials shall be applied evenly and free of runs, sags, pinholes, or lap marks.
- N. Only the manufacturer's thinners may be used to thin the respective products and, in the amounts prescribed.
- O. All application tools and equipment shall be in good working order and suitable for proper application.
- P. All shrubbery and sprinkler systems shall be fully protected against damage during each stage of the painting project.
- Q. All exterior substrates designated not to receive paint coatings shall be kept free of paint residue. e.g. windows, doors, foliage etc...

- R. Normal safety signs, necessary lighting and temporary fencing around work areas shall be installed and maintained in accordance with OSHA requirements while the work is in progress.
- S. Advise the Contractor and Owner of those areas in which painting work is to be performed sufficiently in advance of the work schedule to permit the Contractor and Owner to prepare for the work, advise employees, move vehicles, etc.
- T. Only licensed contractors holding a valid license issued in their own name by the appropriate county licensing board are qualified to bid on this project.
- U. The contractor shall provide insurance certificates and maintain insurance coverages, i.e. workmen's compensation, bodily injury, property damage and automotive damage, for this project.
- V. The contractor shall comply with all fire and safety regulations.
- W. Painting contractor agrees not to sub-contract or assign any portion of this work without Owner's prior written approval.

1.04 PRODUCT DELIVERY AND STORAGE

- A. All materials shall be delivered to the Site in manufacturers' sealed packages, with labels intact.
- B. Confine all apparatus, materials storage, and operations of workmen to limits indicated by Contractor. All materials used on the job shall be stored in a single place designated by the Contractor. Such storage shall be kept clean and assume liability for damage to surrounding areas.
- C. Inflammable material and/or fire hazard waste shall be stored, handled and used in an approved manner and shall be removed from the site daily.

1.05 SUBMITTALS

- A. Samples:
 - 1. Submit full color chip line for each type of paint specified, for color selection(s) by the Architect.
 - 2. Supply draw-downs for each color selected.
- B. Product Data:
 - 1. Submit manufacturer's product data for each type of product used.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Products – Basis of Design: Provide paint products indicated on Drawings as manufactured by Sherwin-Williams Company.
- B. Ready-mixed paints, both exterior and interior, varnish, stains, coatings, and waxes shall be first-line (best quality grade) retail products.
- C. Thinners and additives shall be of types recommended by the paint manufacturer.
- D. The use of lead-containing paint is not permitted.
- E. The paints specified herein are known to be suitable and will be enforced as the required standards of quality of this work.

PART 3 - EXECUTION

3.01 INSPECTION, SAMPLES AND PROJECT STANDARDS

- A. Examine the areas and conditions under which painting is to be applied. Do not proceed with painting work until unsatisfactory conditions have been corrected.
- B. A sample area showing each phase of work shall be applied in a "stepped-out" fashion and checked by the Architect and/or Owner. Upon acceptance this will serve as the job standard for the remainder of that phase of work. This will also prevent misunderstanding as to interpretation of this specification's standards.
- C. Advise the Contractor, Architect and/or Owner with enough lead time prior to beginning each phase of work for their inspection to not cause a delay of work.
- D. Use a wet film thickness gauge to check application thickness as work proceeds. This method checked against the volume solids and coverage rates is the best guide in determining what the dry film thickness will be.

3.02 COLORS

- A. Colors shall be as indicated on Drawings
- B. Pigmented prime coats may be tinted to approximate shade of the final coat; some contrast is required.

3.03 STORAGE AND USE OF PREMISES

- A. The painting contractor shall confine his apparatus, materials storage, and operations of his workmen to limits indicated by project representative. All materials used on the job shall be stored in a single place designated by the Project Representative. Such storage shall be kept clean and the painting contractor shall be liable for damage to surrounding areas.
- B. Inflammable material and/or fire hazard waste shall be stored, handled, and used in an approved manner and shall be removed from the site daily.

3.04 PREPARATION

- A. Each surface shall be cleaned and prepared as specified. Should any surface be found unsuitable to produce a proper paint or sealant finish, the project representative shall be notified in writing and no material shall be applied until the unsuitable surfaces have been made satisfactory.
- B. Surfaces to be painted shall be clean, smooth, free from scratches and dust and thoroughly dry. Wood surfaces shall be well sanded before painting work is started.
- C. Concrete surfaces shall be cleaned, grouted, rubbed and pointed, water flushed clean and free of all dust, oily grease and laitance, and allowed to dry prior to painting.
- D. Steel and Iron shall be free from grease, rust, scale and dust. Touch up any chipped or abraded places on items that have been shop coated. Where steel and iron have heavy coating of scale, it shall be removed by wire brush or sand blasting necessary to produce a satisfactory surface for painting.

3.05 CONCEALED CONDITIONS

- A. Occasionally, cleaning techniques may develop or reveal unforeseen conditions which require

additional labor and materials. Notify the General Contractor, Architect and/or Owner to properly correcting the condition.

3.06 CLEANING AND MILDEW CONTROL

- A. All exterior surfaces to be painted shall be pressure cleaned to remove dirt, mildew, chalked paint and any foreign materials deterrent to the new finish.
- B. All exterior surfaces to be painted shall be water blasted at 2500 PSI or more depending upon substrate's condition (see C. below) with the following solution to remove mildew, mildew spores, and other surface contaminants.
- C. If a Dry-vit type system is present a lower pressure shall be used so as not to damage the exterior wall face.

3.07 CLEANING SOLUTION

- A. Mix 1 part bleach to 3 parts water - mix thoroughly. Let solution remain on surface 15 - 20 minutes and then thoroughly rinse with potable water. If dirt remains, wash with a non-sudsing detergent (i.e. Soilax). Rinse thoroughly with potable water and allow the surface to dry before painting.
- B. All loose and scaling paint not removed by pressure washing shall be removed by wire brushing or other suitable power tool cleaning.

3.08 MASONRY SUBSTRATES

- A. Prior to any masonry patching all cracks shall be sounded out, cut out and sealed with the specified bonding sealer.
- B. Minor cracks (hairline) in stucco, Dry-vit type system, exposed block, or poured concrete shall be patched with Elastomeric Patching Compound. Finished patches shall be closely matched to existing stucco surface.
 - 1. A hairline crack is defined as any visible crack no wider than 1/8 inch.
- C. Masonry cracks repaired using Elastomeric Patching Compound shall result in a minimum 1/8" build-up over the cracked areas. These areas shall then be feathered and textured to match adjacent surfaces.
- D. All masonry cracks of more than 1/8 inch in width shall be cut out, cleaned, primed, neoprene rope installed and then filled with One Part Polyurethane Sealant to meet federal specifications TT-S-00230C, Type II, Class A, USDA and FDA Approved.
- E. After the sealant has completely cured, apply Elastomeric Patching Compound with a minimum 1/8-inch build-up of material over the cracked areas to match adjacent surfaces in texture and uniformity.
- F. Remove all tape, patching compound, caulking or sealant in any previously patched areas that have lost adhesion to the substrate. Repatch and repaint as specified. (All silicone caulking or sealant shall be removed.)
- G. Unforeseen conditions can arise while doing the normal masonry crack repair. Should any area(s) be discovered indicating loose, disbonding or hollow sounding masonry, notify the Contractor, Architect and/or Owner immediately.

3.09 WOOD SUBSTRATES

- A. Painted wood surfaces shall be carefully inspected for evidence of deterioration or surface

imperfections. Sandpaper any hard, glossy surface to ensure proper adhesion. Fill nail holes, imperfections, and cracks with putty. Edges, corners and raised grain shall be eased by sanding.

1. Wood Substrates with Ferrous Fasteners:

- a. All rusty nail heads shall be treated with a phosphoric acid-based solution counter-sunk and puttied with an oil-based putty or spot primed to prevent further bleed

3.10 FERROUS METAL SUBSTRATES

- A. Metals showing signs of rust degradation shall be power tool cleaned per SSPC-SP 3, treated with a phosphoric acid based cleaner and pre-paint conditioner that leaves the surface chemically clean and corrosion free and primed with a rust inhibitive primer.

3.11 PROTECTION

- A. Adjacent fixtures and hardware shall be removed during the painting application.
- B. Particular care shall be taken using clean drop cloths, masking and other suitable means, to protect adjoining surfaces, fixtures, and materials of all kinds. The painting applicator shall be held responsible for, and shall repair, all damage resulting from the painting operation.
- C. All ceiling and soffit overhead painting shall be applied only while the floor is completely and continuously covered with drop cloths.

3.12 APPLICATION

- A. Paints shall be applied in the colors and minimum number of coats scheduled herein and at the square foot coverage as stated in the paint manufacturer's printed specifications. It is intended that paint so applied shall cover to the satisfaction of the Architect or additional coats shall be applied until approval is obtained.
- B. Paints shall not be applied to surfaces which show a moisture content greater than 15 percent as determined by an electronic moisture meter.
- C. Paints shall not be applied when the temperature falls below 45 degrees F., in damp, rainy weather, or when the relative humidity exceeds 85 percent.
- D. Paint shall be evenly spread and well distributed. The finish coats shall be free from any noticeable laps, brush marks, streaks, runs, sags, wrinkles, and shiners.
- E. All wood surfaces shall be thoroughly sanded between coats as required for a flaw-free finish.
- F. Follow instructions for metal primer (see 3.16 P. below).

3.13 BACK PRIMING

- A. All wood backs to be placed against concrete or masonry (except pressure treated wood) shall be painted with a sealer coat of paint or clear varnish before installation

3.14 DESTROYING WASTE

- A. At the end of each day, all cloths and waste materials which have been used in preparation and application of inflammable paint materials shall be destroyed or placed in closed metal containers. Under no circumstances shall any waste be emptied into plumbing fixtures, drains, or clean-outs of the plumbing systems of the building. Waste shall not be allowed to accumulate on the Site.

3.15 PAINTING OF PIPING AND FIRE RATED PARTITIONS FOR IDENTIFICATION

- A. Exposed piping, piping concealed in accessible pipe spaces and piping behind access panels shall be identified to designate service.
- B. Legend shall be stencil applied (painted on) at 40 feet spacing on straight runs where pipes pass through walls or floors and regulators, strainers, and clean-outs (except valves and fittings on plumbing fixtures and equipment).
- C. Legend shall give name in full or abbreviations. Size of stenciled identity lettering shall vary with the diameter of pipe covering as follows:
 - 1. Up to 1" 1/2" high letters.
 - 2. Above 1" 3/4" high letters.
- D. Fire rated walls, fire rated partitions and smoke partitions shall be identified by 3/4" high red lettering which identifies type and rating. Identifying marks shall be spaced 20'-0" on center maximum. Identifying marks are required above suspended ceilings in "dressed" areas and at 8'-0" to 10'-0" above floor in "back of house" or non-finished areas. Such identifying marks are not required in inaccessible spaces above hard ceilings in any "dressed" areas.

3.16 PAINTING SCHEDULE: INTERIOR FINISH SCHEDULE:

Interior Finishes

Drywall Showroom & Office Areas

Primer: B28W02600 - ProMar® 200 Zero VOC Interior Latex Primer White

2 Coats: B20W12651 - ProMar® 200 Zero VOC Interior Latex Eg-Shel

Drywall Service Areas

Primer: B70W00710 - Dura Pox Water Based Epoxy Primer Off White

2 Coats: B62W00811 - Epolon II Multi-Mil Epoxy Coating

Galvanized Metal Deck

2 Coats: B42W00002 - Waterborne Acrylic Dry Fall Eg-Shel White

Steel Deck

Primer: B66W01310 - PI PROCRYL PR OF W

2 Coats: B42W00002 - Waterborne Acrylic Dry Fall Eg-Shel White

Ductwork (exposed)

Primer: B66W01310 - PI PROCRYL PR OF W

2 Coats: B66W00651 - Pro Industrial High Performance Acrylic - Semi-Gloss

Steel/Ferrous Metal Support Members

Primer: B66W01310 - PI PROCRYL PR OF W

2 Coats: B66W00651 - Pro Industrial High Performance Acrylic - Semi-Gloss

Hollow Metal Doors & Frames (painted)

Primer: B66W01310 - PI PROCRYL PR OF W

2 Coats: B66W00651 - Pro Industrial High Performance Acrylic - Semi-Gloss

Wood - Interior Stained

First Coat: 725000000 - MW PERFORMANCE SERIES

2 Coats: 014444000 - Minwax® Polycrylic® Water-Based Protective Finish Semi-Gloss Clear

Concrete Floors Clear Sealer

2 Coats: 50.100204 - CLRSHLD WBCLRSLR WLK

Plaster Walls

Primer: B28W02600 - ProMar® 200 Zero VOC Interior Latex Primer White

2 Coats: A86W02151 - SPR INT FLAT

Concrete Floors Striping

Finish: B97YD2467 - Pro-Park Waterborne Traffic Marking Paint Yellow

Stucco

Primer: LX02W0050 - LXN C&M PRIMER WH

2 Coats: B20W12651 - ProMar® 200 Zero VOC Interior Latex Eg-Shel

PAINTING SCHEDULE: EXTERIOR FINISH SCHEDULE

Exterior Finishes

Precast Concrete Tilt Walls (or Tex Cote)

Primer: LX02W0050 - LXN C&M PRIMER WH

Second Coat: CF17W0811 - CNFLX WB MEDIUM

Finish: A89W02151 - SPR EXT SATIN

Ferrous Metal & Non-Ferrous Metals

Primer: B66W01310 - PI PROCRYL PR OF W

2 Coats: B53W02151 - PI WB ALK UR SG

Hollow Metal Doors & Frames (painted)

Primer: B66W01310 - PI PROCRYL PR OF W

2 Coats: B66W00651 - Pro Industrial High Performance Acrylic - Semi-Gloss

Ferrous Metal on Roof

Primer: B66W01310 - PI PROCRYL PR OF W

2 Coats: B66W00651 - Pro Industrial High Performance Acrylic - Semi-Gloss

Aluminum (Gutters, Downspouts, and Dumpster Gates as required)

Primer: B71Y00001 - DTM Wash Primer Yellow-Green Yellow-Green

2 Coats: B66W00651 - Pro Industrial High Performance Acrylic - Semi-Gloss

Steel/Ferrous Metal Bollards

Primer: B66W01310 - PI PROCRYL PR OF W

2 Coats: B66W00651 - Pro Industrial High Performance Acrylic - Semi-Gloss

Plaster

Primer: LX02W0050 - LXN C&M PRIMER WH

2 Coats: A80W02151 - SPR EXT FLAT

Pavement Striped

Finish: B97YD2467 - Pro-Park Waterborne Traffic Marking Paint White.

Block (Cinder and Concrete)

Primer: B25W00025 - PrepRite® Interior/Exterior Latex Block Filler White

2 Coats: A89W02151 - SPR EXT SATIN

END OF SECTION 09900

SECTION 09960

EXTERIOR TEXTURED COATINGS

1.00 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, and Division-1 Specification sections.

1.02 DESCRIPTION OF WORK

- A. Types of special coatings include, but are not necessarily limited to, the following:
 - 1. Concrete Coating System

1.03 RELATED WORK

- A. Concrete Surfaces (Concrete Tilt-up Panels)
- B. 09220 – Portland Cement Stucco

1.04 SYSTEM DESCRIPTION

- A. Concrete Coating System:
 - 1. TEX•COTE ® CoolWall® System

1.05 SUBMITTALS

- A. Product Data: Submit manufacturer's technical information including label analysis and application instructions for each material proposed for use.
- B. Submit 3 samples each of Smooth Texture, Fine Texture, Sand Texture and Course Texture for comparison with Architect's sample.
- B. Wall Sample:
 - 1. General: For each coating system specified, provide eight (8) foot by eight (8) foot wall sample for Architect's approval prior to beginning Project application of each special coating system.
- C. Manufacturer's recommended application procedures which, when approved by Architect, will become the basis for accepting or rejecting actual application procedures used on the Wall.

1.06 DELIVERY AND STORAGE

- A. Lids must be kept tightly sealed. Do not allow moisture to enter containers.
- B. Store containers in a dry place, upright and airtight at temperatures of forty-five (40° F) degrees F. and not exceeding one hundred (100°F) degrees F. Skins formed on surface of material must be removed prior to moving containers, mixing, or using.

1.07 JOB CONDITIONS

- A. Apply coating only when temperature of surfaces to be coated and surrounding air temperatures are between forty-five (40°F) degrees F. and one hundred (100°F) degrees F., unless otherwise permitted by manufacturer's printed instruction.
- B. Do not apply over frozen surfaces, or when rain is imminent.
- C. Incompatible substrate release agents, form oils, and any foreign material are removed prior to priming and coating.
- D. Roof and parapet top caps are installed and sealed against water penetration prior to priming and coating.
- E. Primer shall not be exposed to ultraviolet for more than four (4) weeks prior to application of coating. If exposure exceeds four (4) weeks, primer shall be re-coated, as recommended by manufacturer.
- F. Material use is above grade only. Do not use below grade.
- G. Joint Sealants must cure a minimum of ten (10) days or per manufacturer's recommendation. Excess sealant surface oils should be removed with an acetone solvent or approved cleaner.

1.08 WARRANTY

- A. On completion, in accordance with manufacturer's current written specifications, provide Owner with manufacturer's written "Limited Warranty" for product replacement.

2.00 PRODUCTS

- A. Textured Coatings of America, Inc.
4101 Ravenswood Road, Suite 218
Fort Lauderdale, Florida 33312
(954) 581-0771

2.02 MATERIALS

- A. Concrete Coating System:

3. TEX•COTE ® CoolWall®

- a. Provide over concrete tilt wall exterior of air conditioned spaces.

4. Colors: Match Dryvit Systems Inc. Moonlight White # 612

5. Texture: Tex•Cote® standard Sand Texture. The Architect reserves the right to substitute texture without additional cost to owner.

- B. Associated Materials

- 1. TEX•COTE ® FLEX-PATCH® BUTTER or KNIFE patching compound for cracks 1/32" or smaller.

2. TEX•COTE ® FLEX-PATCH® SMOOTH for cracks 1/32" to 1/8".
3. Cementitious Patching Compound with TEX-BOND for cracks over 1/8".
4. TEX•COTE ® SKIM COTE for cracks from 1/8" to 3/8".

3.00 EXECUTION

3.01 INSPECTION

- A. Applicator must examine areas and conditions under which special coating work is to be applied and notify Contractor in writing of conditions detrimental to proper and timely completion of work. Do not proceed with work until satisfactory conditions have been corrected in a manner acceptable to the applicator.

3.02 SURFACE PREPARATION

- A. General: Perform preparation and cleaning procedures in accordance with coating system manufacturer's instructions and as herein specified, for each particular substrate and coating condition.
 1. Remove hardware accessories, machined surfaces, plates, lighting fixtures and similar items in place and not to be finish-coated or provide surface applied protection prior to surface preparation and coating operations. Remove, of necessary, for complete coatings of items and adjacent surfaces. Following completion of coating of each area, reinstall removed items.
 2. All surfaces shall be sound and clean prior to application of primer and coatings. Such surface contaminants as dust, dirt, mildew, form oils, loose substrate, etc., shall be removed by water-blasting. Excessive form oils, release agents and curing compounds may require light sandblasting.
 3. Mask all glass, shrubbery, and asphalt surfaces.
 4. Test surface for PH level, record and report PH test results to Manufacturer's Representative.

3.03 MATERIALS PREPARATION

- A. Mix and prepare coating materials in accordance with manufacturer's directions.
- B. Store materials not in actual use in tightly covered containers. Maintain containers used in storage, mixing and application of coatings in a clean condition, free of foreign materials and residue.
- C. Stir materials before application to produce a mixture of uniform density, and stir as required during application. Do not stir surface film into material. Remove film, and if necessary, strain material before using.

3.04 APPLICATION

- A. Over a clean and sound surface apply Primer XL-70 per manufacturer's printed instructions.
 1. Application Rate (smooth concrete): Two hundred seventy-five (275) to three hundred (300) square feet per gallon.
 2. Curing Time: Twenty-four (24) hours minimum
 3. Application of TEX•COTE shall be a uniform film thickness over the entire surface being covered.

4. A wet edge shall be maintained to prevent lap-marks.
5. Avoid starting and stopping midway on wall. Continue to a natural break such as a panel edge or corner.

C. For TEX•COTE ® CoolWall®

1. Apply at uniform, continuous pin-hole free film.
2. Apply at a rate of 175 to 225 square feet per gallon.
3. Maintain a wet edge to prevent lap marks.
4. Continue work to a panel edge, corner, seam or other natural break.

3.05 CLEANING AND PROTECTION

A. General:

1. Clean-up: During the progress of work, remove from site discarded coating materials, rubbish, cans and rags at end of each work day.
2. Upon completion of coating work, clean window glass and other coating-splattered surfaces. Protect work of other trades, whether to be coated or not, against damage by coating and finishing work. Correct any damage by cleaning, repairing, or replacing, and recoating, as acceptable to Architect.
3. Provide "wet paint" signs as required to protect newly coated finishes. Remove temporary protective wrappings provided by others for protection of their work, after completion of coating operations.
4. At the completion of work of other trades, touch-up and restore all damaged or defaced surfaces.

4.00 PERFORMANCE CRITERIA

- A. Textured coating must provide a dense textured population with uniform textured profile on all surfaces covered.
- B. Completed Textured Coating System must provide a continuous, pinhole free film, 15 to 18 mils dry film thickness.

END OF SECTION 09960

SECTION 10160
TOILET PARTITIONS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Furnish and install all solid polymer floor supported, overhead braced toilet partitions located in Toilet Rooms, all as indicated on Drawings or specified herein.

1.02 RELATED WORK

- A. GYPSUM WALLBOARD: Section 09250.
- B. TILE WORK: Section 09300.
- C. TOILET ROOM ACCESSORIES: Section 10800.

1.03 QUALITY ASSURANCE

- A. Installer's Qualifications: Installation shall be performed only by a qualified installer with at least five (5) years documented experience in installations of a similar nature.
- B. Reference Standards: Comply with provisions of the following, unless otherwise indicated or specified:
 - 1. American Society for Testing and Materials (ASTM):
 - a. Referenced Standards.
 - 2. National Electrical Manufacturers Association (NEMA):
 - 1. Referenced Standards.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's detailed technical data for materials, fabrication, and installation; including catalog cuts of anchors, hardware, fastenings, and accessories.
- B. Shop Drawings: Complete shop drawings shall be prepared for this work indicating the materials, sizes of members and units, construction and clearances required, and methods of securing to the building. Include instructions for installation of anchorage devices built into other work.
- C. Samples: Submit full range of color samples for each type of unit required. Submit 6-inch square samples of each color and finish on same substrate to be used in work, for color verification after selections have been made.
- D. Installer Qualifications: Submit documented evidence of installer's qualifications.

1.05 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver all units in substantial, protective cartons and with protective masking. Retain masking until completion of construction.
- B. Store all materials indoors. Locate and keep free from building contamination as might occur during the course of construction.
- C. Handle all materials carefully so as not to injure surface finishes. In the event of damage, immediately make all repairs and replacements necessary.

1.06 JOB CONDITIONS

- A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication to ensure proper fitting of work.
- B. Coordination: Furnish inserts and anchorages which must be built into other work for installation of toilet partitions and related work; coordinate delivery with other related work to avoid delay.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Products: Provide toilet partitions by one of the following manufacturers:
 - 1. Stainless Steel in Public Restrooms-Men # 109 & Women # 110 by Hadrian-Elite. Full Privacy System.
 - 2. Phenolic Finish in # 126/Men's RR / Locker by Bradley Corp. Full Privacy System.

2.02 SOLID-POLYMER TOILET PARTITIONS

- A. Door, Panel, and Pilaster Construction: Solid, polypropylene (PP) panel material, not less than 1 inch thick, seamless, with eased edges, and with homogenous color and pattern throughout thickness of material.
 - 1. Color as selected from manufacturer's standard color line.
- B. Pilaster Shoes: ASTM A 666, Type 302/304 stainless steel, not less than 3-inches high, 20 gauge, finished to match hardware.
- C. Stirrup Brackets: Manufacturer's standard design for attaching panels to walls and pilasters, either chromium-plated non-ferrous cast zinc alloy ("Zamac") or clear anodized aluminum.
- D. Heat-Sink Strip: Manufacturer's standard continuous, extruded aluminum strip fastened to exposed bottom edges of solid polymer components to prevent burning.

2.03 ACCESSORIES

- A. Hardware and Accessories: Manufacturer's standard design, heavy-duty operating hardware and accessories of chromium-plated non-ferrous cast alloy ("Zamac").
- B. Overhead Bracing: manufacturer's standard continuous, extruded aluminum head rail with anti-grip profile and in manufacturer's standard finish.
- C. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel, chromium-plated steel, or brass finished to match hardware, with theft-resistant type heads and nuts. For concealed anchors, use hot-dip galvanized, cadmium-plated, or other rust-resistant protective-coated steel.

2.04 FABRICATION

- A. Overhead Braced Units: Provide manufacturer's standard corrosion-resistant supports, leveling mechanism, fasteners, and anchors at pilasters to suit floor conditions. Make provisions for setting and securing continuous head rail at top of each pilaster. Provide shoes at pilasters to conceal supports and leveling mechanism.
- B. Doors: Unless otherwise indicated, provide 24 inch wide in-swinging doors for standard toilet compartment and 36-inch wide out swinging doors with a minimum 32 inch wide clear opening for compartment indicated to be accessible to people with disabilities.
 - 1. Hinges: Manufacturer's standard self-closing type that can be adjusted to hold doors open at any angle up to 90 degrees.
 - 2. Latch and Keeper: Recessed latch unit, designed for emergency access, with combination rubber faced door strike and keeper. Use model complying with requirements of ADA.
 - 3. Coat Hook: Manufacturer's standard combination chrome-plated hook and rubber-tipped bumper, sized to prevent door from hitting compartment-mounted accessories. The coat hook is to be mounted at 48" a.f.f. per ADA requirements.
 - 4. Door Bumper: Manufacturer's standard rubber-tipped bumper at out-swinging doors.
 - 5. Door Pull: Manufacturer's standard unit at both out-swinging and in-swinging doors that complies with accessibility requirements of authorities having jurisdiction.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. General: Comply with manufacturer's recommended procedures and installation sequence. Install partitions rigid, straight, plumb, and level. Provide clearances of not more than 2-inch between pilasters and panels, and not more than 1-inch between panels and walls. Secure panels to walls with not less than two stirrup brackets attached near top and bottom of panel. Locate wall brackets so that holes for wall anchorages occur in masonry or tile joints. Secure panels to pilasters with not less than two stirrup brackets located to align with stirrup brackets at wall. Secure panels in position with manufacturer's recommended anchoring devices.
- B. Overhead Braced Partitions: Secure pilasters to floor and level, plumb, and tighten installation with devices furnished. Secure overhead brace to each pilaster with not less than two fasteners. Hang doors and adjust so that tops of doors are parallel with overhead brace when doors are in closed position.

- C. Accessories: Coordinate accessories' mounting with other trades. Refer to Section 10800 - Toilet Accessories.

3.02 ADJUST AND CLEAN

- A. Hardware Adjustment: Adjust and lubricate hardware for proper operation. Set hinges on in-swinging doors to hold open approximately 30 degrees from closed position when unlatched. At handicap accessible stall adjust door for ADA requirements.
- B. Clean exposed surfaces of partition systems using materials and methods recommended by manufacturer and provide protection as necessary to prevent damage during remainder of construction period. Replace surfaces that become scarred or chipped prior to Owner's acceptance.

END OF SECTION 10160

SECTION 10522

FIRE EXTINGUISHERS, CABINETS, AND ACCESSORIES

PART 1: GENERAL

1.01 WORK INCLUDED

- A. Fire Extinguishers
- B. Cabinets
- C. Accessories

1.02 RELATED WORK

- A. Section 09900 - Painting

1.03 REFERENCES

- A. NFPA 10 - Portable Fire Extinguishers
- B. ADA Accessibility Guidelines

1.04 QUALITY ASSURANCE

- A. Conform to NFPA 10 requirements for portable fire extinguishers.
Provide fire extinguishers, cabinets, and accessories by a single manufacturer.

1.05 SUBMITTALS

- A. Submit brochure and product data in compliance with Section 01300.

PART 2: PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Where shown in the drawings, provide fire extinguishers, cabinets, and accessories manufactured by Larsen's Manufacturing Co. 7421 Commerce Lane N.E., Minneapolis, MN 55432 (763) 571-1181.

2.02 FIRE EXTINGUISHERS

- A. Dry Chemical Type: Larsen's MP Series 10 LB 4A-60BC or as indicated on drawings.
- B. All fire extinguisher types and locations are subject to Fire Marshal's approval.

2.03 FIRE EXTINGUISHER CABINETS

- A. Where Fire Extinguisher Cabinets (FEC) are indicated in the drawings, provide Larsen's Architectural Series, model number 2409-6R with V Duo door.
- B. Door and trim to be fabricated from cold-rolled steel, with baked white enamel finish.
- C. Provide die cut lettering.
 - 1. Orientation: Vertical
 - 2. Color: Red

2.04 ACCESSORIES

- A. Provide standard brackets.

PART 3: EXECUTION

3.01 INSPECTION

- A. Verify that rough openings for cabinets are correctly sized and located.
- B. Provide Gypsum Wall Board pocket for cabinets located in fire rated Gypsum Wall Board Partitions.

3.02 INSTALLATION

- A. Install the items of this Section in strict accordance with the original design, approved shop drawings, and requirements of agencies having jurisdiction, as approved by the Architect, anchoring all components firmly into position.
- B. Fire Extinguisher top bracket to be mounted 40" above finished floor unless otherwise noted or as directed by Fire Marshal.

END OF SECTION 10522

SECTION 10800
TOILET ACCESSORIES

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Provide all toilet accessories as indicated on the Drawings and herein specified.

1.02 RELATED WORK

- A. CONCRETE UNIT MASONRY: Section 04810.
- B. COLD FORMED METAL FRAMING: Section 05400.
- C. GLASS AND GLAZING: Section 08800.
- D. GYPSUM WALLBOARD: Section 09250.
- E. TILE WORK: Section 09300.

1.03 QUALITY ASSURANCE

A. Manufacturer's Qualifications:

- 1. Products used in the work of this Section shall be produced by manufacturers regularly engaged in the manufacture of similar items and with a history of successful production acceptable to the Architect.

B. Requirements of Regulatory Agencies:

- 1. Comply with requirements of the Americans with Disabilities Act (ADA).

1.04 SUBMITTALS

A. Product Data:

- 1. Submit manufacturer's technical information, catalog cuts, and installation instructions for each product to be furnished and installed.

1.05 PRODUCT DELIVERY AND STORAGE

- A. Materials shall be delivered to the Site undamaged. Materials shall be stored on the Site in an area and in a manner to provide protection from damage until incorporated in the Work.

1.06 JOB CONDITIONS

A. Inserts and Anchorages:

- 1. Furnish inserts and anchoring devices which must be set in metal framed or masonry walls; coordinate delivery with other work to avoid delay.

B. Accessory Locations:

1. Coordinate accessory locations with other work to avoid interference and to ensure proper operation and servicing of accessory units.
2. Locations shall comply with State and Federal handicapped accessibility requirements for handicapped accessible units.

PART 2 - PRODUCTS

2.01 MANUFACTURER

- A. Products: Model numbers shown for accessories are units manufactured by Bobrick Washroom Equipment Company, Inc., unless otherwise specified. Provide products by Bobrick or by one of the following manufacturers:
1. A&J Washroom Accessories.
 2. American Specialties Inc.
 3. Bradley Corp.

2.02 MATERIALS, GENERAL

- A. Stainless Steel: AISI Type 302/304, with polished No. 4 finish, 22 gauge minimum, unless otherwise indicated.
- B. Mirror Glass: ASTM C 0148, Type I, Class 1, Quality q2, 1/4 inch thick, with silver coating, copper protective coating, and non-metallic paint coating. Polished edge, fully protected with padding. 10-year guarantee against silver spoilage.
- C. Galvanized Steel Mounting Devices: ASTM A 153, hot dip galvanized after fabrication.
- D. Fasteners: Screws, bolts, and other devices of same material as accessory unit or of galvanized steel where concealed, theft and vandal resistant.

2.03 FABRICATION

- A. General: Stamped names or labels on exposed faces of toilet accessory units are NOT permitted. Where locks are required for a particular type of toilet accessory, provide same keying throughout Project. Furnish two (2) keys for each lock.
- B. Recessed Toilet Accessories: Except where otherwise indicated, fabricate units of all welded construction, without mitered corners. Hang doors or access panels with continuous stainless steel piano hinges. Provide anchorage which is fully concealed when unit is closed.

2.04 CHANGING STATION

- A. Provide Koala Kare model KB110-SSWM surface mounted baby changing station.

2.05 ADA COMPLIANT

- A. All toilet accessories, whether installed in an accessible stall or not, must be ADA compliant and mounted at an appropriate height. Architect retains the right to refuse any submittal that is not ADA compliant.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install toilet accessories in accordance with the manufacturer's instructions, using fasteners which are appropriate to substrate and recommended by manufacturer of unit. Install units plumb and level, firmly anchored in locations and at heights indicated.
- B. All toilet accessories are to be mounted to meet ADA requirements. If manufacturer's instructions do not include ADA height and reach certifications or instructions, consult with Architect prior to installation.

3.02 ADJUSTING AND CLEANING

- A. Adjust toilet accessories for proper operation and verify that mechanisms function smoothly. Replace damaged or defective items.
- B. Clean and polish all exposed surfaces after removing temporary labels and protective coatings.

3.03 TOILET ACCESSORY SCHEDULE

- A. Refer to Drawings Toilet Accessory Schedule on Drawings. Model numbers refer to Bobrick, or as indicated.

END OF SECTION 10800