ADDENDUM 2

RESPONSES TO BIDDER QUESTIONS

Responses are provided to Bidder Questions with this Addendum.

ADDITIONAL REFERENCE DOCUMENTS

The Geotechnical Report has been added with this addendum.

CLARIFICATIONS

- All new operations and maintenance equipment will be provided for in a forthcoming RFP
- All interior furniture shown for coordination purposes only and N.I.C.
- Bidders should include a $50,000 allowance for graphic panels, room signage, public information/kiosk signage, ADA/emergency egress signage, site and project entry signage
- Bidders should allow for three colors of glazed block (To be selected from approved glazed block product standard color palette, typical.

SPECIFICATION CHANGES

042223 ARCHITECTURAL CONCRETE UNIT MASONRY
- REPLACE entire Specification

064023 INTERIOR ARCHITECTURAL WOODWORK
- REPLACE entire Specification

084113 ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS
- REPLACE entire Specification

087100 DOOR HARDWARE
- REPLACE entire Specification

093000 TILING
- REPLACE entire Specification

095113 ACOUSTICAL PANEL CEILINGS
- REPLACE entire Specification

096513 RESILIENT BASE AND ACCESSORIES
- REPLACE entire Specification

096519 RESILIENT TILE FLOORING
- REPLACE entire Specification

096813 CARPETING

- REPLACE entire Specification

098713 POLISHED CONCRETE WITH DYE
- REPLACE entire Specification

099113 EXTERIOR PAINTING
- REPLACE entire Specification

099123 INTERIOR PAINTING
- REPLACE entire Specification

099500 INTERIOR EPOXY COATINGS
- REPLACE entire Specification

099600 HIGH-PERFORMANCE COATINGS
- REPLACE entire Specification

102226 OPERABLE PARTITIONS
- REPLACE entire Specification

102800 TOILET, BATH, AND BUILDING ACCESSORIES
- REPLACE entire Specification

105113 METAL LOCKERS
- REPLACE entire Specification

107300 PROTECTIVE COVERS
- REPLACE entire Specification

122113 HORIZONTAL LOUVER BLINDS
- REPLACE entire Specification

122200 CURTAINS AND DRAPES
- REPLACE entire Specification

323119 SECURITY GATE SYSTEM
- ADD Specification

DRAWING CHANGES

C-1 SITE PLAN
- Bus Wash Addition length Increased

C-2 TRAFFIC FLOW PLAN
- Bus Wash Addition length Increased

C-3 STAKING PLAN
- Bus Wash Addition Length Increased

C-4 PAVING GRADING AND DRAINAGE PLAN
- Bus Wash Addition length Increased

C-6 UTILITY PLAN
- Relocated utilities between bus wash and fueling station

L-1 PLANTING PLAN
- Bike Rack and Smoking Area Designation Added

DET-1 SITE DETAILS
- ADD signage details for the LEV/FEV and carpool parking spaces

G-100 COVER SHEET
- Front Entry Image Update

A-001 ARCHITECTURAL SITE PLAN
- Gate and Bollard Clarifications, Bus Wash Addition length Increase, Floor Plan Updates

A-002 ARCHITECTURAL SITE PLAN – CIRCULATION
- Bus Wash Length Increase and Floor Plan Updates

A-003 ARCHITECTURAL SITE PLAN – PHASING PLAN
- Bus Wash Addition Length Increase and Floor Plan Updates

A-011 SUMMARY OF CODE REQUIREMENTS
- Area Adjustments for Bus Wash Addition Length Increase

A-021 LIFE SAFETY PLANS - OVERALL – NEW WORK
- Area Adjustments for Bus Wash Addition Length Increase

A-022 LIFE SAFETY PLANS - OVERALL – NEW WORK
- Roof Adjustment for Skylights/Canopy Update

A-042 ACCESSIBILITY PLANS
- Floor Plan Updates and Roof Adjustment for Skylights/Canopy Update

A-121 GROUND FLOOR PLAN – OVERALL – NEW WORK
- Bus Wash Addition Length Increase and Floor Plan Updates

A-122 SECOND FLOOR PLAN – OVERALL – NEW WORK
- Roof Adjustment for Skylights/Canopy Update

A-123 ROOF PLAN – OVERALL – NEW WORK
- Roof Adjustment for Skylights/Canopy Update, Bus Wash Addition Roof Update

A-124 GROUND FLOOR PLAN – SOUTH – NEW WORK

- Ground Floor Plan Update, Extent of Entry Walk-Off Carpeting Clarified

A-125 GROUND FLOOR PLAN – NORTH – NEW WORK
- Bus Wash Addition Length Increased, Extent of Entry Walk-Off Carpeting Clarified

A-126 SECOND FLOOR PLAN – SOUTH – NEW WORK
- Furniture Layout Update, Roof Adjustment for Skylights/Canopy Update

A-127 SECOND FLOOR PLAN – NORTH – NEW WORK
- Furniture Layout Update, Bus Wash Addition Length Increased.

A-128 ROOF PLAN – SOUTH – NEW WORK
- Roof Adjustment for Skylights/Canopy Update, Ref. to Mech Dwgs for Rooftop Equipment

A-129 ROOF PLAN – NORTH – NEW WORK
- Bus Wash Addition Roof Update

A-131 GROUND REFLECTED CEILING PLAN – SOUTH – NEW WORK
- Ground Floor Reflected Ceiling Plan Update, Ref. to M/E/P/FP Dwgs for Fixtures

A-132 GROUND REFLECTED CEILING PLAN – NORTH – NEW WORK
- Ref. to M/E/P/FP Dwgs for Fixtures

A-133 SECOND REFLECTED CEILING PLAN – SOUTH – NEW WORK
- Second Floor Reflected Ceiling Plan Update, Ref. to M/E/P/FP Dwgs for Fixtures

A-134 SECOND REFLECTED CEILING PLAN – NORTH – NEW WORK
- Second Floor Reflected Ceiling Plan Update, Ref. to M/E/P/FP Dwgs for Fixtures

A-141 GROUND FLOOR PLAN – ENLARGED – NEW WORK
- Public Lobby Floor Plan Update

A-152 GROUND FLOOR – ENLARGED – TOILET – LOCKER ROOM – NEW WORK
- Toilet Accessories Update

A-154 MILLWORK ENLARGED PLANS – NEW WORK
- Reception Desk Plan Update

A-161 GROUND FLOOR – EQUIPMENT PLAN
- Ground Floor Plan Update

A-161 GROUND FLOOR – EQUIPMENT PLAN
- Ground Floor Plan Update, new walk-off mat carpeting extents clarification

A-163 GROUND FLOOR – EQUIPMENT PLAN
- New walk-off mat carpeting extents clarification

A-165 GROUND FLOOR – EQUIPMENT PLAN
- New walk-off mat carpeting extents clarification

A-167 GROUND FLOOR – EQUIPMENT PLAN
- New walk-off mat carpeting extents clarification and Ref. to O&M Equip. N.I.C., part of forthcoming FF&E RFP

A-168 SECOND FLOOR – EQUIPMENT PLAN
A-169 SECOND FLOOR – EQUIPMENT PLAN
- Second Floor Furniture Update

A-221 ELEVATIONS – OVERALL – NEW WORK
A-222 ELEVATIONS – NORTH AND SOUTH – NEW WORK
A-223 ELEVATIONS – EAST – NEW WORK
A-224 ELEVATIONS – WEST – NEW WORK
- Front Entry Canopy, Curtainwall and Skylight Update

A-401 FINISH SCHEDULE
- Finish Schedule and Finish Legend Updates

A-411 DOOR SCHEDULE AND DETAILS
- Hardware Set Updates

A-421 WINDOW AND STOREFRONT ELEVATIONS
- Front Entry Curtainwall Update

A-510 EXTERIOR DETAILS
- Rooftop Equipment Screen Deleted, Bollard Detail Added

A-803 CANOPY DETAILS
- Front Entry Layout Update; Service Canopy Column Spacing Update

A-901 3D EXTERIOR VIEWS
A-902 3D EXTERIOR VIEWS
A-903 3D EXTERIOR VIEWS
A-953 AXONOMETRIC – NEW WORK
- Front Entry Image Updated on each sheet

ID-301 MILLWORK DETAILS
- ADD new Millwork Details sheet for spaces shown; Supersedes prior millwork details, provided, typ.

M-111, M-112, M-121, M-122, M-302, M-303, M-402, M-501
- Updates associated with interior design updates and as indicated

E-111, E-112, E-121, E-122, E-211, E-212, E-311, E-312
- Updates associated with interior design updates and as indicated

QUESTION NO. QUESTION RESPONSE RESPONSES TO BIDDER QUESTIONS

111018-01	I found the details (A-510) for the Equipment screen in the plans but was not able to find the screen for dimensions in other plans. Please advise.	Rooftop equipment screens will not be utilized for this project. The equipment screen detail will be removed as part of forthcoming Addendum 2.
111024-01	We are a RetroPlate certified applicator bidding on the polished and colored concrete for the above mentioned project. The specifications fail to call out the level of “shine” that is wanted, (satin, gloss or high gloss). Can you please clarify?	A gloss finish is preferred for the polished and colored concrete.
111027-01	I see no details on the gates, and no specifications on the gate operators. on drawing A 001 it says "GC to provide heavy duty motorized driver remote ....." what kind of gate, what material is the gate made of? what size operator? what safety devices do you want to make UL325 compliant. what voltage and phase, do you want battery back up, is the gate going to be automatic or semi automatic mode. what duty cycle, how is the gate going to be controlled (transmitters only) or do you want a keypad, telephone entry system, card reader, prox reader? what size operator? pad mount or post mount, chain drive or hydraulic.	Specification Section 323119, Security Gate System, has been added and Sheet A-001 Architectural Site Plan updated to address this question as part of Addendum 2.
111028-01	The architectural drawings call for standard 4'x8', single glazed acrylic skylights, but the specs reflect a custom framed skylight. Please advise how to proceed with our bid.	Skylight quanity and locations have been updated as part of Addendum 2. Skylight glazing to be glass (not acrylic) as indicated in Specifications.
111031-01	The specs call for metal framed glass skylights but the plans call for Dittmer acrylic formed skylights. Please advise which they want.	Skylight quanity and locations have been updated as part of Addendum 2. Skylight glazing to be glass (not acrylic) as indicated in Specifications.
111104-01	We have questions regarding the screenwall that is shown on A510: Is this new or existing? Where does the screenwall occur on the roof? It is not shown on the roof plan. Does this screenwall surround the walkway pads shown directly to the left on A510?	Rooftop equipment screens will not be utilized for this project. The equipment screen detail will be removed as part of forthcoming Addendum 2.
111104-02	Also, are there new steel bollards on this project?	Yes, bollard quantities have been clarified on Sheet A-001, Architectural Site Plan as part of Addendum 2.
111104-03	The architectural drawings call for standard 4'x8', single glazed skylight, but the specs reflect a custom framed skylight. Please advise how to proceed with our proposal.	Skylight quanity and locations have been updated as part of Addendum 2. Skylight glazing to be glass (not acrylic) as indicated in Specifications.
111104-04	Could you clarify a way to reference the doors hardware sets to the doors that they are to receive?	Door hardware sets/schedule will be clarified with Addendum 2.

QUESTION NO. QUESTION RESPONSE RESPONSES TO BIDDER QUESTIONS

111104-05	Our take off team found a detail of the screenwall however there are no plan views or elevations showing the location of the screenwall. Can you advise where the drawing can be located so I can provide pricing?	Rooftop equipment screens will not be utilized for this project. The equipment screen detail has been removed as part of forthcoming Addendum 2.
111104-06	The project calls for ceiling speakers. What type of cable/wire goes in this section of the project? Where are the specs that cover this area? The specs are also missing for the CCTV. Where can I find those?	All speakers, P/A system equipment, CCTV cameras and CCTV system equipment will be procured under a separate RFP. G.C. is responsible for providing wiring from each speaker and CCTV camera location terminating back the the Data Center equipment closet. CCTV wiring shall be RJ45 Ethernet CAT 5E or CAT 6 cabling. The final wiring and design requirement will be coordinated with CAT subject to final wiring design/approval. Speaker wiring shall be a combination of twisted-pair speaker cable and a CAT 5 network cable for intelligent monitoring and control of the paging system.
111104-07	Attached for your viewing is a set of typical drawings for Willard Shutter Companies Econo-Span 45 degree Louvered Equipment Screen, color brochure and a brief comparison to CSI's Vert-A-Cade 301 louver which is the basis of design for this project…"	Rooftop equipment screens will not be utilized for this project. The equipment screen detail will be removed as part of Addendum 2.
111104-08	Door Hardware suppliers are calling requesting information about the door schedule. The door schedule as published does not identify which hardware set it receives.	Sheet A-411, Door Schedule and Details, and Spec Section 087100, Door Hardware, have been clarified as part of Addendum 2.
111107-01	The plans or plan details do not show which counter tops are solid surface verses plastic laminate. Also there are no cross sections for the Receptionist, Parts or Shop Foreman counters.	Sheet ID-301, Millwork Details, has been added for clarification with Addendum 2. Consider the Reception Desk as furniture N.I.C.
111107-02	Division 3 Specs include Stained and Polished Concrete. I am unable to find anything on the Finish Schedule A401. Please advise.	Sheet A-401, Finish Schedule, and Finish Specifications have been updated to address this question as part of Addendum 2.
111107-03	On the finish schedule (A-401) the ceramic tile and base is listed as TBD, however, the tile spec has multiple colors listed but nothing for CT-1 or CT-2. Can you please clarify what material to quote?	Sheet A-401, Finish Schedule, and Finish Specifications have been updated to address this question as part of Addendum 2.
111107-04	The specs call for exterior system and doors to be Peerless but drawings detail Kawneer 1600 curtain wall with insulated glass: Confirm whether the systems need to be impact rated to meet code requirement. Can YKK be quoted in lieu of Peerless and Kawneer?	Specification Section 084113, Aluminum-Framed Entrances and Storefronts has been updated to address this question as part of Addendum 2.

QUESTION NO. QUESTION RESPONSE RESPONSES TO BIDDER QUESTIONS

111107-05	Exterior elevations S1 – S8 are detailed as curtain wall – can we quote YKK 300 OG 3” x 7 13/16” (impact rated)?	Specification Section 084113, Aluminum-Framed Entrances and Storefronts has been updated to address this question as part of Addendum 2.
111107-06	Exterior Window W1 – details show storefront metal – can we quote YKK 2 ½” x 5” storefront? And does it need to be thermal or non-thermal?	Specification Section 084113, Aluminum-Framed Entrances and Storefronts has been updated to address this question as part of Addendum 2.
111107-07	Interior elevations S9 – S12 are detailed as curtain wall – can we quote YKK 300 OG 3” x 7 13/16” (looks like drawings want to keep profile the same on exterior and interior)	Specification Section 084113, Aluminum-Framed Entrances and Storefronts has been updated to address this question as part of Addendum 2.
111107-08	Doors – can we quote YKK > 35H medium stile, impact doors for the exterior and 35D medium stile doors for the interior	Specification Section 084113, Aluminum-Framed Entrances and Storefronts has been updated to address this question as part of Addendum 2.
111107-09	The specs call for the exterior glass to be 1” insulated (084413) and interior to be ¼” (088000):	Specification Section 084113, Aluminum-Framed Entrances and Storefronts has been updated to address this question as part of Addendum 2.
111107-10	For the exterior glass to meet hurricane impact code requirements, the glass must be as per below: Windows / Curtain Wall = 1 5/16” thick, Outboard: 1/4" tempered, interspace: 1/2", inboard: 9/16" laminate with minimum of .090 interlayer	Specification Section 084113, Aluminum-Framed Entrances and Storefronts has been updated to address this question as part of Addendum 2.
111107-11	For the exterior door glass, must be 9/16” laminate with minimum of .090 interlayer. The drawings detail curtain wall on the interior (due to same profile goal) but for monolithic glass, an option is to use same curtain wall system and then a modified rubber to allow for 9/16” monolithic glass on the interior > please advise.	Specification Section 084113, Aluminum-Framed Entrances and Storefronts has been updated to address this question as part of Addendum 2.
111107-12	Finish – the specs call for 2-coat painted finish with selection from custom colors – custom colors are typically 3-coat (and more expensive) – please clarify finish.	Specifications 099113, 099123, 099500 and 099600 have been updated to address this question as part of Addendum 2.
111107-13	Where can I find the overhead door specifications for the Chatham transit operations project?	Refer to Specification Section 083323, Overhead Coiling Doors, provided with the original Bid Set
111107-14	The General Submittal Requirements call for the Fire Alarm shop drawings to be prepared by a NICET Level IV fire alarm technician. Will you also require a professional engineer sign and seal the shop drawings per Fire Alarm System Note 4.n?	Yes.

QUESTION NO. QUESTION RESPONSE RESPONSES TO BIDDER QUESTIONS

111107-15	Section 283111-1.3 calls for the interfacing / integration of the existing fire alarm control panel with the new fire alarm system. Please provide the make and model of the existing FACP, the number of zones being used and the number of devices per zone.	There will not be an existing fire alarm control panel to coordinate with. We are providing a new fire alarm system overall.
111107-16	Section 283111-2.3 C.1-d. Calls for no more than 50 addressable devices on each SLC. The Gamewell-FCI panels support up to 98 addressable sensors as well as up to 99 monitor modules and/or control points per SLC. Since the panel supports up to 197 addresses per SLC, will we still be limited to only 50 devices?	Yes. No more than 50 addressable devices are allowed on each SLC to allow for spares/future use.
111107-17	On page E-502 under Fire Alarm System General Notes, Note 7 says to provide two spare signal circuits minimum. Provide required battery capacity. Are you asking for two spare Signaling Line Circuits? If so, would you accept spare capacity as opposed to spare circuits? If so, what is your target spare capacity? 100 devices?	See response to 111107-16. Ultimately, fire alarm contractor will determine number of devices. Minimum of 2 spare Signaling Line Circuits; 50 devices maximum per circuit.
111107-18	Exterior frames are to receive 12 gauge frames? Can be done but highly unusual just confirming that is what is wanted/needed. Extra heavy duty frames are 14 gauge.	14 GA Exterior Frames are acceptable.
111107-19	All doors on schedule are 2" thick? This can be done but is custom size, adding a lot to the bid that is probably not necessary. Average/ usual door thickness is 1 3/4".	1 3/4" doors are intended.
111107-20	Who is responsible for costs associated with the building permit? If the GC is responsible, what is the cost? Are there any impact fees or any other required permits or fees that the GC is required to include?	Please refer to ADDENDUM 1 for front-end requirements.
111107-21	Who is responsible for costs associated with the independent materials testing?	Please refer to ADDENDUM 1 for front-end requirements.
111107-22	Does a preliminary construction schedule need to be submitted with our proposal?	Please refer to ADDENDUM 1 for front-end requirements.
111107-23	Who is responsible for costs associated with the temporary utilities (water & power)? Who is responsible for costs associated with the final power?	Please refer to ADDENDUM 1 for front-end requirements.
111107-24	A-510 provides details for the equipment screens. However, I cannot locate said equipment screens on the roof plans. Are there any equipment screens? Can you point me in the right direction?	Rooftop equipment screens will not be utilized for this project. The equipment screen detail will be removed as part of forthcoming Addendum 2.
111107-25	Can you indicate if there are any liquidated damages?	Please refer to ADDENDUM 1 for front-end requirements.

111107-26	Are there any impact fees / tap fees?	Please refer to ADDENDUM 1 for front-end requirements.
111107-27	Is Impact Resistant Storefronts and Glazing required for this job?	Specification Section 084113, Aluminum-Framed Entrances and Storefronts has been updated to address this question as part of Addendum 2.
111107-28	Who is responsible for NPDES monitoring costs?	Specification Section 084113, Aluminum-Framed Entrances and Storefronts has been updated to address this question as part of Addendum 2.
111108-01	The specs call for a web base program to be used for the routing of submittals. Who pays this expense?	Please refer to ADDENDUM 1 for front-end requirements.
111108-02	What is the sub base underneath the new concrete slab-on-grade? Is it sand, gravel, or compacted sub-grade? What depth?	Please refer to Geotechnical Report included with this Addendum 2 for sub base recommendations underneath the new concrete slab-on-grade.
111108-03	Per note #6 on S125, it calls for helical piers at the new spread footings. Can you provide a detail of this pier. No depth or dimensions are provided?	The helical anchors are to be designed by the pile contractor. It is a specialty-engineered item. The wall and column reaction are provided on the structural drawings.
111108-04	Spec Div 9a calls for Polished Concrete however there is none indicated on the Finish Sch A401. Please advise if it is indeed on the project and where.	Sheet A-401, Finish Schedule, and Finish Specifications have been updated to address this question as part of Addendum 2.
111108-05	Specifications Section 101400-SIGNAGE, Page 3, Part 2.01 “A” refers to two drawings SG2.04 and SG2.05; however, I cannot find these two drawings. Drawing A-222 “South Elevation-New Work” shows the letters CHATHAM AREA TRANSIT over the entrance. Do you know the size – we can scale if necessary, but would be great to have some specifications for these letters.	Please refer to ADDENDUM 2 Narrative Summary. Bidders should include a $50,000 allowance for graphic panels, room signage, public information/kiosk signage, ADA/emergency egress signage, site and project entry signage
111109-01	My Company is Heavy Duty Lift & Equipment, Inc. We are the Southeast distributors for Stertil-Koni Lifts. We have lifts in many transit properties and I am curious to find out what you are looking to do lift wise in this maintenance project.	The equipment referenced will be included in a forthcoming RFP that will be posted on the CAT web site in the near future.
111109-02	Can you tell me how many square feet of detectable warning mats will be needed on this project?	Detectable warning mats are not provided for in this project.
111109-03	The drawing call out for a glazed block in both the partition schedule and the finish schedule, but the specifications have Split-face and Burnished CMU. Are the drawings wrong or are the specs wrong? Or are the Glazed , Split-face and Burnished CMU in this project?	Specification Section 042223, Architectural Concrete Unit Masonry, has been updated to address this question as part of Addendum 2. Glazed block is the preferred finish where block is exposed. Split-face and burnished cmu have been deleted from the project.

111109-04	If the Glazed CMU are actually in the job, I'll need a spec for them…Trenwythe Astraglaze is usually what this type of block is, but it won't meet your LEED requirement as they are in Pennsylvania	Specification Section 042223, Architectural Concrete Unit Masonry, has been updated to address this question as part of Addendum 2.
111109-05	If the glazed are in the job, the elevations of the restrooms don't show any base, but the finish schedule says Ceramic Tile Base. Is the intent to apply a tile base to the glazed CMU or is the intent to have the cove base integrated into the glazed CMU?	The intent is to have a cove base course of glazed block in lieu of Ceramic Tile base.
111109-06	And finally, if there are in fact Split-face and Burnished CMU, where do they go…I haven't been able to locate any in the drawings yet.	Specification Section 042223, Architectural Concrete Unit Masonry, has been updated to address this question as part of Addendum 2. Glazed block is the preferred finish where block is exposed. Split-face and burnished cmu have been deleted from the project.

Test Boring and Sub-Surface Investigation

PROJECT: Chatham Area Transit-Additions

East Gwinett Street, Savannah, GA

CLIENT: Kern Coleman & Co., LLC

REPORT No. : 08-24-11-2-RI

Whitaker Laboratory, Inc.

2500 Tremont Road
Savannah, Georgia 31405
Phone (912) 234-0696
www.whitakerlab.net

WHITAKER LABORATORY, INC.

P.O. Box 7078 2500 Tremont Road Savannah, Georgia 31418
(912) 234-0696 Fax (912) 233-5061 Email: info@whitakerlab.net

September 6, 2011

Kern-Coleman & Co. LLC.
8 Mall Court, Suite 3
Savannah, Georgia 31406

Attention: Mr. Chad Zittrouer, PE
czittrouer@kerncoleman.com

Referencing: Report of Geotechnical Investigation
Chatham Area Transit – Building Additions
Savannah, Georgia
Whitaker Laboratory, Inc. Report No.: 8-24-11-2-R1

Dear Mr. Zittrouer:

As requested, WHITAKER LABORATORY, INC. has conducted a geotechnical investigation at the above referenced site. Authorization to perform this geotechnical investigation was provided by your acceptance of our proposal dated August 5, 2011. Our findings and recommendations for design and construction are attached and it is important that you read the report in its entirety.

It is a pleasure to provide our services to you and we look forward to further opportunities to assist you on this and other projects.

Respectfully submitted,
WHITAKER LABORATORY, INC.

Carroll L. Crowther, PE
GA Registered Engineer
15017

Jason H. Follo, P.E.
GA Registered Engineer
#31031

Joseph M. Whitaker
President

511098rpt

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APPENDICES

REPORT OF GEOTECHNICAL INVESTIGATION

Chatham Area Transit – Building Additions
Savannah, Georgia

INTRODUCTION

At any time, we will be glad to discuss the contents of this report. This includes insuring that you fully consider potential problems for design and construction procedures in respect to interpretations of the data.

WHITAKER LABORATORY, INC. has completed this field investigation of the surface and subsurface conditions at this site. The preliminary conditions found, and how those conditions could affect the design and construction of foundations for the structures planned, form the basis for this report. Regardless of the thoroughness of any geotechnical investigation, there are limitations, and deviations from the conditions found in this investigation could be subsequently disclosed. We recommend that this report be provided to all parties involved in the planned development to include but not necessarily limited to the Owner, Architect, Design Engineers, General Contractor and sub-contractors. Unanticipated circumstances often arise during sitework, earthwork and foundation construction. Accordingly, we recommend that our firm be retained to provide the construction surveillance, inspection, and testing on the project, thereby being readily available to assist in the evaluation of any conditions encountered that differ from those anticipated.

We understand building addition structures are planned for construction on this site. We have not been provided foundation loads or site grading requirements for the building additions, however for the purpose of this report we will assume that foundation loads will not exceed 75 kips for columns and 4 kips per linear foot for walls. We will further assume that site grades will not be raised by more than 18 inches above current ground surface elevations to achieve finished grade elevations for slab-on-grade construction. We also understand that there is a possibility that the existing structure is supported on a pile foundation system. If our assumptions are incorrect, we should be contacted immediately, provided the correct information and allowed an opportunity to change and/or modify the recommendations contained within this report if necessary.

The scope of this investigation included a visual reconnaissance and the drilling of two standard penetration test borings. In addition, a hand excavation was performed adjacent to the existing structure in an effort to expose the existing footing. The footing dimensions were recorded. A single hand auger boring, incorporating DCP testing, was performed within the hand excavation in an effort to evaluate support characteristics of bearing subgrade soil residing below the existing footings.

Please note that this evaluation only applies to the foundations planned for construction. This evaluation does not apply to any future improvements, which may be made to the site. In particular, if at any time should additional fill be placed, adjacent to or nearby the structures referenced in this report, additional geotechnical borings and a follow up geotechnical analysis will be required. Standard billing rates will apply for this work.

AREA GEOLOGY

This project is located in Savannah, Georgia. This overall project area lies near the eastern edge of the South Atlantic Coastal Plain. In South Carolina and Georgia, this broad, gently sloping region extends southeastward from the Fall Line (Chesterfield - Columbia - Augusta - Macon - Columbus) to the Atlantic Ocean. The soils encountered are sedimentary in origin, and consist of layered marine deposits of sands, silts, and clays. These deposits have since been subjected to successive erosion and re-deposition, by fluctuations of sea levels, storm tides, and winds. Many of the surface sands are the result of depositional forces along ancient beaches, which formed during the changing shoreline and river conditions. Intermittent deposits of shells occur within the strata at irregular intervals. The surface soils in a majority of this Coastal Plain area were deposited during the Pleistocene Era, however surface soils near the coast are likely of the Holocene Era.

TEST BORINGS AND SUBSURFACE CONDITIONS

The field exploration to determine the characteristics of the subsurface materials included a reconnaissance of the project site, and the drilling of exploratory borings. Standard penetration test borings were performed using rotary head drilling equipment and advancing hollow stem augers. Sampling and Standard Penetration Testing, (SPT), was performed in accordance with ASTM-D-1586. SPT samples were taken at 2.5 foot intervals of depth for the first 10 feet, and at 5.0 foot intervals thereafter. Standard Penetration testing is done with a 140-pound hammer falling 30 inches and a 2-inch diameter sampling spoon. Results of the Standard Penetration Testing (SPT N values) provide an indication of the relative consistency, density and in-situ strengths of the tested soils.

Soil samples from SPT testing and from the auger cuttings have been used for identification and visual classification. The subsurface stratification and the profile as presented in the boring logs, represent approximate boundary lines between the strata and materials encountered. These boundary lines are usually gradual and not clearly defined, and it is sometimes difficult to record changes in stratification precisely. It should be noted that underlying soil conditions, can, and do, vary considerably within short lateral distances. It is possible that conditions may be revealed between boring locations that are different from those found by our borings and used for our analysis.

The approximate locations of the borings are shown on the attached BORING LOCATION PLAN. Our drilling crews based on landmarks and features available at the time of drilling have estimated the locations of the borings in the field. If the precise location of the boreholes is critical, this can be determined by employing a land-surveying firm to plot the true locations. Such survey should be completed promptly and before any disturbance to the area has occurred. If desired, WHITAKER LABORATORY, INC. will be glad to coordinate surveying arrangements for an additional fee.

At the time of our site visit, boring locations were accessible and the near surface soils were stable to our truck-mounted drilling equipment. The addition areas contain concrete pavement. Soil test borings were advanced through concrete core holes within the planned building addition pad areas to depths reaching 30 feet each below the concrete pavement surface.

Below approximately 9 to 10 inches of concrete pavement, the near surface soils predominately consist of loose to dense sand (SP-SM) extending to depths reaching 5 ½ to 8 feet below the ground surface. Below the surface sands, firm to very stiff sand clays and clays (SM-SC, SC and CH) were predominately encountered extending to the termination depths of the soil test borings at 30 feet below the ground surface.

Please note that a heavy fuel odor was detected in the soil samples collected for this evaluation. We recommend an environmental assessment be performed in an effort to determine if this condition can impact the project in any way.

The above description of the subsurface profile should be considered a general description intended to highlight the major strata encountered. More detailed profiles can be observed within the attached boring logs. Please note that boring logs are only representative of their location. Stratification transitions should be expected to occur outside and between boring locations. Taking into account that sampling was not performed on a continuous basis, lines drawn representing elevations of stratification changes shown on the boring logs were estimated.

GROUNDWATER TABLE

The apparent groundwater table was measured for each boring location at the time of boring. Groundwater levels were measured at 6 ½ to 7 ½ feet below the ground surface. The groundwater elevation can be expected to fluctuate with the season of the year, surrounding ground surface conditions, and with recent rainfall amounts. Thus, groundwater elevations shown on the boring logs should be considered valid only for the date of observation.

WHITAKER LABORATORY, INC. recommends that the contractor determine a groundwater level just prior to site work begins. If groundwater remains at the observed levels, it is not expected to impact construction.

SEISMIC SITE CLASSIFICATION AND RECOMMENDED DESIGN COEFFICIENTS

Liquefaction Potential:

Liquefaction typically occurs when very loose to loose non-cohesive soils encountered below the groundwater table experience a significant loss of shear strength due to the increase in porewater pressure resulting from seismic vibrations.

Based upon the design earthquake and characteristics of subsurface soils encountered within the soil test borings performed for this evaluation, liquefaction is not likely to occur on this site.

Seismic Parameters:

In accordance with International Building Code 2006 (IBC 2006), this site would be defined as a Site Class "D". The classification is determined by average soil properties in the top 100 feet of the soil profile, including standard penetration test N values, shear wave velocities, in-situ shear strengths and moisture contents, as specified by IBC 2006. Both short and long period, Mapped Spectral Response Accelerations have been determined.

0.2 Sec. Period Mapped Response Acceleration
$S_s = 0.403$
1.0 Sec. Period Mapped Response Acceleration
$S_1 = 0.122$

The long and short period site coefficients, F_a and F_v, have been calculated for this site, utilizing mapped spectral response accelerations shown above, the procedures established by The U. S. Geological Survey (USGS) and The Federal Emergency Management Agency (FEMA), and software from the National Seismic Hazard Mapping Project.

0.2 Sec. Period Site Coefficient
$F_a = 1.477$

1.0 Sec. Period Site Coefficient
$F_v = 2.311$

Design spectral response acceleration parameters S_{DS} and S_{D1}, are then determined by multiplying S_{MS} and S_{M1} by 2/3rds.

$S_{MS} = 0.596$ and $S_{DS} = 0.397$
and
$S_{M1} = 0.282$ and $S_{D1} = 0.188$

The design ground motion spectra is attached in the Appendix. If the size and design of this structure justifies additional investigation, a Site Specific Geotechnical Investigation and dynamic site response analysis should be performed. Our firm has the ability to provide our clients such testing and evaluation, and we will be available to discuss the cost, and potential benefit, if any, of such if you desire.

EARTHWORK AND FOUNDATION DESIGN CONSIDERATIONS

The subject building site can be made suitable for construction of the planned addition structures, utilizing shallow spread footing foundations with slab-on-grade flooring, if our assumed foundation loads and site grading requirements are not exceeded and when site preparation and foundation design are in accordance with the recommendations of this report.

- Initial site preparation must include demolition of existing concrete pavement sections.

- Exposed subgrade soils after removal of the concrete pavement should be compacted in place to meet 95% density in accordance with ASTM D-1557 and proofrolled prior to placing fill or backfill to achieve finished subgrade elevations on site. Areas found to pump or deflect should be drained and compacted, stabilized by use of geotextile grid/fabric or undercut to an elevation where competent material is reached and backfilled with an approved compacted material. The geotechnical engineer of record should provide the final recommendation for stabilization of exposed subgrade soils if deemed necessary.

- Fill material required to raise the pad area to achieve finished subgrade elevations, should consist of granular soils and be placed and compacted in accordance with the SITE WORK section of this report. All fill should be placed prior to foundation construction.

- Bottom of footing excavations should be thoroughly compacted to meet or exceed 95% of the soils modified proctor maximum dry density in accordance with ASTM-D-1557. Footing inspections should also be conducted by performing dynamic cone penetrometer testing within bottom of footing excavations to verify adequate bearing material is present. Subsurface bearing soils deemed unsuitable based upon visual classification and/or dynamic cone penetrometer testing should be undercut to a competent material and backfilled with an approved material.

If the above mentioned recommendations are followed, individual spread footings, strip footings, or bearing edges of slabs-on-grade could be designed to bear in compacted and approved virgin soils or coarse grained structural fill or backfill, as outlined above and soil bearing pressures of 2000 psf may be used. This bearing capacity was lowered from 2500 psf within our original report in an effort to reduce the anticipated differential settlement between the existing structure and the new structure to be on the order of ½ inch. Any individual or strip footing should have a minimum plan dimension of 24 inches. Bearing edges of slabs-on-grade should have a minimum plan dimension of 18 inches. Bearing elevations of foundations should be at least 12 inches below grade and 24 inches above CH soils. Floor slabs can be designed utilizing a modulus of subgrade reaction "K" value of 150 pci.

Lateral loads can be resisted by passive earth pressure due to compacted structural fill placed against the sides of the footings. The upper 1-foot of resistance should be neglected unless the fill is confined by a pavement or floor slab. A soil unit weight of 110 pcf and passive earth pressure coefficient of 3.0 can be utilized in the analysis. Additionally, a friction coefficient of 0.35 between the concrete footings and underlying sandy soil can be used in combination with passive earth pressures to resist lateral loads. The coefficient of friction should be applied to

dead normal loads only.

Please note that we have attached a schematic diagram in Appendix II of this report that depicts the dimensions of the existing footings supported by the existing structure. Please note that the hand auger boring indicated that near surface bearing subgrade soils can support bearing pressures on the order of 2500 psf without significant deflection.

SITE WORK RECOMMENDATIONS

We will be pleased to discuss these recommendations with the owner and the site work contractor selected to do the work. We believe it will be beneficial to the project, for the owner and the contractor to have a clear understanding of our recommendations.

1. Prior to construction, all building areas, plus at least 10 feet on each side and all areas to be paved, should be stripped of all vegetation, topsoil and root systems. Site drainage during construction should be considered prior to this clearing and stripping. Preventing the ponding of storm water is of particular importance.

2. Topsoil, organics, root-mat and other surface materials will likely vary across the site. Individual test borings may not accurately reflect the presence of, or the thickness of such materials due to site variability and/or surfacing clearing to facilitate access for drilling equipment. Site clearing and grubbing, when unsupervised, and particularly in areas of wet soils and times of wet weather, may push organic debris into otherwise stable soils. Undercutting and clearing with a track hoe in lieu of bulldozers can minimize this.

3. Any stump holes or other depressions should be cleared of loose material and debris, and should then be back-filled with approved fill. The backfill should be placed in 6-inch thick lifts and compacted to 95% density in accordance with ASTM D-1557.

4. Any existing utilities that underlie the site should be relocated and their trenches back-filled with approved soil. The backfill should be placed in 6-inch lifts and compacted to 95% density according to ASTM D-1557.

5. Prior to fill placement, the subgrade should be proof rolled with a loaded dump truck to locate unstable or soft areas. Any unstable areas should then be investigated to determine the cause of the instability. If due to unsuitable soils, such as highly organic soils or soft clays, the areas should be undercut to firm soil and replaced with approved fill compacted in 6-inch lifts to minimum density of 95% in accordance with ASTM D-1557. If the instability is due to excess moisture in otherwise stable soil, the area should be drained and compacted to 95% density.

6. Any fill or backfill required to level or raise the site should be placed in 8 to 10 inch thick, loose lifts and compacted by appropriate compaction equipment to 95% density in accordance with ASTM D-1557.

7. All of the fill and backfill (including utility line backfill) for this project should consist of clean, free draining granular soils. The fill should be free of objectionable roots, clay lumps, organics and other debris. The fill should be readily compactable during placement. Soils classified as SW, SP, SP-SM or SM with a maximum of 15% passing a #200 sieve may be acceptable. Soils with the minus #200 fraction classified as MH, CH, OH, ML, CL or SC may be rejected. Soils with a maximum plasticity index of 25 and a maximum liquid limit 40 may be acceptable for use only beneath building pads which are situated well above the groundwater table with approval from the geotechnical engineer. Soils classified as SC or CL, exhibiting moisture sensitivity, soils with excessive clay content, or excessive moisture should not be used without approval from the geotechnical engineer. Approved sands will also need to be moisture conditioned as necessary to facilitate proper compaction throughout its entire depth. If utility trenches cannot be sufficiently dewatered to readily allow compaction of the specified pipe bedding material, then a class I (ASTM-D-2321) gravel or gravel mixture will be required.

8. To assist in reducing moisture beneath the structure, and to reduce the potential for mold growth, the site shall be graded and filled as necessary to direct drainage away from the structure. If sub drains are installed, these alone may not prevent moisture vapor beneath the structure that can cause mold growth. (Also refer to paragraph 10 below). Care must be taken to not place concrete on top of wet soils. For example, if fill or natural soils experience heavy rain, the soils should be properly drained and dried, prior to placement of concrete. Otherwise moisture migration through the slab will occur.

9. Compact all footing excavations and slab subgrades to a minimum density of 95% in accordance with ASTM-D-1557, prior to placement on concrete. The footing excavations, and all prepared slab subgrade, should be maintained in a dry and compacted condition until the concrete is placed. Areas that are softened by water or that are disturbed by construction activity should be re-worked, re-compacted, or appropriately repaired to the required bearing and density. If necessary, stone backfill or other corrective measures may be implemented to stabilize footings.

10. All slabs-on-grade should be supported on a minimum of 4-inches of granular, free-draining gravel or coarse sand to reduce moisture migration by capillarity. A vapor retarding membrane, overlying this granular base, is recommended to further reduce moisture migration into finished areas of the structure. Note that the use of these measures will not totally prevent moisture under or on top of slabs or beneath structures. (Also refer to paragraph 8 above).

11. Any footing excavations that are directly adjacent to the existing foundations should be done in small increments to avoid undermining them and causing a loss of support to the existing structure. If necessary, the excavations should be sheeted and braced or grouting should stabilize the soil in the immediate area.

QUALITY CONTROL AND TESTING

Documented inspections and/or testing performed by Whitaker Laboratory personnel, at the following critical milestones during construction, will be required for the recommendations contained within this report to be validated:

- After concrete pavement removal: Perform proofrolling and density testing on exposed subgrade soil to verify exposed subgrade soils are stable enough to begin receiving fill.
- Collect sample of proposed fill or backfill material, perform laboratory testing and determine suitability for use (approve or disapprove).
- During fill or backfill placement: Perform density testing on each lift of backfill and/or fill soil.
- Once footings are excavated: Perform footing inspections within open footing excavations prior to placement of reinforcing steel or concrete.

At the appropriate time, please contact Whitaker Laboratory, Inc. for budgetary and scheduling purposes for the performance of the above required inspection and testing services.

We further offer concrete, asphalt, masonry, and structural steel inspections and testing. Whitaker Laboratory, Inc. also performs observational services for mold mitigation, including observation of installation of vapor retarding membranes, subdrains, overall site drainage, and regularly scheduled observations after construction of site and landscape drainage, and monitoring of humidity and moisture in slabs and basement walls.

QUALIFICATIONS OF REPORT

Any recommendations or opinions offered in this report are based on our interpretation of the data obtained from this investigation. It should be noted that underlying subsurface and soil conditions can, and do, vary considerably within short lateral distances. Regardless of the thoroughness of any subsurface investigation, it is possible that conditions may be revealed between boring locations that are different from those found by our borings and used for our analysis. For this reason, we recommend that the site preparation and foundation construction for this project be monitored closely. If deviations of the soil conditions from those presented in this report appear, we will be glad to furnish any additional analyses and recommendations that may be required.

This report was made to investigate subsurface properties of the site and is not intended to serve as a wetlands survey, toxic mold assessment, or environmental site assessment. No effort has been made to define, delineate, or designate any area as wetlands or an area of environmental concern or contamination. Any references to low areas, poorly drained areas, etc. are related to geotechnical applications. Any recommendations regarding drainage and earthwork are made on the basis that such work can be permitted and performed in accordance with the current laws pertaining to wetlands, storm water runoff, and environmental contamination.

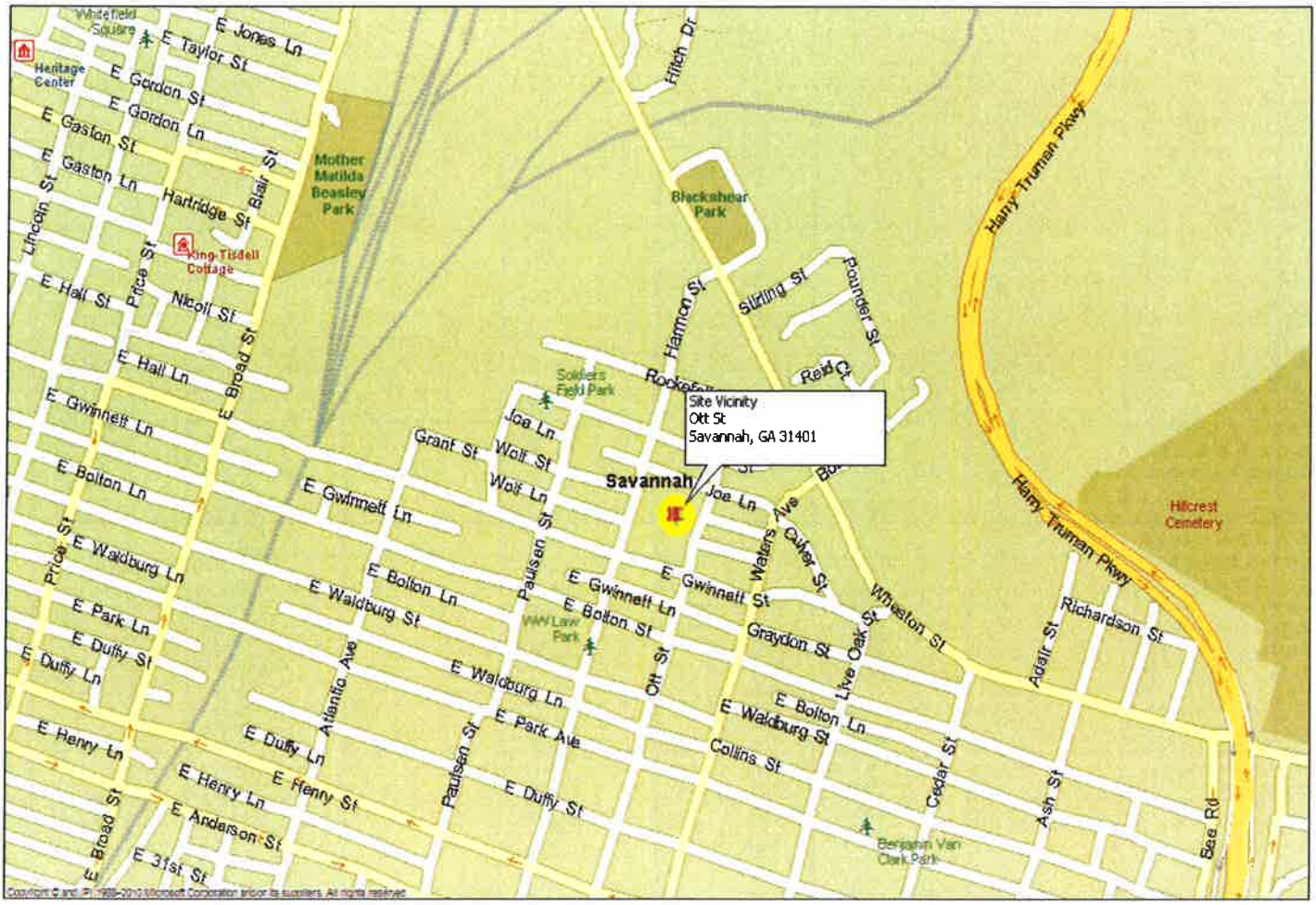
This report does not attempt to define or represent any FEMA, or otherwise designated, flood, erosion, scour, or other hazardous zones; nor does it presume to reflect that governmental or other authorities will grant approval of the project and issue appropriate permits.

WARRANT: WHITAKER LABORATORY, INC. and its professional engineers strive to perform all services in a manner consistent with that level of care and skill ordinarily exercised by members of the engineering profession practicing in the same locality and under similar conditions. No other warranty or representation, expressed or implied, is included or intended in this agreement, in any report, opinion, document, or otherwise. We carry commercial general liability insurance, including completed operations, and professional liability insurance in aggregate amounts deemed adequate, and we comply with the statutory requirements for workmen's compensation insurance. Accordingly, the liability of WHITAKER LABORATORY, INC. and its professional engineers, to the client, owner, or any other party, for any loss or damage, resulting from any cause, including professional acts, errors, omissions, negligence, toxic mold and other environmental claims, breach of warranty or breach of contract, shall not exceed the total compensation received by us for services related to this project; and client will defend, settle, and discharge any claims or allegations of liability for same against us by others. If client desires higher monetary limits of our liability, we will be pleased to discuss such higher limits and the impact on liability and fees. In the event the client makes a claim against us, at law or otherwise, for any alleged act, error, omission, negligence, breach of warranty or breach of contract, arising from the performance of our services, and client fails to prove such claim, then client shall pay all costs accrued by us in defending ourselves.

TITLE: The ownership of opinions, technical ideas, methods and means, drawings, calculations, and other data developed by us during the course of preparing proposals or rendering engineering services remains exclusively with us. It is a condition of this report or proposal that the client agrees not to use the opinions, technical ideas, methods and means, drawings, calculations or any other data for projects or locations, other than those specifically addressed in the report, and that no one other than the client may use this report, without the written permission of WHITAKER LABORATORY, INC.

APPENDIX I

SITE VICINITY & BORING LOCATION PLANS



Site Vicinity Map

Proposed Chatham Area Transit
East Gwinett Street at Ott Street
Savannah, Chatham County, Georgia

Boring Location Plan

Proposed Chatham Area Transit
East Gwinett Street at Ott Street
Savannah, Chatham County, Georgia

N

ALL BORING LOCATIONS ARE APPROXIMATE, & ARE BASED ONLY ON FIELD ESTIMATES.

APPENDIX II

BORING RECORDS

Client: Kern-Coleman & Co., LLC

Boring No. B-1

Project: Building Addition-Chatham Area Transit

Date: 8/22/11

Location: Savannah, GA

Engineer: Follo

SUBSURFACE PROFILE			Sample		Standard Penetration Test blows/ft 10 20 30 40 50 60	Water Table	Remarks
Depth	Description	Depth	Number	Blows/ft			
0	Ground Surface	0					
	SP-SM Firm, brown sand with some stone		1	15			
	SP-SM Loose, brown fine sand		2	10			
5	SP-SM Firm, gray fine sand	5	3	14		▼	
	CH Stiff, gray clay		4	12			
10	SP Very firm, tan fine sand	10	5	21			
15	CH Stiff, gray clay	15	6	11			
20	SP-SM Loose, gray fine sand	20	7	7			
25	SM-SC Firm, gray fine clayey sand	25	8	18			
30	End of Borehole	30	9	15			
35		35					

Drilled By: Wilkerson

Drill Method: H. S. Auger

Drill Date: 8/22/11

WHITAKER LABORATORY INC.
2500 Tremont Road
Savannah, GA 31405

Hole Size: 6.5"

Datum:

Sheet: 1 of 1

Client: Kern-Coleman & Co., LLC

Boring No. B-2

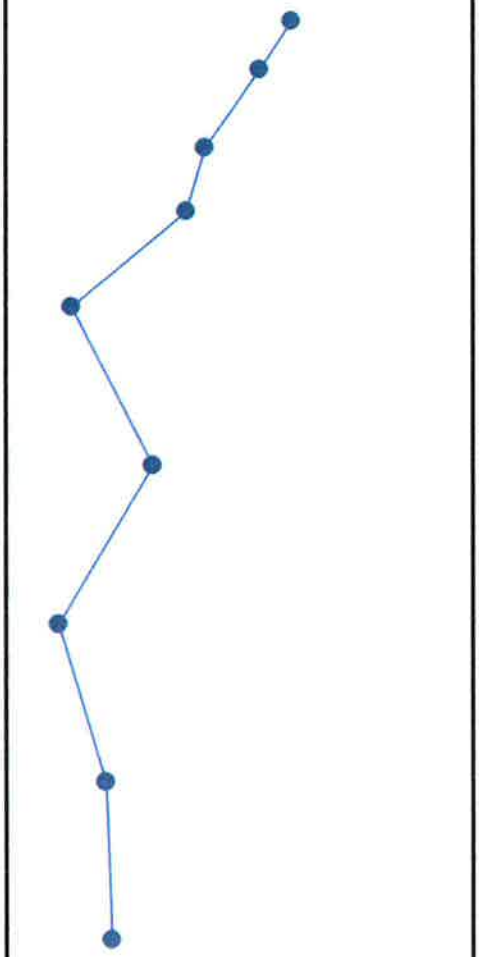
Project: Building Addition-Chatham Area Transit

Date: 8/22/11

Location: Savannah, GA

Engineer: Follo

SUBSURFACE PROFILE			Sample		Standard Penetration Test blows/ft 10 20 30 40 50 60	Water Table	Remarks
Depth	Description	Depth	Number	Blows/ft			
0	Ground Surface	0					
	SP-SM Dense, tan sand - some gravel		1	43			
			2	38			
5	**SP-SM** Dense to very firm, tan-brown fine sand	5	3	30			
			4	27			
10	**SC** Stiff, gray fine sand clay	10	5	10			
15	**CH** Very stiff, gray clay	15	6	22			
20	**SC** Firm to very stiff, gray fine sand clay	20	7	8			
25		25	8	15			
30	End of Borehole	30	9	16			
35		35					



Drilled By: Wilkerson

Drill Method: H. S. Auger

Drill Date: 8/22/11

WHITAKER LABORATORY INC.
2500 Tremont Road
Savannah, GA 31405

Hole Size: 6.5"

Datum:

Sheet: 1 of 1

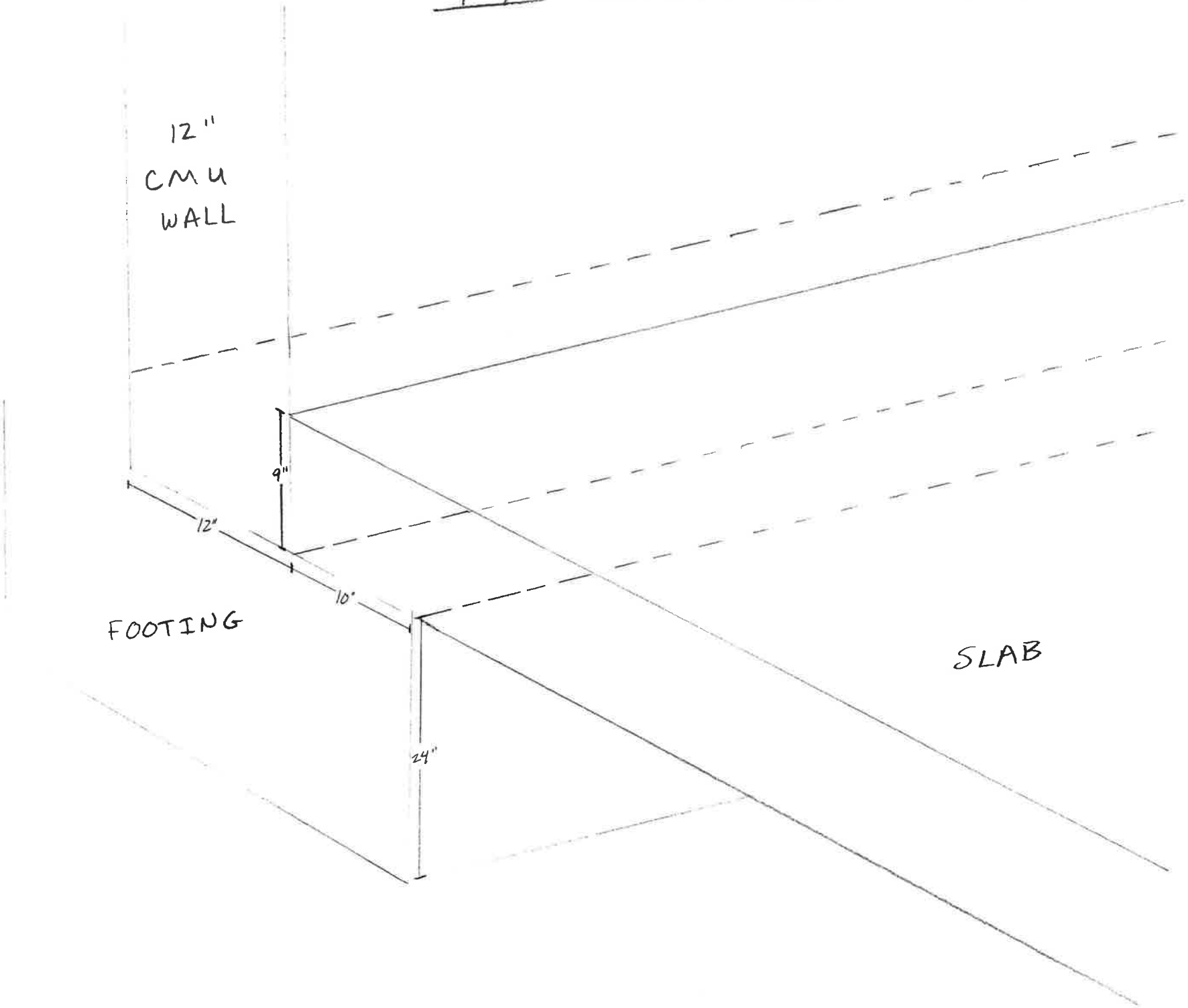
8/11/11, 8/15/11 — CHATHAM AREA TRANSIT

8/16/11 - CHATHAM AREA TRANSIT

- FOOTING EXCAVATION

HA'S TO 3' BELOW FOOTING W/ DCP'S

8/16/11 - CHATHAM AREA TRANSIT



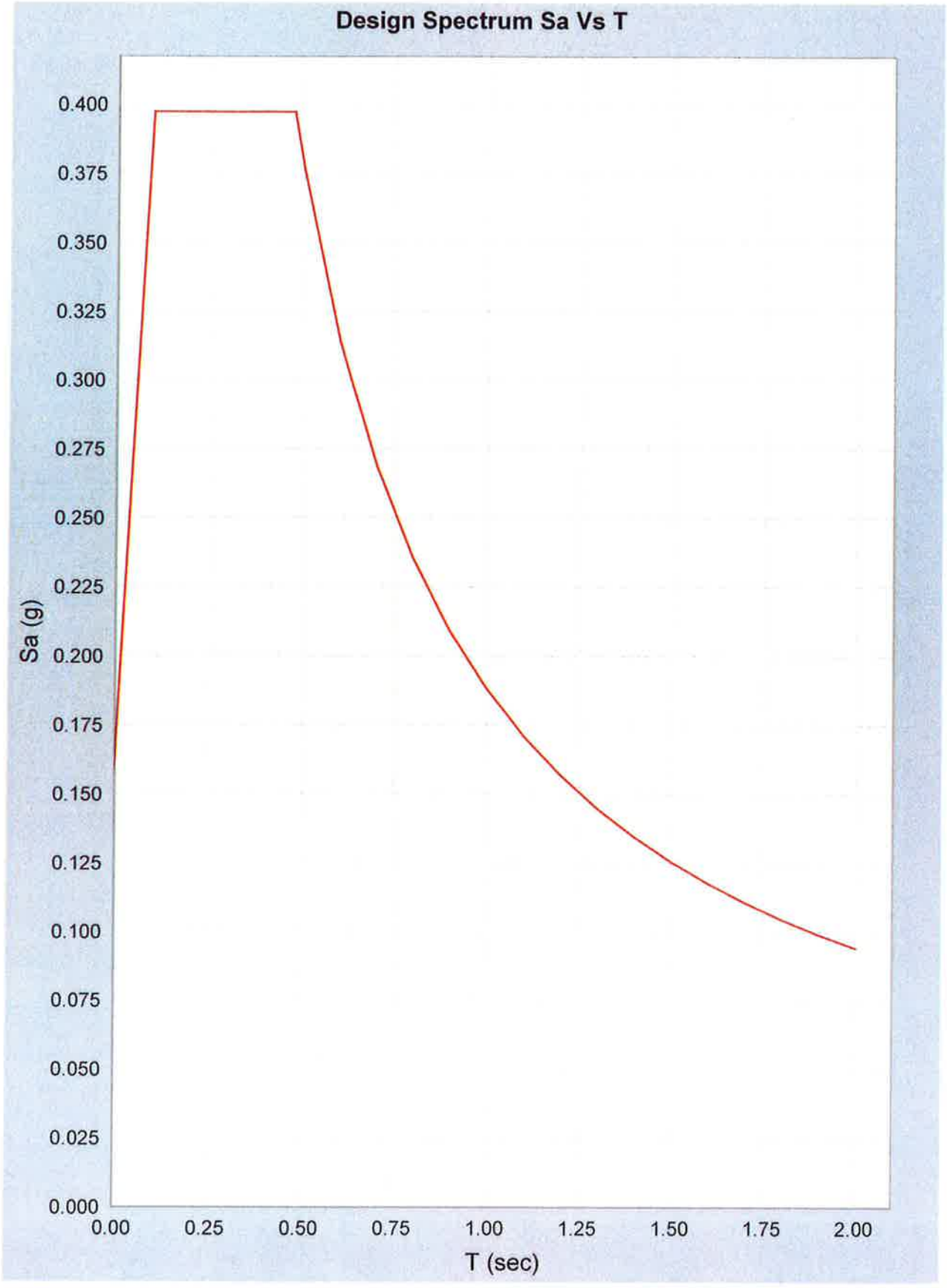
8/16/11 -

- CHATHAM AREA TRANSIT
- FOOTING EXCAUATION

	DCP's
- FOOTING BOTTOM - DARK BROWN SAND CLAY	8, 8, 8
- 1' BELOW FOOTING - LIGHT GRAY SAND	16, 20, 28
- 2' BELOW FOOTING - " " "	10, 20, 30+
- 3' BELOW FOOTING " " "	12, 18, 28

APPENDIX III

SEISMIC SPECTRAL PARAMETERS


Design Spectrum Sa Vs T
Sa (g)
0.400
0.375
0.350
0.325
0.300
0.275
0.250
0.225
0.200
0.175
0.150
0.125
0.100
0.075
0.050
0.025
0.000
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
T (sec)

Conterminous 48 States
2006 International Building Code
Latitude = 32.063
Longitude = -81.081
Spectral Response Accelerations Ss and S1
Ss and S1 = Mapped Spectral Acceleration Values
Site Class B - Fa = 1.0 ,Fv = 1.0
Data are based on a 0.05 deg grid spacing

Period (sec)	Sa (g)
0.2	0.403 (Ss, Site Class B)
1.0	0.122 (S1, Site Class B)

Conterminous 48 States
2006 International Building Code
Latitude = 32.063
Longitude = -81.081
Spectral Response Accelerations SMs and SM1
SMs = Fa x Ss and SM1 = Fv x S1
Site Class D - Fa = 1.477 ,Fv = 2.311

Period (sec)	Sa (g)
0.2	0.596 (SMs, Site Class D)
1.0	0.282 (SM1, Site Class D)

Conterminous 48 States
2006 International Building Code
Latitude = 32.063
Longitude = -81.081
Design Spectral Response Accelerations SDs and SD1
SDs = 2/3 x SMs and SD1 = 2/3 x SM1
Site Class D - Fa = 1.477 ,Fv = 2.311

Period (sec)	Sa (g)
0.2	0.397 (SDs, Site Class D)

APPENDIX IV

IMPORTANT GENERAL NOTES

GENERAL NOTES

The "standard" penetration resistance is an indication of the density of cohesion less soils and of the strength of cohesive soils. The "standard" penetration test is measured with a 1.4 inch I.D., 2 inch O.D., sampler driven one (1) foot with a 140 pound hammer falling 30 inches.

RELATIVE DENSITY OF SOIL THAT IS PRIMARILY SAND

Number of Blows	Relative Density
0 - 4	Very loose
5 - 10	Loose
11 - 20	Firm
21 - 30	Very firm
31 - 50	Dense
Over 51	Very dense

CONSISTENCY OF SOIL THAT IS PRIMARILY SILT OR CLAY

Number of Blows	Consistency
0 - 2	Very soft
3 - 4	Soft
5 - 8	Firm
9 - 15	Stiff
16 - 30	Very stiff
Over 31	Hard

While individual test boring records are considered to be representative of subsurface conditions at the respective boring locations on the dates shown, it is not warranted that they are representative of subsurface conditions at other locations and times.

The subsoil stratification shown on these profiles is not warranted but is estimated based on accepted soil engineering principles and practices and reasonable engineering judgment.

Unless notified, samples will be disposed of after 60 days.

GROUP		
MAJOR DIVISIONS	SYMBOLS	TYPICAL NAMES
COARSE-GRAINED SOILS		
More than 50% retained on No. 200 Sieve*		
GRAVELS		
50% or more of coarse fraction retained on No. 4 sieve		
CLEAN GRAVELS	GW	Well-graded gravels and gravel-sand mixtures, little or no fines
	GP	Poorly graded gravels and gravel-sand mixtures, little or no fines
GRAVELS WITH FINES	GM	Silty gravels, gravel-sand-silty mixtures
	GC	Clayey gravels, gravel sand clay mixtures
SANDS		
More than 50% of coarse fraction passes No. 4 sieve		
CLEAN SANDS	SW	Well graded sand and gravelly sands, little or no fines
	SP	Poor graded sands and gravelly sands, little or no fines
SANDS WITH FINES	SM	Silty sands, sand-silt mixtures
	SC	Clayey sands, sand clay mixtures
FINE GRAINED SOILS		
50% or more passes No. 200 Sieve*		
SILTS AND CLAYS		
Liquid Limit 50% or less		
	ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands
	CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
	OL	Organic silts and organic silty clays of low plasticity
SILTS AND CLAYS		
Liquid Limit greater than 50%		
	MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts
	CH	Inorganic clays of high plasticity, fat clays
	OH	Organic clays of medium to high plasticity
HIGHLY ORGANIC SOILS	PT	Peat, muck and other highly organic soils

*Based on the material passing the 3 in. (75 mm) sieve.

SECTION 122200 - CURTAINS AND DRAPES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes draperies and drapery tracks.

1.3 SUBMITTALS

A. Product Data: For the following:
   1. Tracks: Include maximum weights of draperies that can be supported.
   2. Fabrics.

B. Shop Drawings:
   1. Tracks: Show installation and anchorage details and locations of controls.
   2. Draperies: Show sizes, locations, and details of installation.

C. Coordination Drawings: For track installation; reflected ceiling plans drawn to scale and coordinating track installation with openings and ceiling-mounted items. Show the following:
   1. Suspended ceiling components.
   2. Structural members to which motors will be attached.
   3. Size and location of motor access panel.

D. Samples for Initial Selection: For each type of product indicated.

E. Samples for Verification: As follows:
   1. Tracks: 18 inches (450 mm) long, with carriers, controls, and accessories.
   2. Fabrics: For each color and pattern indicated, provide Sample, full width by 36 inches (1000 mm) long, from dye lot to be used for the Work and with specified textile treatments applied. Mark top and face of fabric.
   3. Drapery Fabrication Samples: For heading and fabric indicated, a complete half-size panel to verify details of fabrication and thread colors.

F. Product Certificates: For each fabric treated with flame retardant, signed by fabric supplier and indicating treatment durability and cleaning procedures required to maintain treatment effectiveness.

G. Maintenance Data: For products to include in maintenance manuals.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: For draperies and tracks, fabricator of draperies.

B. Source Limitations: For draperies, obtain each color and pattern of fabric and trim from one dye lot.

C. Fire-Test-Response Characteristics: For fabrics treated with fire retardants, provide products that pass NFPA 701 as determined by testing of fabrics that were treated using treatment-application method intended for use for this Project by a testing and inspecting agency acceptable to authorities having jurisdiction.

1.5 PROJECT CONDITIONS

A. Field Measurements: Verify dimensions by field measurements before drapery fabrication and indicate measurements on Shop Drawings.

B. Scheduling: Do not deliver or install draperies until after other finish work, including painting, is complete and spaces are otherwise ready for occupancy.

PART 2 - PRODUCTS

2.1 DRAPERY CEILING TRACKS

A. Manually Operated Ceiling Track:
   1. Products: Subject to compliance with requirements, provide one of the following:
      a. Kirsch Model 94004.
      b. Silent Gliss USA Inc.
      c. Springs Industries, Inc.

   2. Construction: Extruded aluminum, slotted for mounting at interval of not more than 24 inches (610 mm) o.c., and bendable to 169 degree radii as indicated.
      a. Lengths and Configurations: As indicated on Drawings.
      b. Support Capability: 16 - 32 lbs.
      c. Finish: Clear anodic coating.

   3. Mounting Brackets: Aluminum, of type suitable for fastening track to surface indicated and designed to support weight of track assembly and drapery plus force applied to operate track.
      a. Mounting Surface: Face of gypsum board soffit.

   4. Installation Fasteners: Sized to support track assembly and drapery, and fabricated from metal compatible with track, brackets, and supporting construction. Provide two fasteners to fasten each bracket to supporting construction.
   5. Operation: Baton.
      a. Draw: One way, stack as indicated on Drawings.
      b. Operating Hardware Location: On stack side.

6. Carriers: Coordinate with drapery headings indicated.
   a. Master Carriers: Butt.

2.2 DRAPERIES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Fabricut.
   2. Fabtex.
   3. Marietta Drapery & Window Company, Inc.

B. Drapery:
   1. Heading:
      a. Ripplefold: 120 percent fullness.
      b. Accessories: Provide all necessary materials for installation.

   2. Drapery Fabric:
      a. Manufacturer: Carnegie.
      b. Designation: Creation Baumann.
      c. Pattern: Porto.
      d. Color: 210.
      e. Fiber Content: 100% Trevira CS.
      f. Orientation: Run right (up the bolt).
      g. Width: 59 inches.

2.3 DRAPERY FABRICATION

A. Fabricate draperies in heading styles and fullnesses indicated. Fabricate headings to stand erect. If less than a full width of fabric is required to produce panel of specified fullness, use equal widths of not less than one-half width of fabric located at ends of panel.
   1. One-Way-Stacking Draperies: Add 5 inches (127 mm) to overall width for returns.

B. Seams: Sew vertical seams with twin-needle sewing machine with selvage trimmed and overlocked. Join widths so that patterns match and vertical seams lay flat and straight without puckering. Horizontal seams are not acceptable.

C. Side Hems: Double-turned, 1-1/2-inch- (38-mm-) wide hems consisting of three layers of fabric, and blindstitched so that stitches are not visible on face of drapery.

D. Bottom Hems: Double-turned, 6-inch- (153-mm-) wide hems consisting of three layers of fabric, and weighted and blindstitched so that weights and stitches are not visible on face of drapery.
   1. Sew in square lead weights at each seam and at panel corners.

PART 3 - EXECUTION

3.1 DRAPERY TRACK INSTALLATION

A. Install track systems according to manufacturer's written instructions, level and plumb, and at height and location in relation to adjoining openings as indicated on Drawings.

B. Isolate metal parts of tracks and brackets from concrete, masonry, and mortar to prevent galvanic action. Use tape or another method recommended in writing by track manufacturer.

3.2 DRAPERY INSTALLATION

A. Where draperies abut overhead construction, hang draperies so that clearance between headings and overhead construction is 1/4 inch (6.4 mm).

B. Where draperies extend to floor, install so that bottom hems clear finished floor by not more than 1 inch (25 mm) and not less than 1/2 inch (13 mm).

C. Install Drapery and track in 212 Library.

3.3 ADJUSTING

A. After hanging draperies, test and adjust each track to produce unencumbered, smooth operation.

B. Steam and dress down draperies as required to produce crease- and wrinkle-free installation.

C. Remove and replace draperies that are stained or soiled.

END OF SECTION 122200

SECTION 122113 - HORIZONTAL LOUVER BLINDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:
1. Horizontal louver blinds with aluminum slats and 2 inch wood blinds at select locations.

1.3 SUBMITTALS

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

B. Shop Drawings: Show fabrication and installation details for horizontal louver blinds.

C. Samples for Initial Selection: For each type and color of horizontal louver blind indicated.
1. Include similar Samples of accessories involving color selection.

D. Samples for Verification: For each type and color of horizontal louver blind indicated.
1. Slat: Not less than 12 inches (300 mm) long.

E. Product Certificates: For each type of horizontal louver blind, signed by product manufacturer.

F. Maintenance Data: For horizontal louver blinds to include in maintenance manuals.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain horizontal louver blinds through one source from a single manufacturer.

B. Product Standard: Provide horizontal louver blinds complying with WCSC A 100.1.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver horizontal louver blinds in factory packages, marked with manufacturer and product name, and location of installation using same designations indicated on Drawings and in a window treatment schedule.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Do not install horizontal louver blinds until construction and wet and dirty finish work in spaces, including painting, is complete and dry and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

B. Field Measurements: Where horizontal louver blinds are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Allow clearances for operable glazed units' operation hardware throughout the entire operating range. Notify Architect of discrepancies. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

PART 2 - PRODUCTS

2.1 HORIZONTAL LOUVER BLINDS, ALUMINUM SLATS

A. Products: Subject to compliance with requirements, provide one of the following:
   1. Hunter Douglas; CD88 Ultimate, de-Light™ 1" aluminum blinds.
      a. Color: As selected by Architect from manufacturer's full range.
      b. Texture: Dust shield (or equivalent).
   2. Levelor Contract; Riveria Classic with Dustguard and LightMaster™ 1" Blind.
      a. Color: As selected by Architect from manufacturer's full range.
      b. Texture: Dust shield (or equivalent).
   3. Bali S3000 Light blocking 1" aluminum blind.
      a. Color: As selected by Architect from manufacturer's full range.
      b. Texture: Dust shield (or equivalent).

B. Louver Slats: Aluminum, alloy and temper recommended by producer for type of use and finish indicated; with crowned profile.
   1. Nominal Slat Width: 1 inch (25 mm) for miniblinds.
      a. Slat Spacing: Every 18 mm for 16.7 slats or more per foot (18 mm).
   2. Nominal Slat Thickness: Not less than 0.008 inch (0.20 mm).
   3. Slat Finish: One color as indicated.
      a. Ionized Coating: Antistatic, dust-repellent, baked polyester finish.

C. Headrail: Formed steel or extruded aluminum; long edges returned or rolled; fully enclosing operating mechanisms on three sides and ends; capacity for one blind per headrail.
   1. Finish Color Characteristics: Match color, texture, pattern, and gloss of louver slats.

D. Bottom Rail: Formed-steel or extruded-aluminum tube, sealed with plastic or metal capped ends top contoured to match crowned shape of louver slat; with enclosed and protected ladders and tapes to prevent their contact with sill.

E. Maximum Light Blocking Blinds: Designed for eliminating all visible light gaps if slats are tilted closed; with tight tape spacing indicated and slats with minimal-sized rout holes for ladders hidden and placed near back edge for maximum slat overlap; with headrail and bottom rail extended and formed for light-tight joints between rail and adjacent slats or construction.

F. Tilt Control: Consisting of enclosed worm gear mechanism, detachable wand preventing over-rotation, and linkage rod, for the following operation:
   1. Tilt Operation: Manual with clear plastic wand.
   2. Length of Tilt Control: Length required to make operation convenient from floor level.

3. Tilt: Full.

G. Lift Operation: Manual, cord lock; locks pull cord to stop blind at any position in ascending or descending travel.

H. Tilt-Control (Left) and Cord-Lock Position (Right): Left side and right side of headrail, respectively.

I. Ladders: Evenly spaced to prevent long-term louver sag.
1. For Blinds with Nominal Slat Width 1 Inch (25 mm) or More: Braided string.

J. Mounting: End mounting permitting easy removal and replacement without damaging blind or adjacent surfaces and finishes; with spacers and shims required for blind placement and alignment indicated.
1. Provide intermediate support brackets if end support spacing exceeds spacing recommended by manufacturer for weight and size of blind.

2. Provide intermediate support brackets if end support spacing exceeds spacing recommended by manufacturer for weight and size of blind.

K. Colors, Textures, Patterns, and Gloss: As selected by Architect from manufacturer's full range..

2.2 HORIZONTAL LOUVER BLINDS, WOOD SLATS

A. Products: Subject to compliance with requirements, provide wood slat blinds by one of the following:
1. Hunter Douglas.
2. Levolor, a Newell Rubbermaid Company.
3. Springs Window Fashions Division, Inc.

B. Slats: Hardwood, North American; with flat profile and radiused corners.
1. Width: 2 inches (1 mm).
a. Spacing: Manufacturer's standard.
2. Finish: Manufacturer's standard.

C. Headrail: Formed steel or extruded aluminum; long edges returned or rolled; fully enclosing operating mechanisms on three sides and ends; capacity for one blind per headrail.

D. Bottom Rail: Hardwood matching with enclosed ladders and tapes to prevent contact with sill.
1. Finish Color Characteristics: Match color, texture, pattern, and gloss of slats.

E. Maximum Light-Blocking Blinds: Designed for eliminating all visible light gaps if slats are tilted closed; with tight tape spacing indicated and slats with minimal-sized rout holes for ladders hidden and placed near back edge for maximum slat overlap; with headrail and bottom rail extended and formed for light-tight joints between rail and adjacent slats or construction.

F. Ladders: Manufacturer's standard-width cloth tapes. Evenly spaced to prevent long-term louver sag.

1. Tape Color, Texture, and Pattern: Color, texture, and pattern as selected by Architect from manufacturer's full range.

G. Tilt Control: Enclosed worm gear mechanism, slip clutch or detachable wand preventing overrotation, and linkage rod, for the following operation:
   1. Tilt Operation: Manual with cord-operated tilter.
   2. Length of Tilt Control: Length required to make operation convenient from floor level.
   3. Tilt: Full.

H. Lift Operation: Manual, cord lock; locks pull cord to stop blind at any position in ascending or descending travel.

I. Tilt-Control and Cord-Lock Position: Manufacturers standard.

J. Valance: Manufacturer's standard.
   1. Finish Color Characteristics: Match color, texture, pattern, and gloss of slats.

K. Tassels: Hardwood, manufacturer's standard finished to match slats.

L. Mounting: End mounting, permitting easy removal and replacement without damaging blind or adjacent surfaces and finishes; with spacers and shims required for blind placement and alignment indicated.
   1. Provide intermediate support brackets if end support spacing exceeds spacing recommended by manufacturer for weight and size of blind.

M. Colors, Textures, Patterns, and Gloss: As selected by Architect from manufacturer's full range.

2.3 HORIZONTAL LOUVER BLIND FABRICATION

A. Concealed Components: Noncorrodible or corrosion-resistant-coated materials.
   1. Lift-and-Tilt Mechanisms: With permanently lubricated moving parts.

B. Unit Sizes: Obtain units fabricated in sizes to fill window and other openings as follows, measured at 74 deg F (23 deg C):
   1. Blind Units Installed between (inside) Jambs: Width equal to 1/4 inch (6 mm) per side or 1/2 inch (13 mm) total, plus or minus 1/8 inch (3.1 mm), less than jamb-to-jamb dimension of opening in which each blind is installed. Length equal to 1/4 inch (6 mm), plus or minus 1/8 inch (3.1 mm), less than head-to-sill dimension of opening in which each blind is installed.

C. Installation Brackets: Designed for easy removal and reinstallation of blind, for supporting headrail and operating hardware, and for hardware position and blind mounting method indicated.

D. Installation Fasteners: No fewer than two fasteners per bracket, fabricated from metal noncorrosive to blind hardware and adjoining construction; type designed for securing to supporting substrate; and supporting blinds and accessories under conditions of normal use.

E. Color-Coated Finish:
   1. Metal: For components exposed to view, apply manufacturer's standard baked finish complying with manufacturer's written instructions for surface preparation including pretreatment, application, baking, and minimum dry film thickness.

F. Component Color: Provide rails, cords, ladders, and exposed-to-view metal and plastic matching or coordinating with slat color, unless otherwise indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, operational clearances, and other conditions affecting performance.
   1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install 1-inch horizontal louver blinds at all exterior windows unless indicated to receive 2-inch wood louver blind.

B. Install 2-inch wood louver blinds at 101, 102, 103, 105, 118, 124, and 212.

C. Install horizontal louver blinds level and plumb and aligned with adjacent units according to manufacturer's written instructions, and located so exterior slat edges in any position are not closer than 1 inch (25 mm) to interior face of glass. Install intermediate support as required to prevent deflection in headrail. Allow clearances between adjacent blinds and for operating glazed opening's operation hardware if any.

D. Jamb or Head Mounted: Install headrail flush with face of opening jamb and head.

3.3 ADJUSTING

A. Adjust horizontal louver blinds to operate smoothly, easily, safely, and free of binding or malfunction throughout entire operational range.

3.4 CLEANING AND PROTECTION

A. Clean horizontal louver blind surfaces after installation, according to manufacturer's written instructions.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that horizontal louver blinds are without damage or deterioration at time of Substantial Completion.

C. Replace damaged horizontal louver blinds that cannot be repaired, in a manner approved by Architect, before time of Substantial Completion.

END OF SECTION 122113

SECTION 107300 - PROTECTIVE COVERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes acrylic protective covers.

B. Definition: Protective cover for shall consist entirely of anodized aluminum extrusions and acrylic glazing material. Understructure shall consist of heli-arc welded, one-piece rigid bents. Roof glazing shall be 1/4 inch thick acrylic panels.

1.2 SUBMITTALS

A. Product Data: For each type of product. Submit manufacturer's product data, specifications, component performance data and installation instructions.

B. Shop Drawings:

1. Include detailed drawings, layout of protective cover systems, bent locations (identify drain columns and wet bents), all mechanical joint locations with complete details, connections, jointing and accessories. Include details of concrete footings and bent anchorage.

2. Include plans, elevations, sections, mounting heights, and attachment details.
3. Detail fabrication and assembly.
4. Show locations for any blocking, reinforcement, and supplementary structural support.

C. Calculations:

1. Provide signed and sealed structural calculations for the proposed protective cover systems, by the qualified professional engineer registered in the State of Georgia.

D. Samples for Initial Selection: For each type of exposed finish.

1. Include Samples of protective cover system and accessories involving color or finish selection.

E. Samples for Verification: For the following:

1. Primary Components: Not less than 12-inch long section showing primary component member and fascia.
2. Frame Finish: Not less than 6-inch lengths.
3. Frame Corner and Frame Intersections: Not less than 12-inch sections showing finished joint construction.
4. Accessories: Manufacturer's full-size unit.

F. Product Schedule: Use same designations indicated on Drawings.

1.3 QUALITY ASSURANCE

A. Codes and Standards: Comply with provisions of the following except as otherwise indicated:

1. Georgia State Minimum Standard Building Code (IBC with GA State Amendments), latest edition.
2. AWS (American Welding Society) standards for structural aluminum welding.

B. Installer Qualifications: Firm with not less than three years experience in installation of aluminum protective cover systems of type, quantity and installation methods similar to work of this section and acceptable to protective cover manufacturer.

C. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication where possible, to ensure proper fitting of work. However, allow for adjustments within specified tolerances wherever taking of field measurements before fabrication might delay work.

D. Shop Assembly: Preassemble units in ship to greatest extent possible and disassemble as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

E. Coordination: Coordinate work of this Section with exterior work of other Sections that may interface with protective cover system.

1.4 PERFORMANCE REQUIREMENTS

A. System Performance. Provide aluminum protective cover system that has been designed, produced, fabricated and installed to withstand normal temperature changes as well as live loading, dead loading and wind loading in compliance with Georgia State Minimum Standard Building Code (IBC with GA State Amendments) requirements for the geographical location in which work is to be installed as follows:

1. Live Load: 30 psf minimum.
2. Structural design for wind forces: Comply with Georgia State Minimum Standard Building Code (IBC with GA State Amendments).
3. Design Wind Velocity/Importance Factor/Stability Criteria: Comply with Georgia State Minimum Standard Building Code (IBC with GA State Amendments.

B. Sizes shown on Drawings are to be considered minimum

C. Structure shall be capable of sustaining hail, hurricane force winds per Georgia State Minimum Standard Building Code (IBC with GA State Amendments) and supporting a concentrated load such as being walked upon.

1.5 QUALITY ASSURANCE

A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

1. Fabricator's responsibilities include fabricating, installing and providing professional engineering services needed to assume engineering responsibility.

B. Installer Qualifications: Fabricator of products.

C. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum."

D. Mockups: Build mockups, as indicated on Drawings, to verify selections made under Sample submittals and to demonstrate aesthetic effects, to set quality standards for materials and execution, and to set quality standards for fabrication and installation.

1. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.6 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit installation of protective covers in exterior locations to be performed according to manufacturers' printed instructions and warranty requirements.

B. Field Measurements: Where protective cover installation is indicated to fit to other work, verify dimensions of other work by field measurements before fabrication and indicate measurements on Shop Drawings. Allow clearances for fenestration operation throughout the entire operating range. Notify Architect of discrepancies. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver, store and handle covered walkway system components as recommended by manufacturer. Handle and store in a manner to avoid deforming members and to avoid excessive stresses.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product: Subject to compliance with requirements, Ditt-Dome Acrylic Walkway Cover” by Dittmer Architectural Aluminum. Equivalent product by Peachtree or Perfection is also acceptable.

2.2 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer to design protective cover system.

B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

C. Regulatory Requirements: Provide protective cover system complying with Georgia State Minimum Standard Building Code (IBC with GA State Amendments) loading and other requirements and limitations.

D. Aluminum Extrusions:

1. All aluminum extrusions shall be alloy 6063 heat treated to a T-6 temper.
2. Standard finish for all components (except custom color and finish as indicated on Drawings) shall be according to Aluminum Association Specification AA-M-10C-22A-21.

E. Fasteners:

1. General: Type 18-8 non-magnetic stainless steel.
2. Trim Rivets: Aluminum.

2.3 FABRICATION

A. Comply with indicated profiles, dimensioned profiles, dimensioned requirements and structural requirements.

B. Use sections true to details with clean, straight, sharply defined profiles and smooth surfaces of uniform color and texture, free from defects impairing strength and durability.

C. All welding to be done by heli-arc process.

D. Bent Construction: Anodized beams and columns shall be heli-arc welded into rigid, one-piece units in the manufacturer's plant. Column ends shall be pierced to "key" grout to bent for maximum uplift protection. All outside corners shall have a minimum 1/8 inch radius. When size of bent does not permit shipment as a welded unit, concealed mechanical joints may be utilized. Joints in such situations shall be of stainless steel bolts with a minimum of two bolts per connection.

E. Internal Drainage: Water flow is directed from roof to beams to columns, as indicated by the shop drawings, for discharge out "weepholes" at ground level.

F. Acrylic Glazing: Acrylic glazing and sidewall panels, where required, shall be acrylic panels equivalent to Rohm & Haas, "Plexiglas" Type G. Color as selected by Architect. Panel thickness shall be a minimum of 1/4 inch.

G. Framing System: Barrel vault and pyramid grid shall consist of all extruded aluminum sections. Acrylic to have a minimum of 1-1/2 inch engagement into glazing pockets. All glazing to have neoprene gaskets to isolate from metal contact.

H. Lighting Fixture: Surface mounted to system as indicated on Drawings. Welded weatherproof, extruded housing, high impact FR grade white acrylic diffuser tethered to housing by wire cables, including 1/2 inch conduit coupling and "Weldnuts" for attachment to framing. Finish shall match the extruded framing system. Ballast shall be class P of voltage required, 0 degree start. Sockets shall receive dual lamps.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for supporting members, blocking, inserts, installation tolerances, and other conditions affecting performance of the Work and quality installation of system.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Field confirm bent locations, dimensions and elevations shown on approved shop drawings prior to fabrication.

3.3 INSTALLATION

A. General: Install protective cover systems at locations and in position indicated, securely connected to supports, free of rack, and in proper relation to adjacent construction. Use mounting methods of types described and in compliance with Shop Drawings and fabricator's written instructions.

B. Erection: Set frame bents into pockets provided in top of footings; set to required elevations, align, plumb and level; and grout in place with 2,000 psi portland cement grout. Ensure that grout fills all voids and “keys” to columns.

C. Install components in accordance with manufacturer’s printed instructions. Provide roof slope for rain discharge without ponding water. Account for rainwater load from face of existing adjacent parking garage in designing protective cover system rainwater collection components. Align and anchor roof deck units to structural support frames.

D. Assemble all components in a neat, workman-like manner.

E. Corrosion Protection: Coat concealed surfaces of aluminum that come in contact with grout, concrete, masonry, wood, or dissimilar metals with a heavy coat of bituminous paint.

F. Coordinate protective cover installation with flashing and joint-sealant installation so these materials are installed in sequence and in a manner that prevents exterior moisture from passing through completed protective cover assembly.

3.4 FLASHING

A. Flashings: Protective cover manufacturer to provide all flashings required between covered walkway system and adjoining structures. Refer to Section 076200 “Sheet Metal Flashing and Trim” for flashing requirements.

3.5 CLEANING AND PROTECTION

A. Damaged Units: Replace components of the work which have been damaged or have deteriorated beyond successful minor repair.

B. Cleaning: Remove protective coverings at time in project construction sequence which will afford greatest protection of work. Clean finished surfaces as recommended by manufacturer. Maintain in a clean condition during construction.

C. Protection: Advise Contractor of protection and surveillance procedures, as required to ensure that work of this section will be without damage or deterioration at time of substantial completion.

END OF SECTION 107300

SECTION 105113 - METAL LOCKERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
   1. Heavy-duty metal lockers.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of metal locker.

B. Shop Drawings: For metal lockers. Include plans, elevations, sections, details, and attachments to other work.
   1. Show locker trim and accessories.
   2. Include locker identification system and numbering sequence.

C. Samples for Initial Selection: For units with factory-applied color finishes.

D. Samples for Verification: For metal lockers, in manufacturer's standard sizes.

E. Qualification Data: For qualified Installer.

F. Maintenance Data: For adjusting, repairing, and replacing locker doors and latching mechanisms to include in maintenance manuals.

G. Warranty: Sample of special warranty.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.

B. Source Limitations: Obtain metal lockers and accessories from single source from single manufacturer.

C. Regulatory Requirements: Where metal lockers are indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA).

D. Preinstallation Conference: Conduct conference at Project site.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver metal lockers until spaces to receive them are clean, dry, and ready for their installation.

B. Deliver master and control keys to Owner by registered mail or overnight package service.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify actual dimensions of recessed openings by field measurements before fabrication.

1.7 COORDINATION

A. Coordinate sizes and locations of concrete bases for metal lockers.

B. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of work specified in other Sections to ensure that metal lockers can be supported and installed as indicated.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal lockers that fail in materials or workmanship, excluding finish, within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Structural failures.
      b. Faulty operation of latches and other door hardware.
   2. Damage from deliberate destruction and vandalism is excluded.
   3. Warranty Period for All-Welded Metal Lockers: 10 years from date of Substantial Completion.

1.9 EXTRA MATERIALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Full-size units of the following metal locker hardware items equal to 10 percent of amount installed for each type and finish installed, but no fewer than five units:
      a. Identification plates.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B, suitable for exposed applications.

B. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with A60 (ZF180) zinc-iron, alloy (galvannealed) coating designation.

C. Expanded Metal: ASTM F 1267, Type II (flattened), Class I, 3/4-inch (19-mm) steel mesh, with at least 70 percent open area.

D. Stainless-Steel Sheet: ASTM A 666, Type 304.

E. Extruded Aluminum: ASTM B 221 (ASTM B 221M), alloy and temper recommended by aluminum producer and manufacturer for type of use and finish indicated.

F. Steel Tube: ASTM A 500, cold rolled.

G. Fasteners: Zinc- or nickel-plated steel, slotless-type, exposed bolt heads; with self-locking nuts or lock washers for nuts on moving parts.

H. Anchors: Material, type, and size required for secure anchorage to each substrate.
1. Provide nonferrous-metal or hot-dip galvanized anchors and inserts for corrosion resistance.
2. Provide toothed-steel or lead expansion sleeves for drilled-in-place anchors.

2.2 HEAVY-DUTY METAL LOCKERS

A. Products: Subject to compliance with requirements, provide products one of the following:
1. DeBourgh Mfg. Co.; Sentry Corridor/Personnel Lockers.
2. List Industries Inc.; Marquis Protector.
3. Lyon Workspace Products, LLC; All-Welded Lockers.
4. Penco Products, Inc.; All-Welded Lockers.

B. Locker Arrangement: 5-tier; 12" wide x 15" tall x 18" deep.

C. Material: Cold-rolled steel sheet.

D. Body: Assembled by welding body components together. Fabricate from unperforated steel sheet with thicknesses as follows:
1. Tops, Bottoms, and Sides: 0.060-inch (1.52-mm) nominal thickness.
2. Backs: 0.048-inch (1.21-mm) nominal thickness.

E. Frames: Channel formed; fabricated from 0.060-inch (1.52-mm) nominal-thickness steel sheet; lapped and factory welded at corners; with top and bottom main frames factory welded into vertical main frames. Form continuous, integral door strike full height on vertical main frames.
1.Cross Frames between Tiers: Channel formed and fabricated from same material as main frames; welded to vertical main frames.

F. Doors: One piece; fabricated from 0.075-inch (1.90-mm) nominal-thickness steel sheet; formed into channel shape with double bend at vertical edges and with right-angle single bend at horizontal edges.
   1. Reinforcement: Manufacturer's standard reinforcing angles, channels, or stiffeners for doors more than 15 inches (381 mm) wide; welded to inner face of doors.
   2. Door Style:
      a.Louvered Vents: Manufacturer's standard shape and configuration.

G. Continuous Zee Base: Fabricated from Manufacturer's standard thickness, but not less than 0.060-inch (1.52-mm)] nominal-thickness steel sheet.
   1. Height: 4 inches (102 mm).

H. Hinges: Welded to door and attached to door frame with no fewer than two factory-installed rivets per hinge that are completely concealed and tamper resistant when door is closed; fabricated to swing 180 degrees.
   1.Knuckle Hinges: Steel, full loop, five or seven knuckles, tight pin; minimum 2 inches (51 mm) high.

I. Recessed Door Handle and Latch: Stainless-steel cup with integral door pull, recessed so locking device does not protrude beyond face of door; pry and vandal resistant.
   1. Multipoint Latching: Finger-lift latch control designed for use with user-furnished padlocks; positive automatic latching.
      a. Latching Mechanism: Manufacturer's standard, rattle-free latching mechanism and moving components isolated to prevent metal-to-metal contact.

J. Equipment: Equip each metal locker with identification plate.

K. Accessories:
   1.Continuous Sloping Tops: Fabricated from 0.048-inch (1.21-mm) nominal-thickness steel sheet, with a pitch of approximately 20 degrees.
      a. Closures: Vertical-end type.
   2.Finished End Panels: Fabricated from 0.048-inch (1.21-mm) nominal-thickness steel sheet formed to match locker depth and height, 1 inch (25-mm) edge dimension; finish to match lockers and install with concealed fasteners.

L. Finish: Baked enamel or powder coat.
   1.Color(s): As selected by Architect from manufacturer's full range.

2.3 FABRICATION

A. Fabricate metal lockers square, rigid, and without warp and with metal faces flat and free of dents or distortion. Make exposed metal edges safe to touch and free of sharp edges and burrs.
   1. Form body panels, doors, shelves, and accessories from one-piece steel sheet unless otherwise indicated.
   2. Provide fasteners, filler plates, supports, clips, and closures as required for complete installation.

B. Fabricate each metal locker with an individual door and frame; individual top, bottom, and back; and common intermediate uprights separating compartments. Factory weld frame members of each metal locker together to form a rigid, one-piece assembly.

C. All-Welded Construction: Factory preassemble metal lockers by welding all joints, seams, and connections; with no bolts, nuts, screws, or rivets used in assembly of main locker groups. Factory weld main locker groups into one-piece structures. Grind exposed welds flush.

D. Accessible Lockers: Fabricate as follows:
   1. Locate bottom shelf no lower than 15 inches (381 mm) above the floor.
   2. Where hooks, coat rods, or additional shelves are provided, locate no higher than 48 inches (1219 mm) above the floor.

E. Identification Plates: Manufacturer's standard, etched, embossed, or stamped aluminum plates, with numbers and letters at least 3/8 inch (9 mm) high.

F. Continuous Sloping Tops: Fabricated in lengths as long as practical, without visible fasteners at splice locations; finished to match lockers.
1.Sloping-top corner fillers, mitered.

G. Finished End Panels: Designed for concealing unused penetrations and fasteners, except for perimeter fasteners, at exposed ends of nonrecessed metal lockers; finished to match lockers.

2.4 STEEL SHEET FINISHES

A. Factory finish steel surfaces and accessories except stainless-steel and chrome-plated surfaces.

B. Baked-Enamel Finish: Immediately after cleaning, pretreating, and phosphatizing, apply manufacturer's standard thermosetting baked-enamel finish. Comply with paint manufacturer's written instructions for application, baking, and minimum dry film thickness.

C. Powder-Coat Finish: Immediately after cleaning and pretreating, electrostatically apply manufacturer's standard, baked-polymer, thermosetting powder finish. Comply with resin manufacturer's written instructions for application, baking, and minimum dry film thickness.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine walls, floors, and support bases, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install level, plumb, and true; shim as required, using concealed shims.

1. Anchor locker runs at ends and at intervals recommended by manufacturer, but not more than 36 inches (910 mm) o.c. Using concealed fasteners, install anchors through backup reinforcing plates, channels, or blocking as required to prevent metal distortion.
2. Anchor single rows of metal lockers to walls near top and bottom of lockers and to floor.

B. All-Welded Metal Lockers: Connect groups together with standard fasteners, with no exposed fasteners on face frames.

C. Equipment and Accessories: Fit exposed connections of trim, fillers, and closures accurately together to form tight, hairline joints, with concealed fasteners and splice plates.
1. Identification Plates: Identify metal lockers with identification indicated on Shop Drawings.
   a. Attach plates to each locker door, near top, centered, with at least two aluminum rivets.
2. Attach sloping-top units to metal lockers, with closures at exposed ends.
3. Attach finished end panels with fasteners only at perimeter to conceal exposed ends of nonrecessed metal lockers.

3.3 ADJUSTING, CLEANING, AND PROTECTION

A. Clean, lubricate, and adjust hardware. Adjust doors and latches to operate easily without binding.

B. Protect metal lockers from damage, abuse, dust, dirt, stain, or paint. Do not permit use during construction.

C. Touch up marred finishes, or replace metal lockers that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by locker manufacturer.

END OF SECTION 105113

SECTION 102800 - TOILET, BATH AND BUILDING ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
1. Public and Private-use washroom accessories.
2. Public-use shower room accessories.
3. Warm-air dryers.
4. Underlavatory guards.
5. Custodial accessories.
6. Full-height mirror units.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated. Include the following:
1. Construction details and dimensions.
2. Anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.
3. Material and finish descriptions.
4. Features that will be included for Project.
5. Manufacturer's warranty.

B. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.
1. Identify locations using room designations indicated.
2. Identify products using designations indicated.

C. Maintenance Data: For toilet and bath accessories to include in maintenance manuals.

D. Warranty: Sample of special warranty.

1.4 QUALITY ASSURANCE

A. Source Limitations: For products listed together in the same Part 2 articles, obtain products from single source from single manufacturer.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1.5 COORDINATION

A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.

B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

1.6 WARRANTY

A. Special Mirror Warranty: Manufacturer's standard form in which manufacturer agrees to replace mirrors that develop visible silver spoilage defects and that fail in materials or workmanship within specified warranty period.
   1. Warranty Period: 15 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Stainless Steel: ASTM A 666, Type 304, 0.031-inch (0.8-mm) minimum nominal thickness unless otherwise indicated.

B. Brass: ASTM B 19, flat products; ASTM B 16/B 16M, rods, shapes, forgings, and flat products with finished edges; or ASTM B 30, castings.

C. Steel Sheet: ASTM A 1008/A 1008M, Designation CS (cold rolled, commercial steel), 0.036-inch (0.9-mm) minimum nominal thickness.

D. Galvanized-Steel Sheet: ASTM A 653/A 653M, with G60 (Z180) hot-dip zinc coating.

E. Galvanized-Steel Mounting Devices: ASTM A 153/A 153M, hot-dip galvanized after fabrication.

F. Fasteners: Screws, bolts, and other devices of same material as accessory unit and tamper-and-theft resistant where exposed, and of galvanized steel where concealed.

G. Chrome Plating: ASTM B 456, Service Condition Number SC 2 (moderate service).

H. Mirrors: ASTM C 1503, Mirror Glazing Quality, clear-glass mirrors, nominal 6.0 mm thick.

I. ABS Plastic: Acrylonitrile-butadiene-styrene resin formulation.

2.2 PUBLIC-USE WASHROOM ACCESSORIES

A. Manufacturers: Subject to compliance with requirements, provide Basis-of-Design products or comparable products by one of the following:
   1. A & J Washroom Accessories, Inc.
   2. American Specialties, Inc.

3. Bobrick Washroom Equipment, Inc.
4. Bradley Corporation.
5. GAMCO Specialty Accessories; a division of Bobrick Washroom Equipment, Inc.

B. Toilet Tissue (Roll) Dispenser **TBA-1**:
1. Basis-of-Design Product: Bobrick Multi-Roll Toilet Tissue Dispenser #B-2888.
2. Mounting: Surface mounted.
3. Description: Roll-in-reserve dispenser with hinged front secured with lockset.
4. Operation: Noncontrol delivery with standard spindle.
5. Capacity: Designed for 4-1/2- or 5-inch- (114- or 127-mm-) diameter tissue rolls.
6. Material and Finish: Stainless steel, No. 4 finish (satin).
7. Lockset: Tumbler type.

C. Multi-Function Unit **TBA-2**:
1. Basis-of-Design Product: Bobrick Multi-Function Unit #B-3579.
2. Description: Seat-Cover Dispenser, Sanitary Napkin Disposal, and Toilet Tissue Dispenser.
3. Mounting: Surface mounted.
4. Material and Finish: Stainless steel, No. 4 finish (satin).
5. Lockset: Tumbler type.

D. Multi-Function Unit **TBA-3**:
1. Basis-of-Design Product: Bobrick Multi-Function Unit #B-357.
2. Mounting: Partition-Mounted.
3. Description: Seat-Cover Dispenser, Sanitary Napkin Disposal, and Toilet Tissue Dispenser.
4. Material and Finish: Stainless steel, No. 4 finish (satin).
5. Lockset: Tumbler type.

E. Waste Receptacle **TBA-4**:
1. Basis-of-Design Product: Bobrick Waste Receptacle #B-279.
2. Mounting: Surface mounted.
3. Minimum Capacity: 6.4 gal. (24.2L).
4. Material and Finish: Stainless steel, No. 4 finish (satin).
5. Liner: Reusable vinyl liner.

F. Combination Towel (Folded) Bobrick Dispenser/Waste Receptacle **TBA-5**:
1. Basis-of-Design Product: Bobrick Combination Unit #B-3699.
2. Description: Combination unit for dispensing C-fold or multifold towels, with removable waste receptacle.
3. Mounting: Surface mounted.
4. Minimum Towel-Dispenser Capacity: 350 C-fold or 475 multifold paper towels.
5. Minimum Waste-Receptacle Capacity: 2 gal. (7.5 L), Removable.
6. Material and Finish: Stainless steel, No. 4 finish (satin).
7. Lockset: Tumbler type for towel-dispenser compartment.

G. Liquid-Soap Dispenser **TBA-6**:
1. Basis-of-Design Product: Bobrick Soap Dispenser #B-82216.
2. Description: Designed for dispensing soap in liquid or lotion form.
3. Mounting: Deck mounted on vanity countertop.
4. Capacity: 20-fl oz. (0.6L).
5. Materials: Piston, Spout and Top Cover: Stainless steel, No. 4 finish (satin).

H. Liquid-Soap Dispenser **TBA-7**:

1. Basis-of-Design Product: Bobrick Soap Dispenser #B-2112.
2. Description: Designed for dispensing soap in liquid or lotion form.
3. Mounting: Surface-Mounted on wall.
4. Capacity: 40-fl oz. (1.2L).
5. Materials: Stainless steel, No. 4 finish (satin).

I. Grab Bar **TBA-8**:
1. Basis-of-Design Product: Bobrick Grab Bar Series B-5806
2. Mounting: Flanges with concealed fasteners.
3. Material: Stainless steel, 0.05 inch (1.3 mm) thick.
   a. Finish: Smooth, No. 4 finish (satin) on ends and slip-resistant texture in grip area.
4. Outside Diameter: 1-1/4 inches (32 mm).
5. Configuration and Length: As indicated on Drawings.

J. Vendor **TBA-9**:
1. Basis-of-Design Product: Bobrick Napkin/Tampon Vendor #B-47069.
2. Type: Sanitary napkin and tampon.
3. Mounting: Surface mounted.
4. Capacity: 30 napkins and 27 tampons.
5. Operation: Single coin (25 cents).
6. Exposed Material and Finish: Stainless steel, No. 4 finish (satin).
7. Lockset: Tumbler type with separate lock and key for coin box.

K. Sanitary-Napkin Disposal Unit **TBA-10**:
1. Mounting: Surface mounted.
2. Door or Cover: Self-closing, disposal-opening cover and hinged face panel with tumbler lockset.
3. Receptacle: Removable, leak-proof, rigid molded polyethylene.
4. Material and Finish: Stainless steel, No. 4 finish (satin).

L. Mirror Unit **TBA-11, TBA-12 and TBA-15**:
1. Basis-of-Design Product: Bobrick Channel Frame #B-165 Series.
2. Frame: Stainless-steel angle, 0.05 inch (1.3 mm) thick.
   a. Corners: Manufacturer's standard.
3. Hangers: Produce rigid, tamper- and theft-resistant installation.
4. Size: TBA-11: 2'-0" x 3'-0"; TBA-12: 1 piece as indicated on Drawings; TBA-15: 2'-6" x 5'-0".
5. Special Size for 131 Fitness Center: install mirror on west wall above and below Ballet Barre (see 064023) 12-inches below ceiling and 6-inches AFF, centered in width of wall in equal sections, not less than 4'-0" wide each, 28'-0" overall.

2.3 PUBLIC-USE SHOWER ROOM ACCESSORIES

A. Manufacturers: Subject to compliance with requirements, provide Basis-of-Design products or comparable products by one of the following:
1. A & J Washroom Accessories, Inc.
2. American Specialties, Inc.
3. Bobrick Washroom Equipment, Inc.
4. Bradley Corporation.
5. GAMCO Specialty Accessories; a division of Bobrick Washroom Equipment, Inc.

B. Shower Curtain and Hooks: **TBA-13 & TBA-14**
   1. Basis-of-Design Product: Bobrick #204-2 & 204-3
   2. Size: Minimum 12 inches (305 mm) wider than opening by 72 inches (1828 mm) high.
   3. Material: Nylon-reinforced vinyl, minimum 10 oz. (284 g) or 0.008-inch- (0.2-mm-) thick vinyl, with integral antibacterial agent.
   4. Color: White.
   5. Grommets: Corrosion resistant at minimum 6 inches (152 mm) o.c. through top hem.
   6. Shower Curtain Hooks: TBA-14: Chrome-plated or stainless-steel, spring wire curtain hooks with snap fasteners, sized to accommodate specified curtain rod. Provide one hook per curtain grommet.

C. Robe Hook **TBA-16**:
   1. Basis-of-Design Product: Bobrick #B-6727
   2. Description: Double-prong unit.
   3. Material and Finish: Stainless steel, No. 4 finish (satin).

D. Towel Shelf with Towel Bar **TBA-17**:
   1. Basis-of-Design Product: Bobrick #B-676.
   2. Description: Towel Shelf with Towel Bar.
   3. Length: 26 inches (660 mm) x 8 .5 inches (215 mm).
   4. Material and Finish: Stainless steel, No. 4 finish (satin).

2.4 WARM-AIR DRYERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Bobrick Washroom Equipment, Inc. Model 7128, High Speed.
   2. SaniFlow a Mediclinics Company, Model M06ACS-UL, High Speed.
   3. World Dryer Corporation, Airforce Model J-070 with KJR-972 Recessing Kit.

B. Warm-Air Dryer **TBA-18**:
   1. Mounting: Surface and Semirecessed.
   2. Operation: Electronic-sensor activated with timed power cut-off switch.
      a. Operation Time: 25 seconds.
   3. Cover Material and Finish: Chrome-plated steel and Stainless steel, No. 4 finish (satin).
   4. Electrical Requirements: 120 V, 15 A, 1725 W.

2.5 CHILDCARE ACCESSORIES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. American Specialties, Inc.
   2. Brocar Products, Inc.
   3. Diaper Deck & Company, Inc.
   4. GAMCO Specialty Accessories; a division of Bobrick Washroom Equipment, Inc.
   5. Koala Kare Products; a division of Bobrick Washroom Equipment, Inc.
   6. SSC, Inc.

B. Diaper-Changing Station **TBA-19**:
   1. Description: Horizontal unit that opens by folding down from stored position and with child-protection strap.
      a. Engineered to support a minimum of 250-lb (113-kg) static load when opened.

2. Mounting: Surface mounted, with unit projecting not more than 4 inches (100 mm) from wall when closed.
3. Operation: By pneumatic shock-absorbing mechanism.
4. Material and Finish: HDPE in manufacturer's standard color.
5. Liner Dispenser: Built in.

2.6 UNDERLAVATORY GUARDS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Brocar Trap Wrap.
2. Plumberex Specialty Products, Inc.
3. Skal-Gard.
4. Truebro by IPS Corporation.

B. Underlavatory Guard **TBA-20**:
1. Description: Insulating pipe covering for supply and drain piping assemblies that prevent direct contact with and burns from piping; allow service access without removing coverings.
2. Material and Finish: Antimicrobial, molded plastic, white.

2.7 CUSTODIAL ACCESSORIES

A. Manufacturers: Subject to compliance with requirements, provide Basis-of-Design products or comparable products by one of the following:
1. A & J Washroom Accessories, Inc.
2. American Specialties, Inc.
3. Bobrick Washroom Equipment, Inc.
4. Bradley Corporation.
5. GAMCO Specialty Accessories; a division of Bobrick Washroom Equipment, Inc.

B. Mop and Broom Holder **TBA-21**:
1. Description: Unit with shelf, hooks, holders, and rod suspended beneath shelf.
2. Length: 36 inches (914 mm).
3. Hooks: Three.
4. Mop/Broom Holders: Four, spring-loaded, rubber hat, cam type.
5. Material and Finish: Stainless steel, No. 4 finish (satin).
   a. Shelf: Not less than nominal 0.05-inch- (1.3-mm-) thick stainless steel.
   b. Rod: Approximately 1/4-inch- (6-mm-) diameter stainless steel.

2.8 FABRICATION

A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.

B. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to Owner's representative.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.

B. Grab Bars: Install to withstand a downward load of at least 250 lbf (1112 N), when tested according to ASTM F 446.

C. Install mirrors on west wall of 131 Fitness Center, above and below Ballet Barre (see 064023) 12-inches below ceiling and 6-inches AFF, with cut-out spaces for electrical devices and any other electronic/electrical device on wall. Paint wall behind cutouts. Width of mirrors to be equal along wall, align seams top to bottom.

3.2 ADJUSTING AND CLEANING

A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.

B. Remove temporary labels and protective coatings.

C. Clean and polish exposed surfaces according to manufacturer's written recommendations.

END OF SECTION 102800

SECTION 102226 - OPERABLE PARTITIONS

PART 1 - GENERAL

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

1.2 SUMMARY
- A. Section Includes:
  1. Manually operated, acoustical panel partitions.
- B. Related Sections:
  1. Division 05 Section “Metal Fabrications” for supports that attach supporting tracks to overhead structural system.

1.3 DEFINITIONS
- A. ADA-ABA Accessibility Guidelines: U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA) and Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities."
- B. NIC: Noise Isolation Class.
- C. NRC: Noise Reduction Coefficient.
- D. STC: Sound Transmission Class.

1.4 PERFORMANCE REQUIREMENTS
- A. Acoustical Performance: Provide operable panel partitions tested by a qualified testing agency for the following acoustical properties according to test methods indicated:
  1. Sound-Transmission Requirements: Operable panel partition assembly tested for laboratory sound-transmission loss performance according to ASTM E 90, determined by ASTM E 413, and rated for not less than the STC indicated.

1.5 SUBMITTALS
- A. Product Data: For each type of product indicated.
- B. LEED Submittals:
  1. Certificates for Credit MR 7: Chain-of-custody certificates certifying that operable panel partitions comply with forest certification requirements. Include evidence that manufacturer is certified for chain of custody by an FSC-accredited certification body.
  2. Product Data for Credit IEQ 4.4: For each composite wood product used in operable panel partitions, documentation indicating that product contains no urea formaldehyde.
- C. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
  1. Indicate storage and operating clearances. Indicate location and installation requirements for hardware and track, blocking, and direction of travel.
- D. Samples for Initial Selection: For each type of exposed material, finish, covering, or facing indicated.
  1. Include similar Samples of accessories involving color selection.
- E. Samples for Verification: For each type of exposed material, finish, covering, or facing indicated, prepared on Samples of size indicated below:
  1. Panel Facing Material: Manufacturer's standard-size unit, not less than 3 inches square.
  2. Panel Edge Material: Not less than 3 inches long.
- F. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved:

1. Suspended ceiling components.
2. Structural members to which suspension systems will be attached.
3. Size and location of initial access modules for acoustical tile.
4. Items penetrating finished ceiling, including the following:
    a. Lighting fixtures.
    b. HVAC ductwork, outlets, and inlets.
    c. Speakers.
    d. Plenum acoustical barriers.

G. Setting Drawings: For embedded items and cutouts required in other work, including support-beam, mounting-hole template.
H. Qualification Data: For qualified Installer and testing agency.
I. Product Certificates: For each type of operable panel partition, from manufacturer.
J. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each operable panel partition.
K. Operation and Maintenance Data: For operable panel partitions to include in maintenance manuals. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:
    1. Panel finish facings and finishes for exposed trim and accessories. Include precautions for cleaning materials and methods that could be detrimental to finishes and performance.
    2. Seals, hardware, track, carriers, and other operating components.
L. Warranty: Sample of special warranty.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and approved by manufacturer.
B. Testing Agency Qualifications: Qualified according to Division 01 Section "Quality Requirements" for testing indicated.
C. Fire-Test-Response Characteristics: Provide panels with finishes meeting one of the following as determined by testing identical products by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:
    1. Surface-Burning Characteristics: As determined by testing per ASTM E 84.
        a. Flame-Spread Index: 25 or less.
        b. Smoke-Developed Index: 450 or less.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Protectively package and sequence panels in order for installation. Clearly mark packages and panels with numbering system used on Shop Drawings. Do not use permanent markings on panels.

1.8 PROJECT CONDITIONS

A. Field Measurements: Verify actual dimensions of operable panel partition openings by field measurements before fabrication.

1.9 WARRANTY

A. Special Warranty: Manufacturer’s standard form in which manufacturer agrees to repair or replace components of operable panel partitions that fail in materials or workmanship within specified warranty period.
    1. Failures include, but are not limited to, the following:
        a. Faulty operation of operable panel partitions.
        b. Deterioration of metals, metal finishes, and other materials beyond normal wear.
B. Warranty Period: Two years from date of Substantial Completion.

1.10 EXTRA MATERIALS

A. Furnish extra materials from the same production run that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Panel Finish-Facing Material: Furnish full width in quantity to cover both sides of two panels when installed.

PART 2 - PRODUCTS

2.1 OPERABLE ACOUSTICAL PANELS

A. Operable Acoustical Panels: Operable acoustical panel partition system, including panels, seals, finish facing, suspension system, operators, and accessories.
   1. Hufcor; Model 632.
   2. KWIK-WALL Company; 2030 Series.
   3. Modernfold, Inc.; a DORMA Group Company; Model 932.
   4. Panelfold Inc.; Moduflex Series 420.

B. Panel Operation Manually operated, paired panels.

C. Panel Construction: Provide top reinforcement as required to support panel from suspension components and provide reinforcement for hardware attachment. Fabricate panels with tight hairline joints and concealed fasteners. Fabricate panels so finished in-place partition is rigid; level; plumb; aligned, with tight joints and uniform appearance; and free of bow, warp, twist, deformation, and surface and finish irregularities.

D. Dimensions: Fabricate operable acoustical panel partitions to form an assembled system of dimensions indicated and verified by field measurements.
   1. Panel Width: Standard widths.

E. STC: Not less than 50.

F. Panel Weight: 11 lb/sq. ft. maximum.

G. Panel Thickness: Not less than 3 inches.

H. Panel Closure: Manufacturer's standard.

I. Hardware: Manufacturer's standard as required to operate operable panel partition and accessories; with decorative, protective finish.
   1. Hinges: SOSS Invisible Laminated Hinges

2.2 SEALS

A. General: Provide types of seals indicated that produce operable panel partitions complying with acoustical performance requirements and the following:
   1. Seals fitting tight at contact surfaces and sealing continuously between adjacent panels and between operable panel partition perimeter and adjacent surfaces, when operable panel partition is extended and closed.
   2. Vertical Interlocking Sound Seals between panels: Roll-formed astragals, with reversible tongue and groove configuration in each panel edge, for universal panel operation.
   3. Horizontal Top Seals:
      a. Continuous-contact, extruded-PVC or vinyl seal exerting uniform constant pressure on track.
   4. Horizontal Bottom Seals: Vinyl or PVC-faced, mechanical, retractable, constant-force-contact seal exerting uniform constant pressure on floor when extended, ensuring horizontal and vertical sealing and resisting panel movement.
      a. Mechanically Operated for Acoustical Panels: Extension and retraction of bottom seal by operating handle or built-in operating mechanism, with operating range not less than 2 inches between retracted seal and floor finish.

2.3 FINISH FACING

A. General: Provide finish facings for panels that comply with indicated fire-test-response characteristics and that are factory applied to operable panel partitions with appropriate backing, using mildew-resistant nonstaining adhesive as recommended by facing manufacturer's written instructions.
B. Provide marker-board surface material on both sides of each panel.
C. Trimless Edges: Fabricate exposed panel edges so finish facing wraps uninterrupted around panel, covering edge and resulting in an installed partition with facing visible on vertical panel edges, without trim, for minimal sightlines at panel-to-panel joints.

2.4 SUSPENSION SYSTEMS
A. Suspension Tracks: Steel or aluminum with adjustable steel hanger rods for overhead support, designed for type of operation, size, and weight of operable panel partition indicated. Size track to support partition operation and storage without damage to suspension system, operable panel partitions, or adjacent construction. Limit track deflection to no more than 0.10 inch between bracket supports. Provide a continuous system of track sections and accessories to accommodate configuration and layout indicated for partition operation and storage.
B. Carriers: Trolley system as required for configuration type, size, and weight of partition and for easy operation; with ball-bearing wheels.
C. Aluminum Finish: Mill finish or manufacturer's standard, factory-applied, decorative finish unless otherwise indicated.
D. Steel Finish: Manufacturer's standard, factory-applied, corrosion-resistant, protective coating unless otherwise indicated.

PART 3 - EXECUTION

3.1 EXAMINATION
A. Examine flooring, structural support, and opening, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of operable panel partitions.
B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION
A. General: Comply with ASTM E 557 except as otherwise required by operable panel partition manufacturer's written installation instructions.
B. Install operable panel partitions and accessories after other finishing operations, including painting, have been completed.
C. Install panels from marked packages in numbered sequence indicated on Shop Drawings.
D. Broken, cracked, chipped, deformed, or unmatched panels are not acceptable.
E. Broken, cracked, deformed, or unmatched gasketing or gasketing with gaps at butted ends is not acceptable.

3.3 ADJUSTING
A. Adjust operable panel partitions to operate smoothly, without warping or binding. Lubricate hardware and other moving parts.
B. Check and readjust operating hardware. Confirm that latches and locks engage accurately and securely without forcing or binding.

3.4 CLEANING
A. Clean soiled surfaces of operable panel partitions to remove dust, loose fibers, fingerprints, adhesives, and other foreign materials according to manufacturer’s written instructions.

3.5 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain operable panel partitions.

END OF SECTION 102226

SECTION 099600 - HIGH-PERFORMANCE COATINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes surface preparation and application of high-performance coating system on the following substrates:

1. Exterior Substrates:
   a. Concrete, vertical and horizontal surfaces.
   b. Ferrous metal.
   c. Galvanized metal.

B. Related Requirements:

1. Section 051200 "Structural Steel Framing" for shop priming of metal substrates with primers specified in this Section.

1.3 DEFINITIONS

A. Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.

B. Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated. Include preparation requirements and application instructions.

B. LEED Submittals:

1. Product Data for Credit EQ 4.2: For interior coatings, documentation including printed statement of VOC content.
2. Laboratory Test Reports for Credit EQ 4: For interior coatings, documentation indicating that products comply with the testing and product requirements of the California Department of Health Services "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

C. Samples for Initial Selection: For each type of topcoat product indicated.

D. Samples for Verification: For each type of coating system and in each color and gloss of topcoat indicated.
   1. Submit Samples on rigid backing, 4 inches (200 mm) square.
   2. Step coats on Samples to show each coat required for system.
   3. Label each coat of each Sample.
   4. Label each Sample for location and application area.

E. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Coatings: 5 percent, but not less than 1 gal. (3.8 L) of each material and color applied.

1.5 QUALITY ASSURANCE

A. Mockups: Apply mockups of each coating system indicated to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

   1. Architect will select one surface to represent surfaces and conditions for application of each coating system specified in Part 3.
      a. Architect will designate items or areas required.

   2. Final approval of color selections will be based on mockups.
      a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.

   3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
   4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).
   1. Maintain containers in clean condition, free of foreign materials and residue.
   2. Remove rags and waste from storage areas daily.

B. Deliver coatings to the job site in quantities sufficiently large enough so that several different batches of the same color will not be required.

1.7 FIELD CONDITIONS

A. Apply coatings only when temperature of surfaces to be coated and surrounding air temperatures are between 50 and 95 deg F (10 and 35 deg C).

B. Do not apply coatings when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

C. Do not apply exterior coatings in snow, rain, fog, or mist.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products of one of the following:
   1. Tnemec Company, Inc.
   2. Carboline Company.
   3. DuPont Company, High Performance Coatings.

B. High performance coating systems specified in other Part 2 section are products of Tnemec Company, Inc. in order to establish a standard of quality. Equivalent products of other manufacturers listed above are acceptable, but only as approved by the Architect.

2.2 HIGH-PERFORMANCE COATINGS, GENERAL

A. MPI Standards: Provide products that comply with MPI standards indicated and are listed in "MPI Approved Products List."

B. Material Compatibility:
   1. Provide materials for use within each coating system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
   2. For each coat in a coating system, provide products recommended in writing by manufacturers of topcoat for use in coating system and on substrate indicated.
   3. Provide products of same manufacturer for each coat in a coating system.

C. VOC Content: Products shall comply with VOC limits of authorities having jurisdiction.
   1. Flat Paints and Coatings: 50 g/L.
   2. Nonflat Paints and Coatings: 150 g/L.
   3. Primers, Sealers, and Undercoaters: 200 g/L.
   4. Anti-Corrosive and Anti-Rust Paints Applied to Ferrous Metals: 250 g/L.

D. Colors: As selected by Architect from manufacturer's full range.

2.3 HIGH PERFORMANCE COATING SYSTEMS

A. High Performance Coating System at Exterior Ferrous Metal:

   1. Surface Preparation: Shop preparation as specified in Division 05 Section "Structural Steel".
   2. Prime Coat: Prepare all rusted abraded areas in accordance with SSPC-SP 11 Power Tool Cleaning to Bare Metal. Feather the edges of the remaining intact coatings by sanding. Zinc-rich primer applied at spreading rate recommended by manufacturer to achieve a dry film thickness of 2.5 to 3.5 mils.

      a. Basis-of-Design Product: Tnemec 90-97 Tneme-zinc.

   2. Intermediate Coats: Aliphatic acrylic polyurethane applied at spreading rate recommended by manufacturer to achieve a dry film thickness of 2.0 to 3.0 mils.

a. Basis-of-Design Product: Tnemec Series 1075-color Endura-Shield II.

3. Topcoat: Advanced Thermoset Solution Fluoropolymer applied at spreading rate recommended by manufacturer to achieve a dry film thickness of 2.0 to 3.0 mils.
   a. Basis-of-Design Product: Tnemec Series 1071-color Fluoronar.

B. High Performance Coating System at Exterior Galvanized Metal:

1. Surface Preparation: Shop preparation as specified in Division 05 Section "Structural Steel".
2. Prime Coat: Polyamidoamine Epoxy applied at spreading rate recommended by manufacturer to achieve a dry film thickness of 2.0 to 3.0 mils.
   a. Basis-of-Design Product: Tnemec Series N69-color Hi-Build Epoxoline II.

3. Topcoat: Advanced Thermoset Solution Fluoropolymer applied at spreading rate recommended by manufacturer to achieve a dry film thickness of 2.0 to 3.0 mils.
   a. Basis-of-Design Product: Tnemec Series 1071-color Fluoronar.

C. High Performance Coating System at Precast Tees:

1. Surface Preparation: Wash with bio-degradable detergent to remove all dust, dirt and contaminants. Pressure rinse with 2,000 – 3,000 psi fresh water to remove all detergent residue. Hand scrape to remove all loosely adhered coatings. Feather the edges of remaining tightly adhering coatings. Clean and dry all surfaces.
2. Prime Coat: Waterborne Modified Polyamine Epoxy applied at approximately 200 square feet per gallon
   a. Basis-of-Design Product: Tnemec Series 151-1051 Elasto-Shield.
3. Intermediate Coats: Modified Waterborne Acrylate applied at approximately 136 to 204 square feet per gallon.
   a. Basis-of-Design Product: Tnemec Series 156-color Enviro-Crete.
4. Topcoat: Modified Waterborne Acrylate applied at approximately 136 to 204 square feet per gallon.
   a. Basis-of-Design Product: Tnemec Series 156-color Enviro-Crete.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

1. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
   a. Concrete: 12 percent.
   b. Masonry (Clay and CMU): 12 percent.

B. Coordination of Work: Review other Sections in which primers or other coatings are provided to ensure compatibility of total systems for various substrates. On request, furnish information on characteristics of specified finish materials to ensure compatible primers.

1. If a potential incompatibility of primers applied by others exists, obtain the following from the primer Applicator before proceeding:
   a. Confirmation of primer's suitability for expected service conditions.
   b. Confirmation of primer's ability to be top coated with materials specified.
2. Notify Architect about anticipated problems before using the coatings specified over substrates primed by others.

C. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.

C. Clean substrates of substances that could impair bond of coatings, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce coating systems indicated.

D. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.

1. Clean surfaces with pressurized water.
2. Abrasive blast clean surfaces to comply with SSPC-SP 7/NACE No. 4, "Brush-Off Blast Cleaning."

E. Steel Substrates: Remove rust, loose mill scale, and shop primer if any. Clean using methods recommended in writing by paint manufacturer**.**

1. SSPC-SP 7/NACE No. 4, "Brush-Off Blast Cleaning."
2. SSPC-SP 11, "Power Tool Cleaning to Bare Metal."
3. SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
4. SSPC-SP 10/NACE No. 2, "Near-White Blast Cleaning."
5. SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning."

F. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

G. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied coatings.

3.3 APPLICATION

A. Apply high-performance coatings according to manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual."

1. Use applicators and techniques suited for coating and substrate indicated.
2. Do not apply high-performance coatings over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to forming a durable coating film.
3. Coat surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, coat surfaces behind permanently fixed equipment or furniture with prime coat only.
4. Coat back sides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
5. Do not apply coatings over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
6. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures are in place. Extend coatings in these areas, as required, to maintain system integrity and provide desired protection.

B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of the same material are to be applied. Tint undercoats to match color of finish coat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through final coat, apply additional coats until cured film has a uniform coating finish, color, and appearance.

D. Apply coatings to produce surface films without cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections. Produce sharp glass lines and color breaks.

Application Procedures: Apply coatings by spray according to manufacturer's written instructions.

1. Spray Equipment: Use mechanical methods to apply coating if permitted by manufacturer's written instructions and governing regulations.

    a. Use spray equipment with orifice size recommended by manufacturer for material and texture required.
    b. Apply each coat to provide the equivalent hiding of brush-applied coats.
    c. Do not double back with spray equipment building-up film thickness of two coats in one pass, unless recommended by manufacturer.

3.4 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing coating application, clean spattered surfaces. Remove spattered coatings by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from coating operation. Correct damage by cleaning, repairing, replacing, and recoating, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced coated surfaces.

END OF SECTION 099600

SECTION 099500 - INTERIOR EPOXY COATINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes surface preparation and application of high-performance coating systems on the following substrates:
   1. Interior Substrates:
      a. Gypsum board.

1.3 SUBMITTALS

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

B. Samples for Initial Selection: For each type of finish-coat product indicated.

C. Samples for Verification: For each type of coating system and in each color and gloss of finish coat indicated.
   1. Submit Samples on rigid backing, 8 inches (200 mm square).
   2. Step coats on Samples to show each coat required for system.
   3. Label each coat of each Sample.
   4. Label each Sample for location and application area.

D. Product List: For each product indicated. Cross-reference products to coating system and locations of application areas. Use same designations indicated on Drawings and in schedules.

E. LEED Submittals:
   1. Product Data for Credit EQ 4.2: For coatings, including printed statement of VOC content and chemical components.

1.4 QUALITY ASSURANCE

A. Master Painters Institute (MPI) Standards:
   1. Products: Complying with MPI standards indicated and listed in "MPI Approved Products List."
   2. Preparation and Workmanship: Comply with requirements in "MPI Architectural Painting Specification Manual" for products and coating systems indicated.

B. Mockups: Apply benchmark samples of each coating system indicated to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions for application of each type of coating and substrate.
   a. Wall and Ceiling Surfaces: Provide samples of at least 100 sq. ft. (9 sq. m).
   b. Other Items: Architect will designate items or areas required.
2. Apply benchmark samples after permanent lighting and other environmental services have been activated.
3. Final approval of color selections will be based on benchmark samples.
   a. If preliminary color selections are not approved, apply additional benchmark samples of additional colors selected by Architect at no added cost to Owner.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).
   1. Maintain containers in clean condition, free of foreign materials and residue.
   2. Remove rags and waste from storage areas daily.

1.6 PROJECT CONDITIONS

A. Apply coatings only when temperature of surfaces to be coated and surrounding air temperatures are between 50 and 95 deg F (10 and 35 deg C).

B. Do not apply coatings in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F1 (3 deg C) above the dew point; or to damp or wet surfaces.

1.7 EXTRA MATERIALS

A. Furnish extra materials described below that are from same production run (batch mix) as materials applied and that are packaged for storage and identified with labels describing contents.
   1. Quantity: Furnish an additional 5 percent, but not less than 1 gal. (3.8 L) of each material and color applied.

PART 2 - PRODUCTS

2.1 HIGH-PERFORMANCE COATINGS, GENERAL

A. Material Compatibility:
   1. Provide materials for use within each coating system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
   2. Provide products of same manufacturer for each coat in a coating system.

B. VOC Content of Field-Applied Interior Paints and Coatings: Provide products that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
   1. Flat Paints, Coatings, and Primers: VOC content of not more than 50 g/L.
   2. Nonflat Paints, Coatings, and Primers: VOC content of not more than 150 g/L.
   3. Anticorrosive and Anti-Rust Paints Applied to Ferrous Metals: VOC content of not more than 250 g/L.

4. Clear Wood Finishes, Varnishes: VOC not more than 350 g/L.
5. Clear Wood Finishes, Lacquers: VOC not more than 550 g/L.
6. Floor Coatings: VOC not more than 100 g/L.
7. Shellacs, Clear: VOC not more than 730 g/L.
8. Shellacs, Pigmented: VOC not more than 550 g/L.
9. Stains: VOC content of not more than 250 g/L.

C. Chemical Components of Field-Applied Interior Paints and Coatings: Provide topcoat paints and anti-corrosive and anti-rust paints applied to ferrous metals that comply with the following chemical restrictions; these requirements do not apply to paints and coatings that are applied in a fabrication or finishing shop:
1. Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight of total aromatic compounds (hydrocarbon compounds containing 1 or more benzene rings).
2. Restricted Components: Paints and coatings shall not contain any of the following:
a. Acrolein.
b. Acrylonitrile.
c. Antimony.
d. Benzene.
e. Butyl benzyl phthalate.
f. Cadmium.
g. Di (2-ethylhexyl) phthalate.
h. Di-n-butyl phthalate.
i. Di-n-octyl phthalate.
j. 1,2-dichlorobenzene.
k. Diethyl phthalate.
l. Dimethyl phthalate.
m. Ethylbenzene.
n. Formaldehyde.
o. Hexavalent chromium.
p. Isophorone.
q. Lead.
r. Mercury.
s. Methyl ethyl ketone.
t. Methyl isobutyl ketone.
u. Methylene chloride.
v. Naphthalene.
w. Toluene (methylbenzene).
x. 1,1,1-trichloroethane.
y. Vinyl chloride.

D. Colors: Match Architect's samples.

2.2 INTERIOR PRIMERS/SEALERS

A. Interior Latex Primer/Sealer: MPI #50.
1. Products: Subject to compliance with requirements, provide products by one of the following:
a. Benjamin Moore & Co.
b. ICI Paints.
c. PPG Architectural Finishes, Inc.
d. Sherwin-Williams Company (The).

2.3 EPOXY COATINGS

A. Water-Based Epoxy (Interior and Exterior): MPI #115.

1. Products: Subject to compliance with requirements, provide products by one of the following:
   a. Benjamin Moore & Co.
   b. ICI Paints; Devoe Coatings.
   c. PPG Architectural Finishes, Inc.
   d. Sherwin-Williams Company (The).

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.
   1. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
      a. Gypsum Board: 12 percent.
   2. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
   3. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.
   4. Coating application indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates indicated.

B. Remove plates, machined surfaces, and similar items already in place that are not to be coated. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and coating.
   1. After completing coating operations, reinstall items that were removed; use workers skilled in the trades involved.

C. Clean substrates of substances that could impair bond of coatings, including dirt, oil, grease, and incompatible paints and encapsulants.
   1. Remove incompatible primers and reprime substrate with compatible primers as required to produce coating systems indicated.

3.3 APPLICATION

A. Apply high-performance coatings according to manufacturer's written instructions.
   1. Use applicators and techniques suited for coating and substrate indicated.
   2. Coat surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, coat surfaces behind permanently fixed equipment or furniture with prime coat only.

3. Coat back sides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.

B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of the same material are to be applied. Tint undercoats to match color of finish coat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through final coat, apply additional coats until cured film has a uniform coating finish, color, and appearance.

D. Apply coatings to produce surface films without cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections. Produce sharp glass lines and color breaks.

3.4 FIELD QUALITY CONTROL

A. Owner reserves the right to invoke the following procedure at any time and as often as Owner deems necessary during the period when coatings are being applied:
1. Owner will engage the services of a qualified testing agency to sample coating material being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of Contractor.
2. Testing agency will perform tests for compliance with specified requirements.
3. Owner may direct Contractor to stop applying coatings if test results show materials being used do not comply with specified requirements. Contractor shall remove noncomplying coating materials from Project site, pay for testing, and recoat surfaces coated with rejected materials. Contractor will be required to remove rejected materials from previously coated surfaces if, on recoating with complying materials, the two coatings are incompatible.

3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing coating application, clean spattered surfaces. Remove spattered coatings by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from coating operation. Correct damage by cleaning, repairing, replacing, and recoating, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced coated surfaces.

3.6 INTERIOR HIGH-PERFORMANCE COATING SCHEDULE

A. Gypsum Board Substrates:
1. Water-Based Epoxy Coating System:
a. Prime Coat: Interior latex primer/sealer, MPI #50.
b. Intermediate Coat: Water-based epoxy (interior and exterior), MPI #115.
c. Topcoat: Water-based epoxy (interior and exterior), MPI #115.

END OF SECTION 099500

SECTION 099123 - INTERIOR PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes surface preparation and the application of paint systems on the following interior substrates:
   1. Concrete.
   2. Concrete masonry units (CMU).
   3. Steel.
   4. Galvanized metal.
   5. Aluminum (not anodized or otherwise coated).
   6. Gypsum board.

1.3 SUBMITTALS

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

B. Samples for Initial Selection: For each type of topcoat product indicated.

C. Samples for Verification: For each type of paint system and in each color and gloss of topcoat indicated.
   1. Submit Samples on rigid backing, 8 inches (200 mm) square.
   2. Step coats on Samples to show each coat required for system.
   3. Label each coat of each Sample.

D. Product List: For each product indicated, include the following:
   1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
   2. Printout of current "MPI Approved Products List" for each product category specified in Part 2, with the proposed product highlighted.

E. LEED Submittal:
   1. Product Data for Credit EQ 4.2: For paints, including printed statement of VOC content and chemical components.

1.4 QUALITY ASSURANCE

A. MPI Standards:
   1. Products: Complying with MPI standards indicated and listed in "MPI Approved Products List."
   2. Preparation and Workmanship: Comply with requirements in "MPI Architectural Painting Specification Manual" for products and paint systems indicated.

B. Mockups: Apply benchmark samples of each paint system indicated and each color and finish selected to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
   1. Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.
      a. Wall and Ceiling Surfaces: Provide samples of at least 100 sq. ft. (9 sq. m).
      b. Other Items: Architect will designate items or areas required.
   2. Apply benchmark samples after permanent lighting and other environmental services have been activated.
   3. Final approval of color selections will be based on benchmark samples.
      a. If preliminary color selections are not approved, apply additional benchmark samples of additional colors selected by Architect at no added cost to Owner.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).
   1. Maintain containers in clean condition, free of foreign materials and residue.
   2. Remove rags and waste from storage areas daily.

1.6 PROJECT CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).

B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

1.7 EXTRA MATERIALS

A. Furnish extra materials described below that are from same production run (batch mix) as materials applied and that are packaged for storage and identified with labels describing contents.
   1. Quantity: Furnish an additional 5 percent, but not less than 1 gal. (3.8 L) of each material and color applied.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Benjamin Moore & Co.
   2. ICI Paints.
   3. PPG Architectural Finishes, Inc.
   4. Sherwin-Williams Company (The).

2.2 PAINT, GENERAL

A. Material Compatibility:

1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

B. VOC Content of Field-Applied Interior Paints and Coatings: Provide products that comply with the following limits for VOC content, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24); these requirements do not apply to paints and coatings that are applied in a fabrication or finishing shop:
1. Flat Paints, Coatings, and Primers: VOC content of not more than 50 g/L.
2. Nonflat Paints, Coatings, and Primers: VOC content of not more than 150 g/L.
3. Anti-Corrosive and Anti-Rust Paints Applied to Ferrous Metals: VOC not more than 250 g/L.
4. Floor Coatings: VOC not more than 100 g/L.

C. Chemical Components of Field-Applied Interior Paints and Coatings: Provide topcoat paints and anti-corrosive and anti-rust paints applied to ferrous metals that comply with the following chemical restrictions; these requirements do not apply to paints and coatings that are applied in a fabrication or finishing shop:
1. Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight of total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
2. Restricted Components: Paints and coatings shall not contain any of the following:
    a. Acrolein.
    b. Acrylonitrile.
    c. Antimony.
    d. Benzene.
    e. Butyl benzyl phthalate.
    f. Cadmium.
    g. Di (2-ethylhexyl) phthalate.
    h. Di-n-butyl phthalate.
    i. Di-n-octyl phthalate.
    j. 1,2-dichlorobenzene.
    k. Diethyl phthalate.
    l. Dimethyl phthalate.
    m. Ethylbenzene.
    n. Formaldehyde.
    o. Hexavalent chromium.
    p. Isophorone.
    q. Lead.
    r. Mercury.
    s. Methyl ethyl ketone.
    t. Methyl isobutyl ketone.
    u. Methylene chloride.
    v. Naphthalene.
    w. Toluene (methylbenzene).
    x. 1,1,1-trichloroethane.
    y. Vinyl chloride.

D. Colors: Match Architect's samples.

2.3 BLOCK FILLERS

A. Interior/Exterior Latex Block Filler: MPI #4.

2.4 PRIMERS/SEALERS

A. Interior Latex Primer/Sealer: MPI #50.

2.5 METAL PRIMERS

A. Rust-Inhibitive Primer (Water Based): MPI #107.

B. Waterborne Galvanized-Metal Primer: MPI #134.

C. Quick-Drying Primer for Aluminum: MPI #95.

2.6 LATEX PAINTS

A. Institutional Low-Odor/VOC Latex (Flat): MPI #143 (Gloss Level 1).

B. Institutional Low-Odor/VOC Latex (Eggshell): MPI #145 (Gloss Level 3).

C. Institutional Low-Odor/VOC Latex (Semigloss): MPI #147 (Gloss Level 5).

D. High-Performance Architectural Latex (Eggshell): MPI #139 (Gloss Level 3).

2.7 FLOOR COATINGS

A. Interior/Exterior Clear Concrete Floor Sealer (Water Based): MPI #99.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
   1. Concrete: 12 percent.
   2. Masonry (Clay and CMU): 12 percent.
   3. Gypsum Board: 12 percent.

C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

D. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.
   1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates indicated.

B. Remove plates, machined surfaces, and similar items already in place that are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
   1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
   2. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

C. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.
   1. Remove incompatible primers and reprime substrate with compatible primers as required to produce paint systems indicated.

D. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.
   1. Remove all ‘flaking’ existing paint, all loose surface coatings and all other coatings.

E. Concrete Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.

F. Steel Substrates: Remove rust and loose mill scale. Clean using methods recommended in writing by paint manufacturer.

G. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

H. Aluminum Substrates: Remove surface oxidation.

I. Gypsum Board Substrates: Do not begin paint application until finishing compound is dry and sanded smooth.

3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions.
   1. Use applicators and techniques suited for paint and substrate indicated.
   2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
   3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.

B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

E. Painting Mechanical and Electrical Work: Paint items exposed in equipment rooms and occupied spaces including, but not limited to, the following:
   1. Mechanical Work:
      a. Uninsulated metal piping.
      b. Uninsulated plastic piping.
      c. Pipe hangers and supports.
      d. Tanks that do not have factory-applied final finishes.
      e. Visible portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets.
      f. Mechanical equipment that is indicated to have a factory-primed finish for field painting.
   2. Electrical Work:
      a. Switchgear.
      b. Panelboards.
      c. Electrical equipment that is indicated to have a factory-primed finish for field painting.

3.4 FIELD QUALITY CONTROL

A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure at any time and as often as Owner deems necessary during the period when paints are being applied:
   1. Owner will engage the services of a qualified testing agency to sample paint materials being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of Contractor.
   2. Testing agency will perform tests for compliance with product requirements.
   3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying-paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 INTERIOR PAINTING SCHEDULE

A. Concrete Substrates, Nontraffic Surfaces:
   1. Institutional Low-Odor/VOC Latex System: MPI INT 3.1M.
      a. Prime Coat: Institutional low-odor/VOC interior latex matching topcoat.
      b. Intermediate Coat: Institutional low-odor/VOC interior latex matching topcoat.
      c. Topcoat: Institutional low-odor/VOC interior latex flat.

B. Concrete Substrates, Traffic Surfaces:
   1. Water-Based Clear Sealer System: MPI INT 3.2G.
      a. First Coat: Interior/exterior clear concrete floor sealer (water based).
      b. Topcoat: Interior/exterior clear concrete floor sealer (water based).

C. CMU Substrates:
   1. Institutional Low-Odor/VOC Latex System: MPI INT 4.2E.
      a. Prime Coat: Interior/exterior latex block filler.
      b. Intermediate Coat: Institutional low-odor/VOC interior latex matching topcoat.
      c. Topcoat: Institutional low-odor/VOC interior latex eggshell.

D. Steel Substrates:
   1. Institutional Low-Odor/VOC Latex System: MPI INT 5.1S.
      a. Prime Coat: Rust-inhibitive primer (water based).
      b. Intermediate Coat: Institutional low-odor/VOC interior latex matching topcoat.
      c. Topcoat: Institutional low-odor/VOC interior latex eggshell.

E. Galvanized-Metal Substrates:
   1. Institutional Low-Odor/VOC Latex System: MPI INT 5.3N.
      a. Prime Coat: Waterborne galvanized-metal primer.
      b. Intermediate Coat: Institutional low-odor/VOC interior latex matching topcoat.
      c. Topcoat: Institutional low-odor/VOC interior latex semigloss.

F. Aluminum (Not Anodized or Otherwise Coated) Substrates:
   1. Institutional Low-Odor/VOC Latex System: MPI INT 5.4G.
      a. Prime Coat: Quick-drying primer for aluminum.
      b. Intermediate Coat: Institutional low-odor/VOC interior latex matching topcoat.
      c. Topcoat: Institutional low-odor/VOC interior latex semigloss.

G. Gypsum Board Substrates:
   1. High-Performance Architectural Latex System: MPI INT 9.2B. (Walls)
      a. Prime Coat: Interior latex primer/sealer.
      b. Intermediate Coat: High-performance architectural latex matching topcoat.
      c. Topcoat: High-performance architectural latex eggshell.
   2. Institutional Low-Odor/VOC Latex System: MPI INT 9.2M. (Ceilings)
      a. Prime Coat: Interior latex primer/sealer.
      b. Intermediate Coat: Institutional low-odor/VOC interior latex matching topcoat.
      c. Topcoat: Institutional low-odor/VOC interior latex eggshell.
   3. Institutional Low-Odor/VOC Latex System: MPI INT 9.3D. (Acoustical Panels)
      a. Intermediate Coat: Institutional low-odor/VOC interior latex matching topcoat.
      b. Topcoat: Institutional low-odor/VOC interior latex flat.

END OF SECTION 099123

SECTION 099113 - EXTERIOR PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes surface preparation and the application of paint systems on the following exterior substrates:
   1. Concrete.
   2. Concrete masonry units (CMU).
   3. Steel.
   4. Galvanized metal.

1.3 SUBMITTALS

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

B. Samples for Initial Selection: For each type of topcoat product indicated.

C. Samples for Verification: For each type of paint system and each color and gloss of topcoat indicated.
   1. Submit Samples on rigid backing, 8 inches (200 mm) square.
   2. Step coats on Samples to show each coat required for system.
   3. Label each coat of each Sample.
   4. Label each Sample for location and application area.

D. Product List: For each product indicated, include the following:
   1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
   2. Printout of current "MPI Approved Products List" for each product category specified in Part 2, with the proposed product highlighted.

1.4 QUALITY ASSURANCE

A. MPI Standards:
   1. Products: Complying with MPI standards indicated and listed in "MPI Approved Products List."
   2. Preparation and Workmanship: Comply with requirements in "MPI Architectural Painting Specification Manual" for products and paint systems indicated.

B. Mockups: Apply benchmark samples of each paint system indicated and each color and finish selected to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
   1. Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.
      a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft. (9 sq. m.)
      b. Other Items: Architect will designate items or areas required.
   2. Final approval of color selections will be based on benchmark samples.
      a. If preliminary color selections are not approved, apply additional benchmark samples of additional colors selected by Architect at no added cost to Owner.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).
   1. Maintain containers in clean condition, free of foreign materials and residue.
   2. Remove rags and waste from storage areas daily.

1.6 PROJECT CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).

B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

1.7 EXTRA MATERIALS

A. Furnish extra materials described below that are from same production run (batch mix) as materials applied and that are packaged for storage and identified with labels describing contents.
   1. Quantity: Furnish an additional 5 percent, but not less than 1 gal. (3.8 L) of each material and color applied.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Benjamin Moore & Co.
   2. ICI Paints.
   3. PPG Architectural Finishes, Inc.
   4. Sherwin-Williams Company (The).

2.2 PAINT, GENERAL

A. Material Compatibility:

1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

B. Colors: Match Architect's samples.

2.3 BLOCK FILLERS

A. Interior/Exterior Latex Block Filler: MPI #4.

2.4 PRIMERS/SEALERS

A. Alkali-Resistant Primer: MPI #3.

2.5 METAL PRIMERS

A. Rust Inhibitive Primer: MPI #107.

B. Waterborne Galvanized-Metal Primer: MPI #134.

2.6 EXTERIOR LATEX PAINTS

A. Exterior Latex (Flat): MPI #15 (Gloss Level 1).

B. Exterior Latex (Semigloss): MPI #11 (Gloss Level 5).

C. Exterior Waterborne Light Industrial Coating: MPI #163 (Gloss Level 5).

2.7 FLOOR COATINGS

A. Interior/Exterior Clear Concrete Floor Sealer (Water Based): MPI #99.

B. Interior/Exterior Latex Floor and Porch Paint (Low Gloss): MPI #60 (maximum Gloss Level 3).

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
   1. Concrete: 12 percent.
   2. Masonry (Clay and CMU): 12 percent.

C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

D. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.
   1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.

B. Remove plates, machined surfaces, and similar items already in place that are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
   1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
   2. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

C. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.
   1. Remove incompatible primers and reprime substrate with compatible primers as required to produce paint systems indicated.

D. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.
   1. Remove all flaking, peeling loose paint and coatings.

E. Concrete Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.

F. Steel Substrates: Remove rust and loose mill scale. Clean using methods recommended in writing by paint manufacturer.

G. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions.
   1. Use applicators and techniques suited for paint and substrate indicated.

2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.

B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.4 FIELD QUALITY CONTROL

A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure at any time and as often as Owner deems necessary during the period when paints are being applied:
1. Owner will engage the services of a qualified testing agency to sample paint materials being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of Contractor.
2. Testing agency will perform tests for compliance of paint materials with product requirements.
3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying-paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 EXTERIOR PAINTING SCHEDULE

A. Concrete Substrates, Nontraffic Surfaces:
1. Latex System: MPI EXT 3.1A.
a. Prime Coat: Alkali-Resistant W.B. Primer.

b. Intermediate Coat: Exterior latex matching topcoat.
c. Topcoat: Exterior latex semigloss.

B. Concrete Substrates, Traffic Surfaces:
1. Latex Floor Paint System: MPI EXT 3.2A.
a. Prime Coat: Interior/exterior latex floor and porch paint (low gloss).
b. Intermediate Coat: Interior/exterior latex floor and porch paint (low gloss).
c. Topcoat: Interior/exterior latex floor and porch paint (low gloss).
2. Water-Based Clear Sealer System: MPI EXT 3.2H.
a. Prime Coat: Interior/exterior clear concrete floor sealer (water based).
b. Intermediate Coat: Interior/exterior clear concrete floor sealer (water based).
c. Topcoat: Interior/exterior clear concrete floor sealer (water based).

C. CMU Substrates:
1. Latex Over Alkali-Resistant Primer System: MPI EXT 4.2L.
a. Prime Coat: Alkali-resistant primer.
b. Intermediate Coat: Exterior latex matching topcoat.
c. Topcoat: Exterior latex semigloss.

D. Steel Substrates:
1. Quick-Drying Enamel System: MPI EXT 5.1M.
a. Prime Coat: Rust Inhibitive Primer..
b. Intermediate Coat: W.B. Light Industrial Coating.
c. Topcoat: W.B. Light Industrial Coating semigloss.

E. Galvanized-Metal Substrates:
1. Latex Over Water-Based Primer System: MPI EXT 5.3J.
a. Prime Coat: Waterborne galvanized-metal primer.
b. Intermediate Coat: W.B. Light Industrial Coating.
c. Topcoat: W.B. Light Industrial Coating semigloss.

END OF SECTION 099113

SECTION 098713 - POLISHED CONCRETE FLOOR FINISH WITH COLORED DYE

PART 1- GENERAL

1.1 RELATED DOCUMENTS

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

1. 2 SUMMARY

A. This section includes the following.
1. Polished Concrete and finishing.
2. Acid base concrete stain floor color.
3. Applying sealer and hardener and polishing concrete to specified finish level.

1.3 REFERENCES

A. American Society for Testing and Materials:
1. ASTM-C779, Standard Test Method for Abrasion Resistance of Horizontal Concrete Surfaces
2. ASTM C805, Impact Strength
3. ASTM G23-81, Ultraviolet Light & Water Spray
4. ASTM 1028, Co-Efficient of Friction
5. ASTM C642-06 Standard Test Method for Density, Absorption and Voids in Hardened Concrete.
6. ASTM D2047-04 Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine.
7. ASTM C1378-04 (2009) Standard Test Method for Determination of Resistance to Staining.

B. American Concrete Institute
1. ACI 302. 1R-89, Guide for Concrete Floor and Slab Construction

1.4 SUBMITTALS

A. Product data:
1. Submit manufacturer's test data and other data required for each type of manufactured material and product indicated.
2. Submit products to be provided, giving manufacturer’s name, product name, and product line number for the specified material proposed to be provided under this section.
3. Submit manufacturer's recommended installation procedures.
4. Submit technical data sheet giving descriptive data, curing time and application requirements. Provide material analysis and generic type.
5. Submit manufacturer’s Material Safety Data Sheets (MSDS) and other safety requirements.
6. Follow all special concrete finishes published manufacturer’s installation instructions.

B. Qualification Data: For Installer - certification and job experience.

C. Provide certified test reports, prepared by an independent testing laboratory, confirming compliance with specified performance criteria.

D. Maintenance Data: Manufacturer’s Maintenance Instructions for concrete finish.

1.5 QUALITY ASSURANCE

A. Installer Qualifications:

1. Installer must have 5 years experience and be certified by the Manufacturer.
2. 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 for each specified material and process shall certify applicator.
3. Applicator shall be familiar with the specified requirements and the methods needed for proper performance of work of this section.
4. Installers certification must be current.

B. Manufacturer's Certification:
1. Provide letter of certification from concrete finish manufacturer or specialized applicator stating that installer is certified applicator of special concrete finishes, and is familiar with proper procedures and installation requirements required by the manufacturer.
2. Installers certification must be current.

C. Mock-ups:
1. Apply mock-ups of each type finish, to demonstrate typical joints, surface finish, color variation and standard of workmanship.
   a. Build mock-ups approximately 50 square feet in the location as directed by the Architect.
   b. Notify Architect seven days in advance of dates and times when mock-ups will be constructed.
   c. Obtain from the Architect approval of mock-ups before starting construction.
   d. If the Architect determines that mock-ups do not meet requirements, demolish and remove them from the site and cast others until mock-ups are approved; final color selections will be determined from mock-ups.
   e. Maintain mock-ups during construction in an undisturbed condition as a standard for judging the completed work. For substrate preparation, material application, color selection and shine.
   f. Approved mock-ups may become part of the completed work if undisturbed at 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 be placed under vehicles at all times.
   c. No pipe cutting machine will be used on the inside floor slab.
   d. Steel will not be placed on interior slab to avoid rust staining.

E. Pre-Installation Conference:
1. Conduct conference at project site to comply with requirements in Division 1 Section " Project Management and Coordination"

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in original packages and containers, with seal's unbroken, bearing manufacturers' labels indicating brand name and directions for storage, mixing with other components and application.

B. Store materials to comply with manufacturer's written instructions to prevent deterioration from moisture or other detrimental effects.

C. Dispense special concrete finish material from factory numbered and sealed containers. Maintain record of lot numbers.

1.7 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.
b. Concrete Floor Levelness rating recommended at least 30.
c. Application of finish shall take place 10 days prior to installation of equipment and Material Completion.

B. Close areas to traffic during floor application and after application, for time period recommended in writing by manufacturer.

PART 2 – PRODUCTS

2.1 MATERIALS AND MANUFACTURERS

A. Polished Concrete includes grinding, installation of silicate sealer, hardener, densifier, polishing and a stain repellant.

B. Color Dye: Provide Basis of Design Product: Retro-Plate AmeriPolish Dyes, or a comparable product by one of the following:
1. Certi-Shine MicroStain FSR by Vexcan Chemicals, Inc.
2. Vivid Concrete Dyes by L& M Construction Chemicals, Inc.

C. Concrete Stabilizer: Provide Basis of Design Product: Retro-Plate 99, manufactured by Advanced Floor Products, Inc., P.O. Box 50533, Provo, Utah 84605, 801-812-3420, Manufacturer's Representative: Spencer Maggard: 770-356-5884; or a comparable product by one of the following:
1. Certi-Shine MicroStain FSR by Vexcan Chemicals, Inc.
2. FGS Permashine by L& M Construction Chemicals, Inc.
a. Performance Criteria:
i. Abrasion Resistance: ASTM C779 – Up to 400% increase in abrasion resistance.
ii. Impact Strength: ASTM C805 – 21% increase impact strength.
iii. Ultra Violet Light and Water Spray: ASTM G23-81 – No adverse effect to ultra violet and water spray.
iv. Co-efficient of Friction: ASTM 1028 – all levels of finish (up to 800 grit) exceed OSHA and ADA recommendations.
v. Reflectivity: 30% increase in reflectivity.

D. Final Sealer: RetroGuard by AFP-Anti-Stain Sealant. Apply at 500 square feet per gallon.

2.2 RELATED MATERIALS

A. Neutralizing Agent:
1. Tri-sodium Phosphate

B. Water:
1. Potable

PART 3- EXECUTION

3.1 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. Prior to application, verify that floor surfaces are free of construction latents.

3.2 APPLICATION

A. Start any of the floor finish applications in presence of manufacturer's technical representative.

B. Apply concrete floor finish in accordance with manufacturer's instructions.

C. Stained Concrete Finish:
1. Bring concrete substrate up to 400 grit.
2. Apply acid stain, where indicated, in accordance with stain manufacturer's written instructions.
3. Cure stained surface in accordance with manufacturer's instructions.
4. Neutralize stained concrete floor with neutralizing agent, and flush with water.

D. 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 any loose equipment being placed in the areas receiving dyed and sealed concrete finish, thus providing a complete, uninhibited concrete slab for application
3. Only a certified applicator meeting requirements stated above 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, dust-proofing, and abrasion resistance of the surface while imparting a sheen.
5. Apply special concrete sealer finish in accordance with sealer manufacturer's instructions.
6. Polish to sheen level as directed by the Architect
7. Apply Retro Guard manufactured by Advanced Floor Products of Springville, UT.

E. Joint Filler:
1. Prime and fill with manufacturer's approved epoxy joint sealant those joints that require the application of joint sealant after the application of the finishing system as directed by the manufacturer.

3.3 WORKMANSHIP AND CLEANING

A. The premises shall be kept clean and free of debris at all times.

B. Remove spatter from adjoining surfaces.

C. Repair damages to surface caused by cleaning operations.

D. Remove debris from jobsite.
1. Dispose of materials in separate, closed containers in accordance with local regulations.

3.4 PROTECTION

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

END OF SECTION 098713

SECTION 096813 - CARPETING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes:
   1. Modular tufted carpet tile.
   2. Walk-off carpet tile mat.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated. Include manufacturer's written data on physical characteristics, durability, and fade resistance. Include installation recommendations for each type of substrate.

B. Shop Drawings: Show the following:
   1. Columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet tiles.
   2. Existing flooring materials to be removed.
   3. Existing flooring materials to remain.
   4. Carpet tile type, color, and dye lot.
   5. Pattern of installation.
   6. Pattern type, location, and direction.
   7. Pile direction.
   8. Type, color, and location of insets and borders.
   9. Type, color, and location of edge, transition, and other accessory strips.
   10. Transition details to other flooring materials.

C. Samples: For each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.
   1. Carpet Tile: Full-size Sample.
   2. Exposed Edge, Transition, and other Accessory Stripping: 12-inch- (300-mm-) long Samples.

D. LEED Submittal:
   1. Product Data for Credit IEQ 4.3:
      a. For carpet tile, documentation indicating compliance with testing and product requirements of Carpet and Rug Institute's "Green Label Plus" program.
      b. For installation adhesive, documentation including printed statement of VOC content.

E. Product Schedule: For carpet tile and mat. Use same designations indicated on Drawings.

F. Qualification Data: For Installer.

G. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency.

H. Maintenance Data: For carpet tiles to include in maintenance manuals. Include the following:
   1. Methods for maintaining carpet tile, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
   2. Precautions for cleaning materials and methods that could be detrimental to carpet tile.

I. Warranty: Special warranty specified in this Section.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who is certified by the Floor Covering Installation Board or who can demonstrate compliance with its certification program requirements.

B. Fire-Test-Response Characteristics: Provide products with the critical radiant flux classification indicated in Part 2, as determined by testing identical products per ASTM E 648 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.

C. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1.5 DELIVERY, STORAGE, AND HANDLING

A. Comply with CRI 104, Section 5, "Storage and Handling."

1.6 PROJECT CONDITIONS

A. Comply with CRI 104, Section 7.2, "Site Conditions; Temperature and Humidity" and Section 7.12, "Ventilation."

B. Environmental Limitations: Do not install carpet tiles and mat until wet work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

C. Do not install carpet tiles and mat over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive and concrete slabs have pH range recommended by carpet tile manufacturer.

D. Where demountable partitions or other items are indicated for installation on top of carpet tiles, install carpet tiles before installing these items.

1.7 WARRANTY

A. Special Warranty for Carpet Tiles: Manufacturer's standard form in which manufacturer agrees to repair or replace components of carpet tile installation that fail in materials or workmanship within specified warranty period.
   1. Warranty does not include deterioration or failure of carpet tile due to unusual traffic, failure of substrate, vandalism, or abuse.
   2. Failures include, but are not limited to, more than 10 percent loss of face fiber, edge raveling, snags, runs, loss of tuft bind strength, dimensional stability, excess static discharge, and delamination.

3. Warranty Period for Carpet Tiles: 10 years from date of Substantial Completion.
4. Warranty Perior for Walk-off Carpet Tile Mat: Limited 15-Year ColorSafe Bleach Resistant Warranty; Limited 15-Year XGUARD Stain Resistant warranty.

1.8 EXTRA MATERIALS

A. Furnish extra materials described below, before installation begins, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Carpet Tile and Mat: Full-size units equal to 5 percent of amount installed for each type indicated, but not less than 10 sq. yd. (8.3 sq. m).

PART 2 - PRODUCTS

2.1 CARPET TILE CP-1

A. Products: Subject to compliance with requirements, provide the “Basis of Design” product.

B. Basis-of-Design Product: **Shaw Contract™ Carpet Tile Mirror Image 59466.**
   1. Color: As selected by the Architect.
   2. Installation Pattern: Quarter-turned.
   3. Manufacturer’s Representative: Joe Walker, 706-831-3938.

C. Subject to compliance with requirements, provide the “Basis of Design” product or product listed below:
   1. **InterfaceFLOR Urban Grid™ II.**
   2. Color: As Selected by the Architect from manufacturers full offering.
   3. Installation Pattern: As directed by the Architect.
   4. Manufacturer’s Representative: Ron Titus, 904-557-6359.

D. Construction: Multi-Level Loop.

E. Fiber Content: eco solution q..

F. Color System: 100 percent Solution Dyed.

G. Backing: ecoworx.

H. Face Weight: 19 oz. (644.23 g).

I. Tufts: 10/inch (38/10 cm).

J. Gauge: 1/12 (47.2/10 cm).

K. Average Density: 5653 ozs./cubic yard (10.26 kilotex).

L. Size: Modular 24 inch x 24 inch.

M. Performance Characteristics: As follows:
   1. Critical Radiant Flux Classification: Not less than 0.45 W/sq. cm.
   2. Flammability: Passes Methenamine Pill Test (DOC-FF1-70).
   3. Dimensional Tolerance: Within 1/32 inch (0.8 mm) of specified size dimensions, as determined by physical measurement.

4. Antimicrobial Activity: Not less than 2-mm halo of inhibition for gram-positive bacteria; not less than 1-mm halo of inhibition for gram-negative bacteria; no fungal growth; per AATCC 174.
5. Electrostatic Propensity: Less than 3.5 kV per AATCC 134.
6. Environmental Requirements: Provide carpet tile that complies with testing and product requirements of Carpet and Rug Institute's "Green Label Plus" program.

2.2 CARPET TILE WALK-OFF MAT CP-5

A. Products: Subject to compliance with requirements, provide the “Basis of Design” product.

B. Basis-of-Design Product: **Mannington Commercial Ruffian II.**
1. Color: As selected by the Architect from manufacturer’s full offering.
2. Installation Pattern: Monolithic.
3. Manufacturer’s Representative: Amy Hubbel 0 4-669-9008.

C. Construction: Tip-Sheared Tufted Loop.

D. Face Fiber: 100% Type 6,6 Nylon.

E. Dye Method: Solution.

F. Gauge: 5/32 (25.20 per 10 cm).

G. Primary Backing: 100% Synthetic.

H. Secondary Backing: Infinity RE Modular.

I. Pile Thickness: 0.155 (3.94 mm).

J. Size: 24" x 24".

K. Average Density: 8825.

L. Recycled Content: Minimum of 30% total recycled content, including a minimum of 10% post-consumer recycled content by total product weight.

M. Additional Manufacturers with products modified to match the Basis of Design in construction and Appearance:
1. AFCO-USA.
2. Mats, Inc.
3. Mohawk Modular.

2.3 INSTALLATION ACCESSORIES

A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet tile manufacturer.

B. Adhesives: Water-resistant, mildew-resistant, nonstaining, pressure-sensitive type to suit products and subfloor conditions indicated, that complies with flammability requirements for installed carpet tile and is recommended by carpet tile manufacturer for releasable installation.
1. VOC Limits: Provide adhesives with VOC content not more than 50 g/L when calculated according to 40 CFR 59, Subpart D (EPA method 24).

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting carpet tile performance. Examine carpet tile for type, color, pattern, and potential defects.

B. Concrete Subfloors: Verify that concrete slabs comply with ASTM F 710 and the following:
   1. Slab substrates are dry and free of curing compounds, sealers, hardeners, and other materials that may interfere with adhesive bond. Determine adhesion and dryness characteristics by performing bond and moisture tests recommended by carpet tile manufacturer.
   2. Subfloor finishes comply with requirements specified in Division 03 Section "Cast-in-Place Concrete" for slabs receiving carpet tile.
   3. Subfloors are free of cracks, ridges, depressions, scale, and foreign deposits.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. General: Comply with CRI 104, Section 6.2, "Site Conditions; Floor Preparation," and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile installation.

B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8 inch (3 mm) wide or wider and protrusions more than 1/32 inch (0.8 mm), unless more stringent requirements are required by manufacturer's written instructions.

C. Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by carpet tile manufacturer.

D. Clean metal substrates of grease, oil, soil and rust, and prime if directed by adhesive manufacturer. Rough sand painted metal surfaces and remove loose paint. Sand aluminum surfaces, to remove metal oxides, immediately before applying adhesive.

E. Broom and vacuum clean substrates to be covered immediately before installing carpet tile.

3.3 INSTALLATION

A. General: Comply with CRI 104, Section 14, "Carpet Modules," and with carpet tile manufacturer's written installation instructions.

B. Installation Method: As recommended in writing by carpet tile manufacturer.

C. Maintain dye lot integrity. Do not mix dye lots in same area.

D. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet tile manufacturer.

E. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.

F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on finish flooring as marked on subfloor. Use nonpermanent, nonstaining marking device.

3.4 CLEANING AND PROTECTION

A. Perform the following operations immediately after installing carpet tile:
   1. Remove excess adhesive, seam sealer, and other surface blemishes using cleaner recommended by carpet tile manufacturer.
   2. Remove yarns that protrude from carpet tile surface.
   3. Vacuum carpet tile using commercial machine with face-beater element.

B. Protect installed carpet tile to comply with CRI 104, Section 16, "Protection of Indoor Installations."

C. Protect carpet tile against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet tile manufacturer.

END OF SECTION 096813

SECTION 096519 - RESILIENT TILE FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
   1. Vinyl composition floor tile.
   2. Static-Control Resilient floor tile.
   3. Quartz floor tile.
   4. Rubber floor tile.

1.3 SUBMITTALS

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

B. LEED Submittals:
   1. Product Data for Credit IEQ 4.1: For adhesives and sealants, including printed statement of VOC content.
   2. Product Data for Credit IEQ 4.3: For adhesives and chemical bonding compounds, documentation including printed statement of VOC content.
   3. Product Data for Credit IEQ 4.3: For resilient tile flooring, documentation from an independent testing agency indicating compliance with FloorScore Standard.

C. Buy America Requirements: Provide “Certificate of Compliance with Buy America Requirements” in accordance with Federal Regulation 49 CFR 661.:
   1. Listing as an acceptable manufacturer shall not relieve the contractor from compliance with this requirement.

D. Shop Drawings: For each type of floor tile. Include floor tile layouts, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.
   1. Show details of special patterns.

E. Samples for Initial Selection: For each type of floor tile indicated.

F. Samples for Verification: Full-size units of each color and pattern of floor tile required.

G. Product Schedule: For floor tile. Use same designations indicated on Drawings.

H. Qualification Data: For qualified Installer.

I. Maintenance Data: For each type of floor tile to include in maintenance manuals.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs workers for this Project who are competent in techniques required by manufacturer for floor tile installation indicated.
   1. Engage an installer who employs workers for this Project who are trained or certified by manufacturer for installation techniques required.

B. Fire-Test-Response Characteristics: As determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.
   1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store floor tile and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F (10 deg C) or more than 90 deg F (32 deg C). Store floor tiles on flat surfaces.

1.6 PROJECT CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F (21 deg C) or more than 95 deg F (35 deg C, in spaces to receive floor tile during the following time periods:
   1. 48 hours before installation.
   2. During installation.
   3. 48 hours after installation.

B. Until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F (13 deg C) or more than 95 deg F (35 deg C).

C. Close spaces to traffic during floor tile installation.

D. Close spaces to traffic for 48 hours after floor tile installation.

E. Install floor tile after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 VINYL COMPOSITION FLOOR TILE **VCT**

A. Products: Subject to compliance with requirements, provide products by one of the following:
   1. Armstrong World Industries, Inc.
   2. Azrock by Tarkett.
   3. Mannington Mills, Inc.

B. Tile Standard: ASTM F 1066,Class 1, solid-color tile.

C. Wearing Surface: Smooth.

D. Thickness: 0.125 inch (3.2 mm).

E. Size: 12 by 12 inches (305 by 305 mm).

F. Colors and Patterns: Match Architect's sample.

2.2 STATIC CONTROL RESILIENT FLOOR TILE **SDT**

A. Static-Control Resilient floor tile: ASTM F 1344.
   1. Armstrong World Industries, Inc.
   2. Flexco, esd Vinyl Tile.
   3. Staticworx, ESD Vinyl Tile.
   4. VPI, ESD Statmate.

B. CEN Classification: 34 + 43.

C. Thickness: 0.005 inch (0.13 mm).

D. Size: 12 by 12 inches (305 by 305 mm).

E. Fire-Test-Response Characteristics:
   1. Critical Radiant Flux Classification: Class I, not less than 1.08 W/sq. cm per ASTM F 648, NFPA 253.

2.3 QUARTZ FLOOR TILE **QFT**

A. Products: Subject to compliance with requirements, provide products by one of the following:
   1. Procedo Flooring, Versa.
   2. Altro Quartz Tile.

B. Material: 70% Natural Quartz, PVC, natural raw materials and synthetic polymers.

C. Tile Standard: ASTM E 662 & E 648.

D. Wearing Surface: Smooth.

E. Gauge: .100-inch (2.5 mm).

F. Size: 24 by 24 inches (610 by 610 mm).

G. Colors and Patterns: Match Architect's sample.

2.4 RUBBER FLOOR TILE **RFT**

A. Products: Subject to compliance with requirements, provide products by one of the following:
   1. Connor Sports Flooring, Inc.: ElastiFlex Weight Room Floor.
   2. Eco Surfaces® Commercial Flooring, ICO Nights for Sport.
   3. Expanko Reztec Chunks Recycled Rubber Flooring.
   4. Robbins Sports Surfaces, Freeweight.

B. Material: Polymeric bound recycled-rubber mixed with colored EPDM granules or pigmented SBR rubber.

C. Installation Method: Adhered.

D. Wearing Surface: Smooth.

E. Thickness: 3/8 inch (9.5 mm).

F. Size: Manufacturer’s standard size for square tile, 27 inches, 36 inches.

G. Weight: No less than 1.9 lbs./sq/ft/per tile.

H. Colors and Patterns: As selected by the Architect from manufacturer's full range.

2.5 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by manufacturer to suit floor tile and substrate conditions indicated.
   1. Use adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
      a. VCT and Asphalt Tile Adhesives: Not more than 50 g/L.
      b. Rubber Floor Adhesives: Not more than 60 g/L.

C. Floor Polish: Provide protective liquid floor polish products as recommended by manufacturer. Coordinate liquid floor polish with Owner's Maintenance Department.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of floor tile.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.

B. Concrete Substrates: Prepare according to ASTM F 710.
   1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
   2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
   3. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
   4. Moisture Testing: Perform tests recommended by manufacturer and as follows. Proceed with installation only after substrates pass testing.
      a. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of (3 lb of water/1000 sq. ft.) (1.36 kg of water/92.9 sq. m) in 24 hours.

b. Perform relative humidity test using in situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 75% relative humidity level measurement.

C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.

D. Do not install floor tiles until they are same temperature as space where they are to be installed.
1. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.

E. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation.

3.3 FLOOR TILE INSTALLATION

A. Comply with manufacturer's written instructions for installing floor tile.

B. Lay out floor tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.
1. Lay tiles square with room axis.

C. Match floor tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.
1. Lay tiles with grain running in one direction.

D. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.

E. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.

F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent, nonstaining marking device.

G. Install floor tiles on covers for telephone and electrical ducts, building expansion-joint covers, and similar items in finished floor areas. Maintain overall continuity of color and pattern between pieces of tile installed on covers and adjoining tiles. Tightly adhere tile edges to substrates that abut covers and to cover perimeters.

H. Adhere floor tiles to flooring substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.4 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protection of floor tile.

B. Perform the following operations immediately after completing floor tile installation:
1. Remove adhesive and other blemishes from exposed surfaces.
2. Sweep and vacuum surfaces thoroughly.
3. Damp-mop surfaces to remove marks and soil.

C. Protect floor tile products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Floor Polish: Remove soil, visible adhesive, and surface blemishes from floor tile surfaces before applying liquid floor polish to VCT.
   1. Apply three coat(s).
   2. Do not get polish on the cove base.

E. Cover floor tile until Substantial Completion.

END OF SECTION 096519

SECTION 096513 - RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
   1. Resilient base.
   2. Resilient molding accessories.

1.3 SUBMITTALS

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

B. LEED Submittals:
   1. Product Data for Credit IEQ 4.1: For adhesives, including printed statement of VOC content.
   2. Product Data for Credit IEQ 4.3: For adhesives, including printed statement of VOC content.
   3. Product Data for Credit IEQ 4.3: For resilient stair accessories, documentation from an independent testing agency indicating compliance with the FloorScore Standard.

C. Samples for Initial Selection: For each type of product indicated.

D. Samples for Verification: For each type of product indicated, in manufacturer's standard-size Samples but not less than 12 inches (300 mm) long, of each resilient product color, texture, and pattern required.

1.4 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: As determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.
   1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F (10 deg C) or more than 90 deg F (32 deg C).

1.6 PROJECT CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F (21 deg C) or more than 95 deg F (35 deg C), in spaces to receive resilient products during the following time periods:
   1. 48 hours before installation.
   2. During installation.
   3. 48 hours after installation.

B. Until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F (13 deg C) or more than 95 deg F (35 deg C).

C. Install resilient products after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 RESILIENT BASE VB

A. Resilient Base:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Armstrong World Industries, Inc.
      b. Burke Mercer Flooring Products; Division of Burke Industries, Inc.
      c. Flexco.
      d. Johnsonite.
      e. Roppe Corporation, USA.

B. Resilient Base Standard: ASTM F 1861.
   1. Material Requirement: Type TS (rubber, vulcanized thermoset).
   2. Manufacturing Method: Group I (solid, homogeneous).
   3. Style: Cove (base with toe).

C. Minimum Thickness: 0.125 inch (3.2 mm).

D. Height: 4 inches (102 mm).

E. Lengths: Coils in manufacturer's standard length.

F. Outside Corners: Job formed.

G. Inside Corners: Job formed.

H. Finish: Low luster.

I. Colors and Patterns: As selected by Architect from full range of industry colors.

2.2 RESILIENT MOLDING ACCESSORY

A. Resilient Molding Accessory:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Burke Mercer Flooring Products; Division of Burke Industries, Inc.
      b. Flexco.
      c. Johnsonite.
      d. Roppe Corporation, USA.

B. Description: Joiner for tile and carpet and transition strips for carpet and terrazzo.

C. Material: Rubber, vulcanized thermoset.

D. Profile and Dimensions: As selected by Architect from full range.

E. Colors and Patterns: As selected by Architect from full range of industry colors.

2.3 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.
   1. Use adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
      a. Cove Base Adhesives: Not more than 50 g/L.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.

B. Concrete Substrates for Accessories: Prepare according to ASTM F 710.
   1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
   2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
   3. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer.
   4. Moisture Testing: Perform tests recommended by manufacturer and as follows. Proceed with installation only after substrates pass testing.
      a. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. (1.36 kg of water/92.9 sq. m) in 24 hours.

b. Perform relative humidity test using in situ probes, ASTM F 2170. Proceed with installation only after substrates have maximum 75 percent relative humidity level measurement.

C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.

D. Do not install resilient products until they are same temperature as the space where they are to be installed.
1. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.

E. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation.

3.3 RESILIENT BASE INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient base.

B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

C. Install resilient base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.

D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

E. Do not stretch resilient base during installation.

F. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.

G. Job-Formed Corners:
1. Outside Corners: Use straight pieces of maximum lengths possible. Form without producing discoloration (whitening) at bends.
2. Inside Corners: Use straight pieces of maximum lengths possible.

3.4 RESILIENT ACCESSORY INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient accessories.

B. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of carpet, resilient floor covering and terrazzo that would otherwise be exposed.

3.5 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protection of resilient products.

B. Perform the following operations immediately after completing resilient product installation:
1. Remove adhesive and other blemishes from exposed surfaces.
2. Sweep and vacuum surfaces thoroughly.

3. Damp-mop surfaces to remove marks and soil.

C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Cover resilient products until Material Completion.

END OF SECTION 096513

SECTION 095113 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:
   1. Suspended Acoustical Panel ceilings. (**APC**)
   2. Accessories: Provide all other necessary items including devices for attachments to overhead construction, secondary members, splines, splices, connecting clips, wall connectors, wall trims and all other devices required for a complete installation.
   3. Exposed suspension systems for acoustical panel ceilings and accessories.

B. Products furnished, but not installed under this Section, include anchors, clips, and other ceiling attachment devices to be cast in concrete at ceilings.
   1. Installation to meet requirements for Seismic Zone C.

1.3 DEFINITIONS

A. AC: Articulation Class.

B. CAC: Ceiling Attenuation Class.

C. LR: Light Reflectance coefficient.

D. NRC: Noise Reduction Coefficient.

1.4 SUBMITTALS

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

B. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved:
   1. Ceiling suspension system members.
   2. Method of attaching hangers to building structure.
      a. Furnish layouts for cast-in-place anchors, clips, and other ceiling attachment devices whose installation is specified in other Sections.
   3. Ceiling-mounted items including lighting fixtures, diffusers, grilles, speakers, sprinklers, access panels, and special moldings.
   4. Minimum Drawing Scale: 1/8 inch = 1 foot (1:96).

C. Samples for Initial Selection: For components with factory-applied color finishes.

D. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of size indicated below.
   1. Acoustical Panel: Set of 6-inch- (150-mm-) square. Samples of each type, color, pattern, and texture.
   2. Exposed Suspension System Members, Moldings, and Trim: Set of 6-inch- (150-mm-) long Samples of each type, finish, and color.

E. LEED Submittals:
   1. Product Data for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content.
      a. Include statement indicating costs for each product having recycled content.
   2. Product Data for Credit IEQ 4.1: For sealants, including printed statement of VOC content.

F. Qualification Data: For testing agency.

G. Field quality-control test reports.

H. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each acoustical panel ceiling.

I. Research/Evaluation Reports: For each acoustical panel ceiling and components.

J. Maintenance Data: For finishes to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Acoustical Testing Agency Qualifications: An independent testing laboratory, or an NVLAP-accredited laboratory, with the experience and capability to conduct the testing indicated. NVLAP-accredited laboratories must document accreditation, based on a "Certificate of Accreditation" and a "Scope of Accreditation" listing the test methods specified.

B. Source Limitations:
   1. Acoustical Ceiling Panel: Obtain each type through one source from a single manufacturer.
   2. Suspension System: Obtain each type through one source from a single manufacturer.

C. Source Limitations: Obtain each type of acoustical ceiling panel and supporting suspension system through one source from a single manufacturer.

D. Fire-Test-Response Characteristics: Provide acoustical panel ceilings that comply with the following requirements:
   1. Surface-Burning Characteristics: Provide acoustical panels with the following surface-burning characteristics complying with ASTM E 1264 for Class A materials as determined by testing identical products per ASTM E 84:
      a. Smoke-Developed Index: 450 or less.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical panels, suspension system components, and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.

C. Handle acoustical panels carefully to avoid chipping edges or damaging units in any way.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1.8 COORDINATION

A. Coordinate layout and installation of acoustical panels and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

1.9 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Acoustical Ceiling Panels: Full-size panels equal to 2.0 percent of quantity installed.
   2. Suspension System Components: Quantity of each exposed component equal to 2.0 percent of quantity installed.

PART 2 - PRODUCTS

2.1 ACOUSTICAL PANELS, GENERAL

A. Recycled Content: Provide acoustical panels with recycled content such that Post-consumer recycled content is 18 percent and Pre-consumer recycled content is 35 percent by weight.

B. Acoustical Panel Standard: Provide manufacturer's standard panels of configuration indicated that comply with ASTM E 1264 classifications as designated by types, patterns, acoustical ratings, and light reflectances, unless otherwise indicated.

C. Acoustical Panel Colors and Patterns: Match appearance characteristics indicated for each product type.

2.2 ACOUSTICAL PANELS FOR ACOUSTICAL PANEL CEILING **APC-1**

A. Basis-of-Design Product for **APC-1**: Subject to compliance with requirements, provide Armstrong World Industries, Inc.; **Dune™ Tegular #1774HRC** or a comparable product by one of the following:
   1. Ecophon CertainTeed, Inc.
   2. USG Interiors, Inc.

B. Classification: Provide panels complying with ASTM E 1264 for type, form, and pattern as follows:
   1. Type and Form: Type III, mineral base with painted finish; Form 2, water felted.
   2. Pattern: CE perforated, small holes and lightly textured.

C. Color: White.

D. LR: Not less than 0.80.

E. NRC: Not less than 0.50.

F. CAC: Not less than 35.

G. Fire Rating: Class A.

H. Edge/Joint Detail: Angled Tegular sized to fit flange of exposed suspension system members.

I. Thickness: 5/8 inch (15 mm).

J. Modular Size: 24 by 24 inches (610 by 610 mm).

2.3 Basis-of-Design Product for **APC-2**: Subject to compliance with requirements, provide Armstrong World Industries, Inc.; **Optima® Open Plan, Large Size Tegular #3256** or a comparable product by one of the following:
1. Ecophon CertainTeed, Inc.
2. USG Interiors, Inc.

B. Classification: Provide panels complying with ASTM E 1264 for type, form, and pattern as follows:
1. Type and Form: Type XII; Form 2.
2. Pattern: E.

C. Color: White.

D. LR: Not less than 0.90.

E. NRC: Not less than 0.95.

F. CAC: N/A.

G. Fire Rating: Class A.

H. Edge/Joint Detail: Square Tegular sized to fit flange of exposed suspension system members.

I. Thickness: 1- inch (25 mm).

J. Modular Size: 48 by 48 inches (1200 by 1200 mm).

2.4 Basis-of-Design Product for **APC-3**: Subject to compliance with requirements, provide Armstrong World Industries, Inc.; **Ledges® Flush Tegular #8013** or a comparable product by one of the following:
1. Ecophon CertainTeed, Inc.
2. USG Interiors, Inc.

B. Classification: Provide panels complying with ASTM E 1264 for type, form, and pattern as follows:
1. Type and Form: Type III; Form 2.
2. Pattern: J Z.

C. Color: White.

D. LR: Not less than 0.80.

E. NRC: N/A.

F. CAC: 35.

G. Fire Rating: Class A.

H. Edge/Joint Detail: Square Tegular sized to fit flange of exposed suspension system members.

I. Thickness: 3/4- inch.

J. Modular Size: 24 by 24 inches.

K. Finish: Painted in Field.

2.5 METAL SUSPENSION SYSTEMS, GENERAL

A. Recycled Content: Provide products made from steel sheet with average recycled content such that Post-consumer recycled content is 56 percent, and Pre-consumer recycled content is 7 percent.

B. Metal Suspension System Standard: Provide manufacturer's standard direct-hung metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable requirements in ASTM C 635.

C. Finishes and Colors, General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes. Provide manufacturer's standard factory-applied finish for type of system indicated.
   1. High-Humidity Finish: Comply with ASTM C 635 requirements for "Coating Classification for Severe Environment Performance" where high-humidity finishes are indicated.

D. Attachment Devices: Size for five times the design load indicated in ASTM C 635, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.
   1. Anchors in Concrete: Anchors of type and material indicated below, with holes or loops for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to five times that imposed by ceiling construction, as determined by testing per ASTM E 488 or ASTM E 1512 as applicable, conducted by a qualified testing and inspecting agency.
      a. Type: Cast-in-place anchors.
      b. Type: Postinstalled expansion anchors.
      c. Corrosion Protection: Carbon-steel components zinc plated to comply with ASTM B 633, Class Fe/Zn 5 (0.005 mm) for Class SC 1 service condition.
      d. Comply with seismic design requirements for Seismic Category C.v.
   2. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hangers of type indicated, and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling construction, as determined by testing per ASTM E 1190, conducted by a qualified testing and inspecting agency.

E. Wire Hangers, Braces, and Ties: Provide wires complying with the following requirements:
   1. Zinc-Coated, Carbon-Steel Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper.

2. Size: Select wire diameter so its stress at 3 times hanger design load (ASTM C 635, Table 1, "Direct Hung") will be less than yield stress of wire, but provide not less than 0.106-inch- (2.69-mm-) diameter wire.

F. Hanger Rods: Mild steel, zinc coated or protected with rust-inhibitive paint.

G. Angle Hangers: Angles with legs not less than 7/8 inch (22 mm) wide; formed with 0.04-inch- (1-mm-) thick, galvanized steel sheet complying with ASTM A 653/A 653M, G90 (Z275) coating designation; with bolted connections and 5/16-inch- (8-mm-) diameter bolts.

2.6 METAL SUSPENSION SYSTEM FOR ACOUSTICAL PANEL CEILING (**APC**)

A. Basis-of-Design Product: Subject to compliance with requirements, provide **Armstrong World Industries, Inc.; Prelude® XL® High Recycled Content** or a comparable product by one of the following:
1. Chicago Metallic®.
2. USG Interiors, Inc.

B. Wide-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet, prepainted, electrolytically zinc coated, or hot-dip galvanized according to ASTM A 653/A 653M, not less than G30 (Z90) coating designation, with prefinished 15/16-inch- (24-mm-) wide metal caps on flanges.
1. Structural Classification: Intermediate-duty system.
2. End Condition of Cross Runners: Override (stepped) type.
3. Face Design: Flat, flush.
4. Cap Material: Steel cold-rolled sheet.
5. Cap Finish: Painted white.

2.7 METAL EDGE MOLDINGS AND TRIM FOR **APC**

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Armstrong World Industries, Inc.
2. Chicago Metallic®.
3. Fry Reglet Corporation.
4. Gordon, Inc.
5. USG Interiors, Inc.

B. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension system runners.
1. For lay-in panels with reveal edge details, provide stepped edge molding that forms reveal of same depth and width as that formed between edge of panel and flange at exposed suspension member.
2. For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.

2.8 ACOUSTICAL SEALANT

A. Products: Subject to compliance with requirements, provide one of the following:
1. Acoustical Sealant for Exposed and Concealed Joints:
a. Pecora Corporation; AC-20 FTR Acoustical and Insulation Sealant.

b. USG Corporation; SHEETROCK Acoustical Sealant.

2. Acoustical Sealant for Concealed Joints:
   a. OSI Sealants, Inc.; Pro-Series SC-175 Rubber Base Sound Sealant.
   b. Pecora Corporation; BA-98.
   c. Tremco, Inc.; Tremco Acoustical Sealant.

B. Acoustical Sealant for Exposed and Concealed Joints: Manufacturer's standard nonsag, paintable, nonstaining latex sealant, with a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24), complying with ASTM C 834 and effective in reducing airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.

C. Acoustical Sealant for Concealed Joints: Manufacturer's standard nondrying, nonhardening, nonskinning, nonstaining, gunnable, synthetic-rubber sealant, with a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24), recommended for sealing interior concealed joints to reduce airborne sound transmission.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.
   1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders, and comply with layout shown on reflected ceiling plans.

3.3 INSTALLATION

A. General: Install acoustical panel ceilings to comply with ASTM C 636 and seismic design requirements for Seismic Design Category C, per manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."

B. Suspend ceiling hangers from building's structural members and as follows:
   1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
   2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
   3. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
   4. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
   5. Secure wire hangers to ceiling suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts, eye screws,

or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.

6. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, postinstalled mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.
7. Do not attach hangers to steel roof deck. Attach hangers to structural members.
8. Space hangers not more than 48 inches (1200 mm) o.c. along each member supported directly from hangers, unless otherwise indicated; provide hangers not more than 8 inches (200 mm) from ends of each member.

C. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.
1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.
2. Screw attach moldings to substrate at intervals not more than 16 inches (400 mm) o.c. and not more than 3 inches (75 mm) from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet (3.2 mm in 3.6 m). Miter corners accurately and connect securely.
3. Do not use exposed fasteners, including pop rivets, on moldings and trim.

D. Install suspension system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.

E. Install acoustical panels with undamaged edges and fit accurately into suspension system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.
1. Arrange directionally patterned acoustical panels as follows:
   a. Install panels with pattern running in one direction parallel to long axis of space.
2. For reveal-edged panels on suspension system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges.
3. Paint cut edges of APC panel remaining exposed after installation; match color of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.
4. Protect lighting fixtures and air ducts to comply with requirements indicated for fire-resistance-rated assembly.

3.4 CLEANING

A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 095113

SECTION 093000 - TILING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
1. Thru-body porcelain tile.
2. Glass wall tile.
3. Crack isolation membrane.

B. DEFINITIONS

C. General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.

D. ANSI A108 Series: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI A108.1C, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.8, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.12, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, and ANSI A108.17, which are contained in "American National Standard Specifications for Installation of Ceramic Tile."

E. Module Size: Actual tile size plus joint width indicated.

F. Face Size: Actual tile size, excluding spacer lugs.

1.3 PERFORMANCE REQUIREMENTS

A. Static Coefficient of Friction: For tile installed on walkway surfaces, provide products with the following values as determined by testing identical products per ASTM C 1028:
1. Level Surfaces: Minimum 0.6 static coefficient of friction.

1.4 SUBMITTALS

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

B. LEED Submittal:
1. Product Data for Credit IEQ 4.1: For adhesives and sealants, including printed statement of VOC content.
2. Product Data for Credit IEQ 4.3: For adhesives and grouts, documentation including printed statement of VOC content.
3. Product Data for Credit IEQ 4.3: For tile floors, documentation from an independent testing agency indicating compliance with FloorScore Standard.

C. Shop Drawings: Show locations of each type of tile and tile pattern. Show widths, details, and locations of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.

D. Samples for Initial Selection: For each type of tile and grout indicated. Include Samples of accessories involving color selection.

E. Samples for Verification:
   1. Full-size units of each type and composition of tile and for each color and finish required.
   2. Full-size units of each type of trim and accessory for each color and finish required.

F. Qualification Data: For qualified Installer.

G. Product Certificates: For each type of product, signed by product manufacturer.

H. Material Test Reports: For each tile-setting and -grouting product and special purpose tile.

1.5 QUALITY ASSURANCE

A. Source Limitations for Tile: Obtain tile of each type and color or finish from one source or producer.
   1. Obtain tile of each type and color or finish from same production run and of consistent quality in appearance and physical properties for each contiguous area.

B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from one manufacturer and each aggregate from one source or producer.

C. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
   1. Build mockup of each type of wall tile installation.
   2. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

D. Preinstallation Conference: Conduct conference at Project site.
   1. Review requirements in ANSI A108.01 for substrates and for preparation by other trades.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirements in ANSI A137.1 for labeling tile packages.

B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.

C. Store aggregates where grading and other required characteristics can be maintained and contamination can be avoided.

D. Store liquid materials in unopened containers and protected from freezing.

E. Handle tile that has temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 PRODUCTS, GENERAL

A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.
   1. Provide tile complying with Standard grade requirements unless otherwise indicated.

B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCA installation methods specified in tile installation schedules, and other requirements specified.

C. Factory Blending: For tile exhibiting color variations within ranges, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.

D. Mounting: For factory-mounted tile, provide back- or edge-mounted tile assemblies as standard with manufacturer unless otherwise indicated.
   1. Where tile is indicated for installation on exteriors or in wet areas, do not use back- or edge-mounted tile assemblies unless tile manufacturer specifies in writing that this type of mounting is suitable for installation indicated and has a record of successful in-service performance.

E. Factory-Applied Temporary Protective Coating: Where indicated under tile type, protect exposed surfaces of tile against adherence of mortar and grout by precoating with continuous film of petroleum paraffin wax, applied hot. Do not coat unexposed tile surfaces.

2.2 TILE PRODUCTS

A. Products: Subject to compliance with requirements, provide the “Basis of Design” product.

B. Tile Type **CT-1**: **Thru-body porcelain tile**.
   1. Basis-of-Design Product: **Marca Corona 1741 Reaction**.
   2. Subject to compliance with requirements, provide Basis of Design Product or product indicated below.
      a. American Olean St. Germain.
   3. Composition: Porcelain.
   4. Module Size: 12 by 12 inches (299 x 299 mm).
   5. Thickness: 3/8 inch (9.5 mm).
   6. Face: Plain with cushion edges.
   7. Surface: Smooth, without abrasive admixture.
   8. Finish: Manufacturers standard.
   9. Tile Color and Pattern: To be selected by the Architect.
   10. Grout Color: To be selected by the Architect.

C. Tile Type **CT-2**: **Thru-body porcelain tile**.
   1. Basis-of-Design Product: **Ergon Mikado**.

2. Subject to compliance with requirements, provide Basis of Design Product or product indicated below.
   a. DalTile Fabrique, Semi-Polished.
3. Composition: Porcelain.
4. Module Size: 12 by 24 inches (300 x 600 mm), nominal.
5. Thickness: 3/8 inch (9.5 mm).
6. Face: Plain with cushion edges.
7. Surface: Smooth, without abrasive admixture.
8. Finish: Manufacturers standard.
9. Tile Color and Pattern: To be selected by the Architect.
10. Grout Color: To be selected by the Architect.
11. Base Cove: **CCB-** Cove, module size 6 by 12 inch (152.4 by 304.8 mm).

D. Tile Type **CT-3**: **Glass Wall Tile, Factory Mounted**.
1. Basis-of-Design Product: **GST- Dune #185024.**
2. Subject to compliance with requirements, provide Basis of Design Product or product indicated below.
   a. DalTile Stone Radiance™.
3. Composition: Glass/Stone Mosaic.
4. Module Size: 12 by 12 inches (299 by 299 mm).
5. Thickness: 1/4 inch (6.32 mm).
6. Surface: Manufacturers standard.
7. Finish: Manufacturers standard.
8. Tile Color: To be selected by the Architect
9. Grout Color: To be selected by the Architect.

2.3 CRACK ISOLATION MEMBRANE

A. General: Manufacturer's standard product, selected from the following, that complies with ANSI A118.12 for standard performance and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.

B. Fluid-Applied Membrane: Liquid-latex rubber or elastomeric polymer.
1. Products: Subject to compliance with requirements, provide one of the following:
   a. Custom Building Products; Redgard Waterproofing and Crack Prevention Membrane; FractureFree Crack Prevention Membrane; Semco Crack Prevention Membrane.
   b. Jamo Inc.; Waterproof.
   c. Mer-Kote Products, Inc.; Fracture-Guard 5000.
   d. Southern Grouts & Mortars, Inc.; Southcrete 1100 Crack Suppression and Waterproofing.
   e. TEC; a subsidiary of H. B. Fuller Company; HydraFlex - Waterproofing Crack Isolation Membrane.

2.4 SETTING MATERIALS

A. Latex-Portland Cement Mortar (Thin Set): ANSI A118.4.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Boiardi Products; a QEP company.
   b. Bonsal American; an Oldcastle company.
   c. Bostik, Inc.
   d. C-Cure.
   e. Custom Building Products.
   f. Jamo Inc.

g. Laticrete International, Inc.
h. MAPEI Corporation.
i. Mer-Kote Products, Inc.
j. Southern Grouts & Mortars, Inc.
k. Summitville Tiles, Inc.
l. TEC; a subsidiary of H. B. Fuller Company.

2. Provide prepackaged, dry-mortar mix containing dry, redispersible, vinyl acetate or acrylic additive to which only water must be added at Project site.
3. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.4.

2.5 GROUT MATERIALS

A. Sand-Portland Cement Grout: ANSI A108.10, composed of white or gray cement and white or colored aggregate as required to produce color indicated.

B. Unsanded-Portland Cement Grout: ANSI A108.10, composed of white or gray cement as required to produce color indicated.

C. Polymer-Modified Tile Grout: ANSI A118.7.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
a. Boiardi Products; a QEP company.
b. Bonsal American; an Oldcastle company.
c. Bostik, Inc.
d. C-Cure.
e. Custom Building Products.
f. Jamo Inc.
g. Laticrete International, Inc.
h. MAPEI Corporation.
i. Southern Grouts & Mortars, Inc.
j. Summitville Tiles, Inc.
k. TEC; a subsidiary of H. B. Fuller Company.
2. Polymer Type: Ethylene vinyl acetate or acrylic additive, in dry, redispersible form, prepackaged with other dry ingredients.

2.6 ELASTOMERIC SEALANTS

A. General: Provide sealants, primers, backer rods, and other sealant accessories that comply with the following requirements and with the applicable requirements in Division 07 Section "Joint Sealants."
1. Use sealants that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
2. Use primers, backer rods, and sealant accessories recommended by sealant manufacturer.

B. Colors: Provide colors of exposed sealants to match colors of grout in tile adjoining sealed joints unless otherwise indicated.

C. Multipart, Pourable Urethane Sealant for Use T: ASTM C 920; Type M; Grade P; Class 25; Uses T, M, A, and, as applicable to joint substrates indicated, O.
1. Products: Subject to compliance with requirements, provide one of the following:
a. Bostik, Inc.; Chem-Calk 550.
b. Degussa Building Systems; Sonneborn Sonolastic SL 2.
c. Sika Corporation; Sikaflex-2c SL.
d. Tremco Incorporated.; THC-900.

2.7 MISCELLANEOUS MATERIALS

A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.

B. Temporary Protective Coating: Either product indicated below that is formulated to protect exposed surfaces of tile against adherence of mortar and grout; compatible with tile, mortar, and grout products; and easily removable after grouting is completed without damaging grout or tile.
   1. Petroleum paraffin wax, fully refined and odorless, containing at least 0.5 percent oil with a melting point of 120 to 140 deg F (49 to 60 deg C) per ASTM D 87.
   2. Grout release in form of manufacturer's standard proprietary liquid coating that is specially formulated and recommended for use as temporary protective coating for tile.

C. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.

D. Grout Sealer: Manufacturer's standard product for sealing grout joints and that does not change color or appearance of grout.
   1. Products: Subject to compliance with requirements, provide one of the following:
      a. Bonsal American; an Oldcastle company; Grout Sealer.
      b. Bostik, Inc.; CeramaSeal.
      c. C-Cure; Penetrating Sealer 978.
      d. Custom Building Products; Grout Sealer.
      e. Jamo Inc.; Matte Finish Sealer.
      f. Summitville Tiles, Inc.; SL-15, Invisible Seal Penetrating Grout and Tile Sealer.

2.8 MIXING MORTARS AND GROUT

A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.

B. Add materials, water, and additives in accurate proportions.

C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.
   1. Verify that substrates for setting tile are firm, dry, clean, free of coatings that are incompatible with tile-setting materials including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.
   2. Verify that concrete substrates for tile floors installed with thin-set mortar comply with surface finish requirements in ANSI A108.01 for installations indicated.

a. Verify that surfaces that received a steel trowel finish have been mechanically scarified.
b. Verify that protrusions, bumps, and ridges have been removed by sanding or grinding.

3. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed.
4. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with thin-set mortar with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.

B. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

C. Field-Applied Temporary Protective Coating: If indicated under tile type or needed to prevent grout from staining or adhering to exposed tile surfaces, precoat them with continuous film of temporary protective coating, taking care not to coat unexposed tile surfaces.

3.3 TILE INSTALLATION

A. Comply with TCA's "Handbook for Ceramic Tile Installation" for TCA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 Series "Specifications for Installation of Ceramic Tile" that are referenced in TCA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.
1. For the following installations, follow procedures in the ANSI A108 Series of tile installation standards for providing 95 percent mortar coverage:
a. Tile floors in wet areas.
b. Tile floors composed of tiles 8 by 8 inches (200 by 200 mm) or larger.

B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

D. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.
1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so joints between sheets are not apparent in finished work.
2. Where adjoining tiles on floor, base, walls, or trim are specified or indicated to be same size, align joints.

3. Where tiles are specified or indicated to be whole integer multiples of adjoining tiles on floor, base, walls, or trim, align joints unless otherwise indicated.

E. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:
1. Paver Tile: 1/4 inch (6.35 mm).
2. Decorative Glass Wall Tile: 1/16 inch (1.6 mm).

F. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.
1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.
2. Prepare joints and apply sealants to comply with requirements in Division 07 Section "Joint Sealants."

G. Grout Sealer: Apply grout sealer to cementitious grout joints in tile floors according to grout-sealer manufacturer's written instructions. As soon as grout sealer has penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.

3.4 CRACK ISOLATION MEMBRANE INSTALLATION

A. Install crack isolation membrane to comply with ANSI A108.17 and manufacturer's written instructions unless directed otherwise, to produce membrane of uniform thickness and bonded securely to substrate.

B. Install crack isolation membrane over entire floor area receiving tile.

C. Do not install tile or setting materials over crack isolation membrane until membrane has cured.

3.5 CLEANING AND PROTECTING

A. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
1. Remove latex-portland cement grout residue from tile as soon as possible.
2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.
3. Remove temporary protective coating by method recommended by coating manufacturer and that is acceptable to tile and grout manufacturer. Trap and remove coating to prevent drain clogging.

B. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.

C. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.

D. If recommended by manufacturer, cover with Fiberock™ Floor Protector Paper or equivalent.

E. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

3.6 INTERIOR TILE INSTALLATION SCHEDULE

A. Interior Floor Installations, Concrete Subfloor:
   1. Tile Installation F125A: Thin-set mortar on crack isolation membrane; TCA F125 FULL-11.
      a. Tile Type: CT-1, CT-2.
      b. Thin-Set Mortar: Latex- portland cement mortar.
      c. Grout: Polymer-modified sanded grout.

B. Interior Wall Installations, Metal studs with cementitious backer units.
   1. Tile Installation W: Thin-set mortar on metal studs with cementitious backer units; TCA W244C-11.
      a. Tile Type: CT-3 Glass.
      b. Thin-Set Mortar: Latex- portland cement mortar.
      c. Grout: Polymer-modified unsanded grout.

END OF SECTION 093000

SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

A. Provide door hardware as indicated on the Drawings and specified herein.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction and installation details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Samples: For exposed door hardware of each type required, in each finish specified, prepared on Samples of size indicated below. Tag Samples with full description for coordination with the door hardware schedule. Submit Samples before, or concurrent with, submission of door hardware schedule.
   1.
   2. Sample Size: Full-size units or minimum 2-by-4-inch Samples for sheet and 4-inch long Samples for other products.
      a.
      b. Full-size Samples will be returned to Contractor. Units that are acceptable and remain undamaged through submittal, review, and field comparison process may, after final check of operation, be incorporated into the Work, within limitations of keying requirements.

C. Door Hardware Schedule: Prepared by or under the supervision of Installer, detailing fabrication and assembly of door hardware, as well as installation procedures and diagrams. Coordinate final door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
   1.
   2. Submittal Sequence: Submit door hardware schedule concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate the fabrication of other work that is critical in Project construction schedule.
   3. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule." Double space entries, and number and date each page.
   4. Format: Use same scheduling sequence and format and use same door numbers as in the Contract Documents.
   5. Content: Include the following information:
      a.
      b. Identification number, location, hand, fire rating, size, and material of each door and frame.
      c. Locations of each door hardware set, cross-referenced to Drawings on floor plans and to door and frame schedule.
      d. Complete designations, including name and manufacturer, type, style, function, size, quantity, function, and finish of each door hardware product.

e. Description of electrified door hardware sequences of operation and interfaces with other building control systems.
f. Fastenings and other pertinent information.
g. Explanation of abbreviations, symbols, and codes contained in schedule.
h. Mounting locations for door hardware.
i. List of related door devices specified in other Sections for each door and frame.

D. Keying Schedule: Prepared by or under the supervision of Installer, detailing final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations that are coordinated with the Contract Documents.

E. Maintenance Data: For each type of door hardware to include in maintenance manuals. Include final hardware and keying schedule.

F. Warranty: Special warranty specified in this Section.

1.3 QUALITY ASSURANCE

A. General: All hardware shall meet the requirements of Federal, State and Local codes having jurisdiction.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.

B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

C. Deliver keys to the Owner by registered mail or overnight package service.

1.5 COORDINATION

A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing door hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

1.6 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:
   a.
   b. Structural failures including excessive deflection, cracking, or breakage.
   c. Faulty operation of doors and door hardware.
   d. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.
2. Warranty Period: Three years from date of Substantial Completion, unless otherwise indicated.
   a.
   b. Exit Devices: Two years from date of Substantial Completion.
   c. Manual Closers: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. General: The following is a listing of products, specified manufacturers, and other acceptable manufacturers. If material manufactured by other than that specified or listed herewith as an equal, is to be bid upon, permission must be requested from the architect seven (7) days prior to bidding. If substitution is allowed, it will be so noted by addendum.

B.

C. PRODUCT DESCRIPTION	D. SPECIFIED MANUFACTURER	E. ACCEPTABLE F. SUBSTITUTE
G. Hinges Continuous	H. Ives	I. Hager, Stanley, Bommer
J. Hinges	K. Ives	L. Hager, Stanley
M. Power Transfer	N. Von Duprin	O. Falcon, Sargent
P. Power Supply	Q. Von Duprin	R. Falcon, Sargent
S. Cylinders and Keying	T. Schlage Primus	U. None
V. Locks and Latches – Interior Doors	W. Schlage	X. Falcon, Best
Y. Flush Bolts	Z. Ives	AA. Rockwood, DCI
BB. Dust Proof Strike	CC. Ives	DD. Rockwood, DCI

EE. Panic Devices	FF. VonDuprin	GG. Falcon, Sargent, Precision
HH. Fire Exit Device	II. Von Duprin	JJ. Falcon, Sargent, Precision
KK. Closers	LL. LCN	MM. Falcon, Sargent, Norton
NN. OH Stops/Holders	OO. Glynn Johnson	PP. Rixson
QQ. Wall Bumpers, Floor Stops, Flushbolts	RR. Ives	SS. Rockwood, G J
TT. Push Plates and Pulls	UU. Ives	VV. Trimco, Rockwood
WW. Kick Plates/Armor Plate	XX. Ives	YY. Quality, Rockwood
ZZ. Threshold/Weatherstrip	AAA. Zero	BBB. National Guard, Pemko
CCC. Top Drip	DDD. National Guard	EEE. Pemko, Reese
FFF. Silencers	GGG. Ives	HHH. Rockwood, G J
III. Magnetic Hold Opens	JJJ. LCN	KKK. Dor-O-Matic
LLL. Key Cabinet	MMM. Lund	NNN. Key Control

2.2 FIRE-RATED OPENINGS

A. Provide hardware for fire-rated openings in compliance with NFPA Standards No. 80 and 101, and UL10C. This requirement takes precedence over other requirements for such hardware. Provide only hardware that has been tested and listed by UL for the types and sizes of doors required, and complies with the requirements of the door and door frame labels

B. Panic exit devices are required on fire-rated doors, provide supplementary marking on door UL label indicating Fire Door to be equipped with fire exit hardware and provide UL label on exit device indicating “Fire Exit Hardware”.

2.3 HURRICANE OPENINGS

A. Provide hardware for hurricane openings in compliance with local jurisdiction. This requirement takes precedence over other requirements for such hardware. Provide only hardware that has been tested and listed by local authority for the types and sizes of doors required, and complies with the requirements of the door and door frame

2.4 HARDWARE FINISHES

A. Exterior Hinges: Stainless Steel (32D), Interior Hinges to be Satin Chrome (26D).

B. Door Closers: Aluminum. Locks to be Satin Chrome (26D).

C. Exit Devices: Satin Chrome (26D).

D. Overhead Holders: Satin Chrome (26D).

E. Flat Goods Satin Chrome (26D) or Stainless Steel (32D).

F. Thresholds: Mill Finish Aluminum.

2.5 HINGES

A. Types and Quantity: As indicated.

B. Template Requirements: Provide only template-produced units.

C. Hinge Options: Comply with the following where indicated in the Door Hardware Schedule or on Drawings:
   1.
   2. Non-rising Pins: Interior doors.
   3. Nonremovable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the following applications:
      a.
      b. Outswinging exterior doors.
      c. Outswinging corridor doors with locks.

D. Fasteners: Comply with the following:
   1.
   2. Machine Screws: For metal doors and frames. Install into drilled and tapped holes.
   3. Wood Screws: For wood doors and frames.
   4. Threaded-to-the-Head Wood Screws: For fire-rated wood doors.
   5. Screws: Phillips flat-head screws. Finish screw heads to match surface of hinges.

E. Exterior butts shall be Stainless Steel. Butts on all out swinging doors shall be furnished with non-removable pins (NRP). Interior butts shall be as listed.

F. Doors 5’-0” or less in height shall have two (2) butts. Furnish one (1) additional butt for each 2’-6” in height or fraction thereof. Dutch door shall have two (2) butts per leaf

2.6 CYLINDERS AND LOCKS

A. Lock Throw: Comply with testing requirements for length of bolts to comply with labeled fire door requirements.

B. Strikes: Manufacture's standard wrought box strike for each latch or lock bolt, with curved lip extension, finished to match hardware set, unless otherwise indicated.

2.7 KEYING

A. Keying System: All requirements for hardware keying shall be coordinated with the Contracting Officer. Extension of the existing Installation keying system shall be provided, the Installation keying system is Best.
   1.
   2. Permanent keys shall be delivered to the Owner at the completion of the Project; check each lock for proper operation.

B. Temporary Locking: Hardware supplier to provide temporary cylinders or cores during the construction phase. The Contractor to change out the temporary cylinders for the permanent cylinders.

C. Keys: Provide nickel-silver keys only.
   1.
   2. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:
      a.
      b. Notation: "DO NOT DUPLICATE"
   3.
   4. Quantity: In addition to one extra blank key for each lock, provide the following:
      a.
      b. Cylinder Change Keys: Three.
      c. Master Keys: Five.
      d. Grand Master Keys: Five.

D. Key Control System: BHMA Grade 1 system, including key-holding hooks, labels, two sets of key tags with self-locking key holders, key-gathering envelopes, and temporary and permanent markers. Contain system in metal cabinet with baked-enamel finish.
   1.
   2. Wall-Mounted Cabinet: Cabinet with hinged-panel door equipped with key-holding panels and pin-tumbler cylinder door lock.
   3. Capacity: Able to hold keys for 100 percent of the number of locks.
   4. Cross-Index System: Set up by the hardware supplier and as follows.
      a.
      b. Card Index: Furnish four sets of index cards for recording key information. Include three receipt forms for each key-holding hook.

2.8 CLOSERS AND DOOR CONTROL DEVICES

A. Size of Units: Unless otherwise indicated, comply with manufacturer's written recommendations for size of door closers depending on size of door, exposure to weather, and anticipated

frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.

B. All closers shall have non-ferrous covers, forged steel arms separate valves for adjusting back-check, closing and latching cycles and adjustable spring to provide up to 50% increase in spring power. Closers shall be furnished with parallel arm mounted on all doors opening into corridors or other public spaces and shall be mounted to permit 180 degrees door swing wherever wall conditions permit. Furnish with non-hold open arms unless otherwise indicated.

C. Door closer cylinders shall be of high strength cast iron construction to provide low wear operating capabilities of internal parts throughout the life of the installation. All door closers shall be tested to ANSI/BHMA A156.4 test requirements by a BHMA certified testing laboratory. A written certification showing successful completion of a minimum of 10,000,000 cycles must be provided.

D.

E. Door closers shall utilize temperature stable fluid capable of withstanding temperature ranges of 120 degrees F to -30 degrees F, without requiring seasonal adjustment of closer speed to properly close the door. Closers for fire-rated doors shall be provided with temperature stabilizing fluid that complies with the standards UL 10C.

F. Door closers shall incorporate tamper resistant non-critical screw valves of V-slot design to reduce possible clogging from particles within the closer. Closers shall have separate and independent screw valve adjustments for latch speed, general speed, and hydraulic back-check. Back-check shall be properly located so as to effectively slow the swing of the door at a minimum of 10 degrees in advance of the dead stop location to protect the door frame and hardware from damage. Pressure relief valves (PRV) are not acceptable

2.9 EXIT DEVICES

A. All devices shall be listed under “Panic Hardware” in the accident equipment list of Underwriters Laboratories. All labeled doors with “Fire Exit Hardware” shall have labels attached and be in strict accordance with Underwriters Laboratories.

B. All exit devices shall be tested to ANSI/BHMA A156.3 test requirements by a BHMA certified testing laboratory. Provide a written certification showing successful completion of a minimum of 1,000,000 cycles.

C. All surface strikes shall be roller type and come complete with a plate underneath to prevent movement. And shall be provided with a dead-latching feature to prevent latchbolt tampering.

2.10 DOOR PROTECTION PLATES

A. Kick plates, mop plates, and armor plates, shall be 0.050 gauge stainless steel with 630 finish. Kick plates to be 10 inches high, mop plates to be 4 inches high. All plates shall be 2 inches less full width of door.

B. Push plates, pull plates, door pulls, and miscellaneous door trim shall be shown in the hardware schedule.

2.11 DOOR STOPS

A. Doorstops shall be furnished for all doors to prevent damage to doors or hardware from striking adjacent walls or fixtures. Wall bumpers equal to IVES 407 Series are preferred, but where not practical furnish floor stops equal to IVES 436 or 438 series. Where conditions prohibit the use of either wall or floor type stops, furnish surface mounted overhead stops equal to Glynn Johnson, 450 Series

2.12 WEATHERSTRIPPING

A. General: Provide continuous weather-strip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated or scheduled. Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.

2.13 DOOR SILENCERS

A. Furnish rubber door silencers equal to IVES 20 for all new interior hollow metal frames, (2) per pair and (3) per single door frame.

2.14 FABRICATION

A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to commercially recognized industry standards for application intended. Provide Phillips flat-head screws with finished heads to match surface of door hardware, unless otherwise indicated.

2.15 FINISHES

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the 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 the range of approved Samples and are assembled or installed to minimize contrast.

C. BHMA Designations and U.S. Finishes: Comply with base material and finish requirements indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Steel Doors and Frames: Comply with DHI A115 series.

B. Surface-Applied Door Hardware: Drill and tap doors and frames according to SDI 107.

C. Wood Doors: Comply with DHI A115-W series.

D.

E. Security: Provide a secure lock-up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items that are not immediately replaceable, so that the completion of the work will not be delayed by hardware losses both before and after installation.

3.3 INSTALLATION

A. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
   1.
   2. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
   3. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."

B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 09 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
   1.
   2. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
   3. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

C. Key Control System: Place keys on markers and hooks in key control system cabinet, as determined by final keying schedule. Key Cabinet must allow room for expansion for 150 percent of the number of keys for the project.

D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Section 079200 "Joint Sealants."

3.4 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.
1.
2. Where door hardware is installed more than one month prior to acceptance or occupancy, return to the installation during the week prior to acceptance or occupancy and make –a final check and adjust all hardware items. Clean operating items as necessary to restore proper function and finish. Adjust door control devices to compensate for final operation of heating and ventilating equipment.
3.
4.
5.

B. Six-Month Adjustment: Approximately six months after date of Substantial Completion, Installer shall return to the Project and perform the following:
1.
2. Examine and readjust each item of door hardware as necessary to ensure function of doors, door hardware, and electrified door hardware.
3. Consult with and instruct Owner's personnel on recommended maintenance procedures.
4. Replace door hardware items that have deteriorated or failed due to faulty design, materials, or installation of door hardware units.
5. Prepare a written report of current and predictable problems in the performance of the hardware.

3.5 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.

B. Clean operating items as necessary to restore proper function and finish.

C. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of Substantial Completion.

3.6 DOOR HARDWARE SCHEDULE

A. General: The following schedule shall not be considered entirely exclusive. Provide additional hardware, as required, for compliance with the Code, or authority having jurisdiction. Should any particular door or item be omitted in any scheduled hardware group, provide door or item with hardware same as required for similar purposes.

Hardware Group No. 01
Provide each PR door(s) with the following:

Quantity		Description	Model Number	Finish	Mfr
2	EA	POWER TRANSFER	EPT-10	689	VON
2	EA	CONTINUOUS HINGE	224HD	628	IVE
2	EA	CONTINUOUS HINGE	224HD EPT	628	IVE
1	EA	PANIC HARDWARE	RX-3547A-EO	626	VON
1	EA	PANIC HARDWARE	RX-QEL3547A-T	626	VON
2	EA	OFFSET DOOR PULL	8190-0-O	630	IVE
2	EA	SURFACE CLOSER	4041	689	LCN
1	EA	THRESHOLD	65A	AL	ZER
1	EA	BALANCE	FURNISHED UNDER SECTION 08 40 00		B/O
1	EA	OPTION BOARD	900-2Q		SCE
1	EA	POWER SUPPLY	PS902		SCE
1		WIRING DIAGRAM	BY HARDWARE SUPPLIER		B/O
1		CARD READER	BY SECURITY SUPPLIER		B/O
2	EA	DOOR POSITION SWITCH	679-05 HM		SCE

CARD READER TO URETRACT LATCH - ACTIVE LEAF
RX SWITCH IN PANIC HARDWARE TO SHUNT DOOR POSITION SWITCH TO ALLOW AUTHORIZED EXITING

Hardware Group No. 02
Provide each PR door(s) with the following:

Quantity		Description	Model Number	Finish	Mfr
2	EA	CONTINUOUS HINGE	224HD	628	IVE
2	EA	PULL/PUSHBAR	9190-0-NO	630	IVE
2	EA	SURFACE CLOSER	4041	689	LCN
2	EA	WALL STOP	WS407CCV	630	IVE
1	EA	BALANCE	FURNISHED UNDER SECTION 08 40 00		B/O

Hardware Group No. 03
Provide each PR door(s) with the following:

Quantity		Description	Model Number	Finish	Mfr
6	EA	HINGE	3CB1 4.5 X 4.5 NRP	630	IVE
2	EA	POWER TRANSFER	EPT-10	689	VON
2	EA	MULLION STABILIZER	154	689	VON
1	EA	MULLION	KR9954	689	VON
1	EA	PANIC HARDWARE	98EO	626	VON
1	EA	PANIC HARDWARE	RX-98EO	626	VON
1	EA	PANIC HARDWARE	RX-LX-QEL98NL	626	VON
1	EA	RIM CYLINDER	20-057-ICX	626	SCH
1	EA	MORTISE CYLINDER	20-061-ICX	626	SCH
2	EA	PRIMUS CORE ONLY	20-740	626	SCH
2	EA	SURFACE CLOSER	4041	689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
2	EA	WALL STOP	WS407CCV	630	IVE
2	SET	SEALS	188S	BLK	ZER
1	EA	THRESHOLD	65A	AL	ZER
1	EA	OPTION BOARD	900-2Q		SCE

1	EA	POWER SUPPLY	PS902	SCE
1		WIRING DIAGRAM	BY HARDWARE SUPPLIER	B/O
1		CARD READER	BY SECURITY SUPPLIER	B/O
2	EA	DOOR POSITION SWITCH	679-05 HM	SCE

CARD READER TO URETRACT LATCH - ACTIVE LEAF
RX SWITCH IN PANIC HARDWARE TO SHUNT DOOR POSITION SWITCH TO ALLOW AUTHORIZED EXITING

Hardware Group No. 04
Provide each PR door(s) with the following:

Quantity		Description	Model Number	Finish	Mfr
6	EA	HINGE	3CB1 4.5 X 4.5 NRP	630	IVE
2	EA	MANUAL FLUSH BOLT	FB458	626	IVE
1	EA	STOREROOM LOCK	L9080T 17A	626	SCH
1	EA	PRIMUS CORE ONLY	20-740	626	SCH
2	EA	SURFACE CLOSER	4041	689	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW	630	IVE
2	EA	WALL STOP	WS407CCV	630	IVE
1	SET	SEALS	188S	BLK	ZER
1	EA	THRESHOLD	65A	AL	ZER
1	EA	METAL Z-ASTRAGAL	BY DOOR SUPPLIER	GRY	B/O
2	EA	DOOR POSITION SWITCH	679-05 HM		SCE

DOOR POSITION SWITCH TO ALARM EXITING

Hardware Group No. 05
Provide each SGL door(s) with the following:

Quantity		Description	Model Number	Finish	Mfr
2	EA	HINGE	3CB1 4.5 X 4.5 NRP	630	IVE
1	EA	ELECTRIC HINGE	3CB1 4.5 X 4.5 TW4	630	IVE
1	EA	PRIMUS CORE ONLY	20-740	626	SCH
1	EA	EU STOREROOM LOCK	L9080TEU-RX 17A	626	SCH
1	EA	SURFACE CLOSER	4041	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS407CCV	630	IVE
1	SET	SEALS	188S	BLK	ZER
1	EA	THRESHOLD	65A	AL	ZER
1		WIRING DIAGRAM	BY HARDWARE SUPPLIER		B/O
1		CARD READER	BY SECURITY SUPPLIER		B/O
1	EA	DOOR POSITION SWITCH	679-05 HM		SCE

CARD READER TO UNLOCK ELECTRIC LOCK
RX SWITCH IN LOCK TO SHUNT DOOR POSITION SWITCH TO ALLOW AUTHORIZED EXITING

Hardware Group No. 06
Provide each SGL door(s) with the following:

Quantity		Description	Model Number	Finish	Mfr
3	EA	HINGE	3CB1 4.5 X 4.5 NRP	630	IVE
1	EA	PANIC HARDWARE	98EO	626	VON
1	EA	SURFACE CLOSER	4041	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS407CCV	630	IVE
1	SET	SEALS	188S	BLK	ZER
1	EA	THRESHOLD	65A	AL	ZER
1	EA	DOOR POSITION SWITCH	679-05 HM		SCE

DOOR POSITION SWITCH TO ALARM EXITING

Hardware Group No. 07
Provide each SGL door(s) with the following:

Quantity		Description	Model Number	Finish	Mfr
3	EA	HINGE	3CB1 4.5 X 4.5	630	IVE
1	EA	STOREROOM LOCK	L9080T 17A	626	SCH
1	EA	PRIMUS CORE ONLY	20-740	626	SCH
1	EA	SURFACE CLOSER	4041	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS407CCV	630	IVE
1	SET	SEALS	188S	BLK	ZER
1	EA	DOOR SWEEP	8198AA	AL	ZER
1	EA	THRESHOLD	544A	AL	ZER
1	EA	DOOR POSITION SWITCH	679-05 HM		SCE

DOOR POSITION SWITCH TO ALARM EXITING

Hardware Group No. 08
Provide each DE door(s) with the following:

Quantity		Description	Model Number	Finish	Mfr
6	EA	HINGE	3CB1 4.5 X 4.5	652	IVE
2	EA	FIRE EXIT HARDWARE	9827EO-F-LBR	626	VON
2	EA	SURFACE CLOSER	4041	689	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW	630	IVE
2	EA	WALL STOP	WS407CCV	630	IVE
1	SET	SEALS	188S	BLK	ZER
2	EA	MEETING STILE SEAL	8193AA	AL	ZER

Hardware Group No. 09
Provide each PR door(s) with the following:

Quantity		Description	Model Number	Finish	Mfr
4	EA	HINGE	3CB1 4.5 X 4.5	652	IVE
2	EA	ELECTRIC HINGE	3CB1 4.5 X 4.5 TW4	652	IVE

1	EA	FIRE EXIT HARDWARE	9827EO-F-LBR	626	VON
1	EA	FIRE EXIT HARDWARE	9827EO-F-LBR-RX	626	VON
1	EA	PANIC HARDWARE	9827L-LBR-RX E996L	626	VON
1	EA	RIM CYLINDER	20-057-ICX	626	SCH
1	EA	CORE ONLY	23-030	626	SCH
2	EA	SURFACE CLOSER	4041	689	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW	630	IVE
2	EA	WALL STOP	WS407CCV	630	IVE
1	SET	SEALS	188S	BLK	ZER
2	EA	MEETING STILE SEAL	8193AA	AL	ZER
1		WIRING DIAGRAM	BY HARDWARE SUPPLIER		B/O
1		CARD READER	BY SECURITY SUPPLIER		B/O
2	EA	DOOR POSITION SWITCH	679-05 HM		SCE

CARD READER TO UNLOCK ELECTRIC LOCK
RX SWITCH IN PANIC HARDWARE TO SHUNT DOOR POSITION SWITCH TO ALLOW AUTHORIZED EXITING

Hardware Group No. 10
Provide each PR door(s) with the following:

Quantity		Description	Model Number	Finish	Mfr
6	EA	HINGE	3CB1 4.5 X 4.5	652	IVE
2	EA	FIRE EXIT HARDWARE	9827L-F-LBR 996L	626	VON
2	EA	RIM CYLINDER	20-057-ICX	626	SCH
2	EA	PRIMUS CORE ONLY	20-740	626	SCH
2	EA	SURFACE CLOSER	4041	689	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW	630	IVE
2	EA	WALL STOP	WS407CCV	630	IVE
1	SET	SEALS	188S	BLK	ZER
2	EA	MEETING STILE SEAL	8193AA	AL	ZER

Hardware Group No. 11
Provide each PR door(s) with the following:

Quantity		Description	Model Number	Finish	Mfr
6	EA	HINGE	3CB1 4.5 X 4.5	630	IVE
2	EA	MANUAL FLUSH BOLT	FB458	626	IVE
1	EA	CLASSROOM LOCK	ND70PD SPA	626	SCH
1	EA	SURFACE CLOSER	4041	689	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW	630	IVE
2	EA	WALL STOP	WS407CCV	630	IVE
1	SET	SEALS	188S	BLK	ZER
1	EA	METAL Z-ASTRAGAL	BY DOOR SUPPLIER	GRY	B/O

Hardware Group No. 12
Provide each PR door(s) with the following:

Quantity	Description	Model Number	Finish	Mfr

6	EA	HINGE	3CB1 4.5 X 4.5	630	IVE
2	EA	MANUAL FLUSH BOLT	FB458	626	IVE
1	EA	STOREROOM LOCK	ND80PD SPA	626	SCH
1	EA	SURFACE CLOSER	1461	689	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW	630	IVE
2	EA	WALL STOP	WS407CCV	630	IVE
1	SET	SEALS	188S	BLK	ZER
1	EA	METAL Z-ASTRAGAL	BY DOOR SUPPLIER	GRY	B/O

Hardware Group No. 13
Provide each SGL door(s) with the following:

Quantity		Description	Model Number	Finish	Mfr
2	EA	HINGE	3CB1 4.5 X 4.5	652	IVE
1	EA	ELECTRIC HINGE	3CB1 4.5 X 4.5 TW4	652	IVE
1	EA	EU STOREROOM LOCK	ND80PDEU-RX SPA	626	SCH
1	EA	SURFACE CLOSER	1461	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS407CCV	630	IVE
1	SET	SEALS	188S	BLK	ZER
1		WIRING DIAGRAM	BY HARDWARE SUPPLIER		B/O
1		CARD READER	BY SECURITY SUPPLIER		B/O
1	EA	DOOR POSITION SWITCH	679-05 HM		SCE

CARD READER TO UNLOCK ELECTRIC LOCK
RX SWITCH IN LOCK TO SHUNT DOOR POSITION SWITCH TO ALLOW AUTHORIZED EXITING

Hardware Group No. 14
Provide each SGL door(s) with the following:

Quantity		Description	Model Number	Finish	Mfr
3	EA	HINGE	3CB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	ND80PD SPA	626	SCH
1	EA	SURFACE CLOSER	1461	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS407CCV	630	IVE
1	SET	SEALS	188S	BLK	ZER

Hardware Group No. 15
Provide each SGL door(s) with the following:

Quantity		Description	Model Number	Finish	Mfr
3	EA	HINGE	3CB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	AL80PD NEP	626	SCH
1	EA	SURFACE CLOSER	1461	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS407CCV	630	IVE
1	SET	SEALS	188S	BLK	ZER

Hardware Group No. 16

Provide each SGL door(s) with the following:

Quantity		Description	Model Number	Finish	Mfr
3	EA	HINGE	3CB1 4.5 X 4.5	652	IVE
1	EA	ENTRANCE LOCK	AL53PD NEP	626	SCH
1	EA	SURFACE CLOSER	1461 CUSH	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	SET	SEALS	188S	BLK	ZER

Hardware Group No. 17

Provide each SGL door(s) with the following:

Quantity		Description	Model Number	Finish	Mfr
3	EA	HINGE	3CB1 4.5 X 4.5	652	IVE
1	EA	CLASSROOM LOCK	ND70PD SPA	626	SCH
1	EA	SURFACE CLOSER	4041	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS407CCV	630	IVE
1	SET	SEALS	188S	BLK	ZER

Hardware Group No. 18

Provide each SGL door(s) with the following:

Quantity		Description	Model Number	Finish	Mfr
3	EA	HINGE	3CB1 4.5 X 4.5	652	IVE
1	EA	PRIVACY SET	ND40S SPA	626	SCH
1	EA	SURFACE CLOSER	4041	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS407CCV	630	IVE
1	SET	SEALS	188S	BLK	ZER

Hardware Group No. 19

Provide each SGL door(s) with the following:

Quantity		Description	Model Number	Finish	Mfr
3	EA	HINGE	3CB1 4.5 X 4.5	652	IVE
1	EA	PASSAGE SET	ND10S SPA	626	SCH
1	EA	SURFACE CLOSER	4041	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS407CCV	630	IVE
1	SET	SEALS	188S	BLK	ZER

Hardware Group No. 20

Provide each SGL door(s) with the following:

Quantity		Description	Model Number	Finish	Mfr
3	EA	HINGE	3CB1 4.5 X 4.5	630	IVE
1	EA	PUSH PLATE	8200 6" X 16"	630	IVE
1	EA	PULL PLATE	8305-0 4" X 16"	630	IVE
1	EA	SURFACE CLOSER	4041	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS407CCV	630	IVE

3	EA	SILENCER	SR64	GRY	IVE

Hardware Group No. 21
Provide each SGL door(s) with the following:

Quantity		Description	Model Number	Finish	Mfr
3	EA	HINGE	3PB1 4.5 X 4.5	652	IVE
1	EA	ENTRANCE LOCK	ND53PD SPA	626	SCH
1	EA	WALL STOP	WS407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

Hardware Group No. 22
Provide each SGL door(s) with the following:

Quantity		Description	Model Number	Finish	Mfr
3	EA	HINGE	3PB1 4.5 X 4.5	652	IVE
1	EA	ENTRANCE LOCK	AL53PD NEP	626	SCH
1	EA	WALL STOP	WS407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

Hardware Group No. 23
Provide each SGL door(s) with the following:

Quantity		Description	Model Number	Finish	Mfr
3	EA	HINGE	3PB1 4.5 X 4.5	652	IVE
1	EA	PRIVACY SET	AL40S NEP	626	SCH
1	EA	WALL STOP	WS407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

Hardware Group No. 24
Provide each SGL door(s) with the following:

Quantity		Description	Model Number	Finish	Mfr
3	EA	HINGE	3PB1 4.5 X 4.5	652	IVE
1	EA	PASSAGE SET	AL10S NEP	626	SCH
1	EA	WALL STOP	WS407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

Hardware Group No. 25
Provide each PR door(s) with the following:

Quantity		Description	Model Number	Finish	Mfr
1	EA	ELECTRIC STRIKE	6211AL FS 24VDC	630	VON
1	EA	SCANNER	SCAN II-B	BLK	SCE

ADD ELECTRIC STRIKE TO HARDWARE PACKAGE SUPPLIED WITH DIRTT DOORS - PAIRS TO BE PREPARED FOR ELECTRIC STRIKE ON INACTIVE LEAF. ELECTRIC HINGE TO SUPPLY POWER SCANNER (PIR) TO SHUNT DOOR POSITION SWITCH TO ALLOW AUTHORIZED EXITING

Hardware Group No. 26
Provide each SGL door(s) with the following:

Quantity		Description	Model Number	Finish	Mfr
1	EA	ELECTRIC STRIKE	6211AL FS 24VDC	630	VON
1	EA	SCANNER	SCAN II-B	BLK	SCE

ADD ELECTRIC STRIKE TO HARDWARE PACKAGE SUPPLIED WITH DIRTT DOORS -PREPARED FOR ELECTRIC STRIKE ON FRAME
RX SWITCH IN LOCK TO SHUNT DOOR POSITION SWITCH TO ALLOW AUTHORIZED EXITING

END OF SECTION 087100

SECTION 084113 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Exterior and interior storefront systems.
2. Exterior and interior entrance doors and frames.

1.2 PERFORMANCE REQUIREMENTS

A. System Performance: Comply with UFC 4-010-01 Unified Facilities Criteria (UFC) dated 8 October 2003 Including Change 1, 22 January 2007 Force Protection requirements for glass, frame, and structure, and as follows:

1. Building Category: Primary Gathering Building
2. Applicable Level of Protection: Low
3. Minimum Standoff Distance: 82 feet
4. Applicable Explosive Weight: I

B. Storefront and Entrance Systems: Provide exterior aluminum framed storefront and entrance systems capable of withstanding loads and thermal and structural movement requirements indicated without failure, based on testing manufacturer's standard units in assemblies similar to those indicated for this Project.

Code Compliance: Total installation must comply with the requirements of the Georgia State Minimum Standard Building Code (International Building Code with Georgia State Amendments)

C. Structural Loads:

1. Wind Loads: As indicated.

D. Windborne-Debris-Impact-Resistance Performance: Provide aluminum-framed systems that pass missile-impact and cyclic-pressure tests when tested according to ASTM E 1886 and testing information in ASTM E 1996.

1. Large-Missile Impact: For aluminum-framed systems located within 30 feet of grade.

E. Structural-Support Movement: Provide glazing systems that accommodate structural movements including, but not limited to, sway and deflection.

F. Thermal Movements: Provide glazed aluminum storefront and entrance systems that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 180 degrees F.

2. Test Performance: No buckling, stress on glass, glazing-edge seal failure, sealant failure, excess stress on storefront and entrance system framing, anchors and fasteners, or reduction of performance when tested according to AAMA 501.5.

    a. Test Ambient Temperature Range: 180 degrees F.

G. Air Infiltration: ASTM E 283; air infiltration rate shall not exceed 0.06 cfm/ft^2 at a static air pressure differential of 6.24 psf.

H. Water Resistance: ASTM E 331; no leakage at a minimum static air pressure differential of 12 psf as defined in AAMA 501.

I. Dimensional Tolerances: Provide glazing systems that accommodate dimensional tolerances of building frame and other adjacent construction.

1.3 SUBMITTALS

A. Product Data: For each product specified. Include details of construction relative to materials, dimensions of individual components, profiles, and finishes.

B. LEED Submittal:

1. Product Data for Credit MR 4.1: Indicating percentages by weight of postconsumer and preconsumer recycled content for products having recycled content.

    a. Include statement indicating costs for each product having recycled content.

C. Shop Drawings: Show details of fabrication and installation, including plans, elevations, sections, details of components, provisions for expansion and contraction, and attachments to other work.

1. Engineering Responsibility: Prepare engineering data for entrance and storefront systems, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project as prepared by a professional engineer registered in the state where the project is located.

    a. Include structural analysis data signed and sealed by professional engineer registered in the state where the project is located and is responsible for their preparation.

2. For entrance doors, include hardware schedule and indicate operating hardware types, functions, quantities, and locations.

D. Samples:

1. Of exposed finish selected in manufacturer's standard sizes.
2. Glass as indicated on the Drawings.

E. Installer Certificates: Signed by manufacturer certifying that installers comply with specified requirements.

F. Product Test Reports: Based on evaluation of tests performed by manufacturer and witnessed by a qualified independent testing agency, indicate compliance of glazing systems with requirements based on comprehensive testing of current systems.

G. Preconstruction Test Reports: For storefront systems.

H. Field Test Reports: Field quality-control test reports.

I. Warranties: Special warranties specified in this Section.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced installer to assume engineering responsibility and perform work of this Section who has specialized in installing glazing systems similar to those required for this Project and who is acceptable to manufacturer.

B. Welding Standards: Comply with applicable provisions of AWS D1.2, "Structural Welding Code--Aluminum."

C. Pre-Installation Conference: Conduct conference at Project site.

1.5 PROJECT CONDITIONS

A. Field Measurements: Verify dimensions by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1.6 WARRANTY

A. Special Warranty: Submit a written warranty executed by the manufacturer agreeing to repair or replace components of glazing systems that fail in materials or workmanship within the specified warranty period. Failures include, but are not limited to, the following:

1. Failures include, but are not limited to, the following:

a. Structural failures including, but not limited to, excessive deflection.
b. Adhesive sealant failures.
c. Cohesive sealant failures.
d. Failure of system to meet performance requirements.
e. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
f. Failure of operating components to function normally.
g. Water leakage through fixed glazing and frame areas.

2. Warranty Period: 2 years from date of Substantial Completion.

B. Special Finish Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components on which finishes do not comply with requirements or that fail in materials or workmanship within specified warranty period. Warranty does not include normal weathering.

1. Warranty Period: 5 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 ALUMINUM FRAMED STOREFRONTS

A. Exterior Storefront Manufacturer, Basis of Design: “Kawneer Wall System I”; Kawneer Company, Inc. Outside glazed system.

1. System Performance: Meet the Anti-Terrorism/Force Protection (ATFP) requirements of Unified Facilities Criteria UFC 4-010-01 DoD Minimum Antiterrorism Standards for Buildings.

2. Glass: Nominal 1-inch thick, Low-E, insulated/laminated.

a. Outboard Glass Panel: Minimum 1/4-inch thick, tinted, fully tempered with Low-E coating on #2 surface.

1) Glass Description: PPG Solarcool (2) Bronze Glass with Sungate 500 (3)

a) Shading Coefficient: 0.34.
b) U-Value: 0.35

b. Airspace: Nominal 1/2-inch.
c. Inboard Glass Panel: Laminated, clear.

B. Exterior Entrance Doors and Frames Manufacturer, Basis of Design: Kawneer Company, Inc.

1. System Performance: Meet the Anti-Terrorism/Force Protection (ATFP) requirements of Unified Facilities Criteria UFC 4-010-01 DoD Minimum Antiterrorism Standards for Buildings.

2. Glass: Nominal 1-inch thick, insulated/laminated.

a. Outboard Glass Panel: Minimum 1/4-inch thick, tinted, fully tempered with Low-E coating on #2 surface.

1) Shading Coefficient: Not less than 0.50.

b. Airspace: Nominal 1/2-inch.
c. Inboard Glass Panel: Laminated, clear.

C. Interior Storefront and Entrance Doors Basis of Design: “Forster Fuego Light”; Kawneer Company, Inc.

2.2 MATERIALS

A. Aluminum:

1. Recycled Content: Provide aluminum sheet with average recycled content such that postconsumer recycled content plus one-half of preconsumer recycled content is not less than the Standard Average.

2. Alloy and temper recommended by manufacturer for type of use and finish indicated, complying with the requirements of standards indicated below.

a. Sheet and Plate: ASTM B 209.
b. Extruded Bars, Rods, Shapes, and Tubes: ASTM B 221.

c. Extruded Structural Pipe and Tubes: ASTM B 429.
d. Bars, Rods, and Wire: ASTM B 211.
e. Welding Rods and Bare Electrodes: AWS A5.10.

B. Steel Reinforcement: Complying with ASTM A 36 for structural shapes, plates, and bars; ASTM A 611 for cold-rolled sheet and strip; or ASTM A 570 for hot-rolled sheet and strip.

C. Glazing Gaskets: As required to comply with system performance requirements. Provide gasket assemblies that have corners sealed with sealant recommended by gasket manufacturer.

D. Spacers, Setting Blocks, Gaskets, and Bond Breakers: Manufacturer's standard permanent, nonmigrating types in hardness recommended by manufacturer, compatible with sealants, and suitable for system performance requirements.

E. Framing system gaskets, sealants, and joint fillers as recommended by manufacturer for joint type.

2.3 STOREFRONT FRAMING SYSTEMS

A. Framing Members: Extruded-aluminum framing members of thickness required and reinforced as required to support imposed loads.

1. Glazing System: As indicated.

B. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.

C. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.

1. Use self-locking devices where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration.
2. Reinforce members as required to receive fastener threads.

D. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts, complying with ASTM A 123/A 123M or ASTM A 153/A 153M.

E. Concealed Flashing: Dead-soft, 0.018-inch- thick stainless steel, ASTM A 240/A 240M of type recommended by manufacturer.

F. Framing System Gaskets and Sealants: Manufacturer's standard, recommended by manufacturer for joint type.

2.4 GLAZING SYSTEMS

A. Glazing Gaskets: Replaceable, molded or extruded, of profile and hardness required to maintain watertight seal.

B. Spacers and Setting Blocks: Manufacturer's standard elastomeric type.

2.5 ENTRANCE DOOR SYSTEMS

A. Entrance Doors: Manufacturer's standard glazed entrance doors for manual-swing operation.

1. Door Construction: Extruded-aluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deeply penetrated and fillet welded or that incorporate concealed tie rods.
2. Door Design: As indicated.
3. Glazing Stops and Gaskets: Snap-on, extruded-aluminum stops and preformed gaskets.

    a. Provide nonremovable glazing stops on outside of door.

2.6 ENTRANCE DOOR HARDWARE

A. General: Provide entrance door hardware for each entrance door to comply with requirements in this Section.

B. Entrance Door Hardware Sets: Refer to Division 08 Section “Door Hardware”.

C. Balanced of Hardware: Provide balance of door hardware not indicated in Door Hardware Sets and required for a complete installation. Balance of hardware includes, but is not limited to, the following:

1. Weather Stripping: Manufacturer's standard replaceable components.
2. Weather Sweeps: Manufacturer's standard exterior-door bottom sweep with concealed fasteners on mounting strip.
3. Silencers: BHMA A156.16, Grade 1.
4. Thresholds: BHMA A156.21, raised thresholds beveled with a slope of not more than 1:2, with maximum height of 1/2 inch.

2.7 COMPONENTS

A. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.

1. Reinforce members as required to retain fastener threads.
2. Do not use exposed fasteners, except for hardware application. For hardware application, use countersunk Phillips flat-head machine screws finished to match framing members or hardware being fastened, unless otherwise indicated.

B. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts complying with ASTM A 123 or ASTM A 153 requirements.

2.8 FABRICATION

A. General: Fabricate components that, when assembled, will have accurately fitted joints with ends coped or mitered to produce hairline joints free of burrs and distortion. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

1. Fabricate components for screw-spline (concealed fastener) frame construction.
2. Forming: Form shapes with sharp profiles, straight and free of defects or deformations, before finishing.

3. Prepare components to receive concealed fasteners and anchor and connection devices.
4. Fabricate components to drain water passing joints and condensation and moisture occurring or migrating within the system to the exterior.

B. Welding: Weld components to comply with referenced AWS standard. Weld before finishing components to greatest extent possible. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.

C. Glazing Channels: Provide minimum clearances for thickness and type of glass indicated according to FGMA's "Glazing Manual."

D. Metal Protection: Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

2.9 ALUMINUM FINISHES

A. High-Performance Organic Finish: 2-coat fluoropolymer finish complying with AAMA 2605 and containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

1. Color: Custom to match Architect’s sample.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of glazing systems. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Comply with manufacturer's written instructions for protecting, handling, and installing glazing systems. Do not install damaged components. Fit frame joints to produce hairline joints free of burrs and distortion. Rigidly secure nonmovement joints. Seal joints watertight.

B. Metal Protection: Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

C. Install components to drain water passing joints and condensation and moisture occurring or migrating within the system to the exterior.

D. Set continuous sill members and flashing in a full sealant bed to provide weathertight construction, unless otherwise indicated. Comply with requirements of Division 7 Section "Joint Sealants."

E. Install framing components plumb and true in alignment with established lines and grades without warp or rack of framing members.

F. Install the system plumb and true in alignment with established lines and grades without warp or rack. Lubricate operating hardware and other moving parts according to hardware manufacturers' written instructions.

G. Install glazing to comply with requirements of Division 8 Section "Glazing," unless otherwise indicated.

H. Install perimeter sealant to comply with requirements of Division 7 Section "Joint Sealants," unless otherwise indicated.

I. Erection Tolerances: Install glazing systems to comply with the following maximum tolerances:

1. Variation from Plane: Limit variation from plane or location shown to 1/8 inch in 12 feet; 1/4 inch over total length.
2. Alignment: Where surfaces abut in line, limit offset from true alignment to 1/16 inch. Where surfaces meet at corners, limit offset from true alignment to 1/32 inch.
3. Diagonal Measurements: Limit difference between diagonal measurements to 1/8 inch.

3.3 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified independent testing agency to perform field quality control testing indicated.

1. Assemblies Requiring Testing: All window assemblies for the entire Project.

B. Testing Services: Testing and inspecting of representative areas to determine compliance of installed systems with specified requirements shall take place as follows and in successive phases as indicated on Drawings. Do not proceed with installation of the next area until test results for previously completed areas show compliance with requirements.

1. Air Infiltration Tests: Conduct tests in accordance with ASTM E 783. Allowable air infiltration shall not exceed 1.5 times the amount indicated in the performance requirements or 0.09 cfm/ft^2, whichever is greater.
2. Water Infiltration Tests: Conduct tests in accordance with ASTM E 1105. No uncontrolled water leakage is permitted when tested at a static test pressure of two-thirds the specified water penetration pressure but not less than 6.24 psf (300 Pa).

C. Repair or remove and replace Work that does not meet requirements or that is damaged; replace to conform to specified requirements.

D. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

E. Aluminum-framed assemblies will be considered defective if they do not pass tests and inspections.

F. Prepare test and inspection reports.

3.4 ADJUSTING

A. Adjust operating entrance door hardware to function smoothly as recommended by manufacturer.

3.5 PROTECTION

A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer that ensure glazing systems are without damage or deterioration at the time of Substantial Completion.

END OF SECTION 084113

SECTION 064023 - INTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:
   1. Plastic laminate cabinets.
   2. Plastic laminate countertops.
   3. Solid-surfacing-material countertops, integral sinks, window stools and thresholds.
   4. Ballet Barre.

1.3 DEFINITIONS

A. Interior architectural woodwork includes wood furring, blocking, shims, and hanging strips for installing woodwork items unless concealed within other construction before woodwork installation.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated, including cabinet hardware and accessories; finishing materials and processes, panel products, high-pressure decorative laminate, epoxy resin material.

B. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.

C. Samples for Initial Selection:
   1. Plastic laminates.
   2. Solid-surfacing materials.

D. Samples for Verification:
   1. Plastic laminates, 8 by 10 inches (200 by 250 mm), for each type, color, pattern, and surface finish.
   2. Solid-surfacing materials, 6 inches (150 mm) square.

E. Qualification Data: For Installer and fabricator.

F. LEED Submittals:
   1. Product Data for Credit IEQ 4.1: For installation adhesives, including printed statement of VOC content.

2. Product Data for Credit IEQ 4.4:

    a. For each composite-wood product used, documentation indicating that the bonding agent contains no urea formaldehyde.
    b. For each adhesive used, documentation indicating that the adhesive contains no urea formaldehyde.

3. Product Data for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content
    a. Include statement indicating costs for each product having recycled content.

4. Certificates for Credit MR 7: Chain-of-custody certificates certifying that products specified to be made from certified wood comply with forest certification requirements. Include evidence that mill is certified for chain of custody by an FSC-accredited certification body.
    a. Include statement indicating costs for each certified wood product.

1.5 QUALITY ASSURANCE

A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

B. Installer Qualifications: Fabricator of products.

C. Quality Standard: Unless otherwise indicated, comply with AWI's "Architectural Woodwork Quality Standards" for grades of interior architectural woodwork indicated for construction, finishes, installation, and other requirements.

D. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1.6 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver woodwork until painting and similar operations that could damage woodwork have been completed in installation areas. If woodwork must be stored in other than installation areas, store only in areas where environmental conditions comply with requirements specified in "Project Conditions" Article.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install woodwork until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature between 60 and 90 deg F (16 and 32 deg C) and relative humidity between 17 and 50 percent during the remainder of the construction period.

B. Field Measurements: Where woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on

Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being enclosed, and indicate measurements on Shop Drawings.
2. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating woodwork without field measurements. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.8 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that interior architectural woodwork can be supported and installed as indicated.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Provide materials that comply with requirements of AWI's quality standard for each type of woodwork and quality grade specified, unless otherwise indicated.

B. Wood Products: Comply with the following:
   1. Hardboard: AHA A135.4.
   2. Medium-Density Fiberboard: ANSI A208.2, Grade MD, made with binder containing no urea formaldehyde.
   3. Softwood Plywood: DOC PS 1, Medium Density Overlay.

C. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated or, if not indicated, as required by woodwork quality standard.
   1. Manufacturer: Subject to compliance with requirements, provide high-pressure decorative laminates by one of the following:
      a. Formica Corporation.
      b. Laminart.
      c. Nevamar Company, LLC; Decorative Products Div.
      d. Wilsonart International; Div. of Premark International, Inc..

D. Solid-Surfacing Material: Homogeneous solid sheets of filled plastic resin complying with ISSFA-2.
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. E. I. du Pont de Nemours and Company (Corian).
      b. LG Hi Macs.
      c. Samsung; Cheil Industries Inc..
   2. Type: Standard.
   3. Colors and Patterns: Group E for Reception Counter in the Lobby and for Thresholds at RR; Group D for Window Stools.

E. Ballet Barre: Basis-of-Design Product: Subject to compliance with requirements, provide single fixed wall-mounted ballet barre by American Harlequin Corporation, Ann LaGrecka, (800) 642-6440, or comparable product by one of the following:
   1. Alvas.
   2. The Ballet Barre Company.
   3. Cartwheel Factory.
      a. Single Barre: Wooden barre is 2" (50mm) in diameter and 5'-0" long. The lengths of barre can be joined inside the bracket heads to conceal the joints, producing continuous lengths of barre.
      b. Wall Mounting Brackets: Brackets are a rectangular plate with four (4) fixings, stove enameled black, complete with screws and plugs. Back plate is 6" (150mm) x 1 5/8" (40mm) x 1/4" (6mm) thickness.

2.2 CABINET HARDWARE AND ACCESSORIES

A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets, except for items specified in Division 08 Section "Door Hardware (Scheduled by Describing Products)."

B. Frameless Concealed Hinges (European Type): BHMA A156.9, B01602, 135 degrees of opening, self-closing.

C. Continuous (Piano) Hinge: BHMA A156.26.

D. Back-Mounted Pulls: BHMA A156.9, B02011, solid steel:
   1. Hafele, #117.31.650, 8.8 inches (221mm) in nickel-plated matte finish.
   2. Doug Mocket #DP7D 8 7/8" satin nickel.

E. Catches: Magnetic catches, BHMA A156.9, B03141.

F. Adjustable Shelf Standards and Supports: BHMA A156.9, B04071; with shelf rests, B04081.

G. Drawer Slides: BHMA A156.9, B05091.
   1. Standard Duty (Grade 1, Grade 2, and Grade 3): Side mounted and extending under bottom edge of drawer; full-extension type; zinc-plated steel with polymer rollers.
   2. Heavy Duty (Grade 1HD-100 and Grade 1HD-200): Side mounted; full-extension type; zinc-plated steel ball-bearing slides.
   3. Box Drawer Slides: Grade 1HD-100; for drawers not more than 6 inches (150 mm) high and 24 inches (600 mm) wide.
   4. Trash Bin Slides: Hafele Double Waste Bin, US Cargo 15 (Accuride overtravel slides), provide the waste bins as part of this assembly. Provide at Breakrooms as indicated on the Drawings.

H. Door Locks: BHMA A156.11, E07121.

I. Drawer Locks: BHMA A156.11, E07041.

J. Grommets for Cable Passage: 2 1/2-inch (51-mm) OD, color as selected by the Architect, molded-plastic grommets and matching plastic caps with slot for wire passage.

K. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA finish number indicated.
   1. Satin Chromium Plated: BHMA 626 for brass or bronze base; BHMA 652 for steel base.
   2. Satin Stainless Steel: BHMA 630.

L. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in BHMA A156.9.

2.3 MISCELLANEOUS MATERIALS

A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln dried to less than 15 percent moisture content.

B. Adhesives, General: Do not use adhesives that contain urea formaldehyde.

C. VOC Limits for Installation Adhesives and Glues: Use installation adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
   1. Wood Glues: 30 g/L.
   2. Contact Adhesive: 250 g/L.

D. Adhesive for Bonding Plastic Laminate: Contact cement.

2.4 FABRICATION, GENERAL

A. Interior Woodwork Grade: Unless otherwise indicated, provide Custom-grade interior woodwork complying with referenced quality standard.

B. Wood Moisture Content: Comply with requirements of referenced quality standard for wood moisture content in relation to ambient relative humidity during fabrication and in installation areas.

C. Fabricate woodwork to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:
   1. Corners of Cabinets and Edges of Solid-Wood (Lumber) Members 3/4 Inch (19 mm) Thick or Less: 1/16 inch (1.5 mm).
   2. Corners of Cabinets and Edges of Solid-Wood (Lumber) Members and Rails: 1/16 inch (1.5 mm).

D. Complete fabrication, including assembly, finishing and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
   1. Notify Architect seven days in advance of the dates and times woodwork fabrication will be complete.
   2. Trial fit assemblies at fabrication shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after

trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements indicated on Shop Drawings before disassembling for shipment.

E. Shop-cut openings to maximum extent possible to receive hardware, appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.
   1. Seal edges of openings in countertops with a coat of varnish.

2.5 PLASTIC-LAMINATE CABINETS

A. Grade: Custom.

B. AWI Type of Cabinet Construction: Flush overlay.

C. Reveal Dimension: 1/4 inch (6.5 mm).

D. Laminate Cladding for Exposed Surfaces: High-pressure decorative laminate complying with the following requirements:
   1. Horizontal Surfaces Other Than Tops: Grade HGS.
   2. Postformed Surfaces: Grade HGP.
   3. Vertical Surfaces: Grade VGS.
   4. Edges: Grade HGS.

E. Materials for Semiexposed Surfaces:
   1. Surfaces Other Than Drawer Bodies: High-pressure decorative laminate, Grade VGS.
      a. Edges of Plastic-Laminate Shelves: Grade HGS**.**
      b. For semiexposed backs of panels with exposed plastic-laminate surfaces, provide surface of high-pressure decorative laminate, Grade VGS.
   2. Drawer Sides and Backs: Solid-hardwood lumber.
   3. Drawer Bottoms: Hardwood plywood.

F. Concealed Backs of Panels with Exposed Plastic Laminate Surfaces: High-pressure decorative laminate, Grade BKL.

G. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
   1. Match Architect's sample.
   2. At Greyhound counter, as identified above.

2.6 PLASTIC-LAMINATE COUNTERTOPS

A. Grade: Custom.

B. High-Pressure Decorative Laminate Grade: HGS.

C. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
   1. As indicated by manufacturer's designations.

2. Match Architect's sample.

D. Grain Direction: Parallel to cabinet fronts.

E. Edge Treatment: Same as laminate cladding on horizontal surfaces.

F. Core Material: Particleboard or medium-density fiberboard.

G. Paper Backing: Provide paper backing on underside of countertop substrate.

2.7 SOLID-SURFACING-MATERIAL COUNTERTOPS, INTEGRAL SINKS, WINDOW STOOLS AND THRESHOLDS

A. Grade: Custom.

B. Solid-Surfacing-Material Thickness: 1/2 inch (13 mm).

C. Colors, Patterns, and Finishes: Provide materials and products that result in colors of solid-surfacing material complying with the following requirements:
1. Match Architect's sample.

D. Fabricate tops in one piece, unless otherwise indicated. Comply with solid-surfacing-material manufacturer's written recommendations for adhesives, sealers, fabrication, and finishing.
1. Fabricate tops with shop-applied edges of materials and configuration indicated.
2. Fabricate tops with loose backsplashes for field application.

E. Install integral sink bowls in countertops in shop.

F. Drill holes in countertops for plumbing fittings in shop. window stools in one piece, unless otherwise indicated. Comply with solid-surfacing-material manufacturer's written recommendations for adhesives, sealers, fabrication, and finishing.

G. Fabricate window stools and thresholds in shape as shown on the drawings.

2.8 BALLET BARRE

A. Install in accordance with manufacturers written instructions.

B. Install at 36" AFF to center-line of the barre.

PART 3 - EXECUTION

3.1 PREPARATION

A. Before installation, condition woodwork to average prevailing humidity conditions in installation areas.

B. Before installing architectural woodwork, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming.

3.2 INSTALLATION

A. Grade: Install woodwork to comply with requirements for the same grade specified in Part 2 for fabrication of type of woodwork involved.

B. Assemble woodwork and complete fabrication at Project site to comply with requirements for fabrication in Part 2, to extent that it was not completed in the shop.

C. Install woodwork level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb (including tops) to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm).

D. Scribe and cut woodwork to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.

E. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing as required for complete installation. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork and matching final finish if transparent finish is indicated.

F. Cabinets: Install without distortion so 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 installation of hardware and accessory items as indicated.
   1. Install cabinets with no more than 1/8 inch in 96-inch (3 mm in 2400-mm) sag, bow, or other variation from a straight line.
   2. Fasten wall cabinets through back, near top and bottom, at ends and not more than 16 inches (400 mm) o.c. with No. 10 wafer-head screws sized for 1-inch (25-mm) penetration into wood blocking, behind wall finish.

G. Countertops: Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.
   1. Align adjacent solid-surfacing-material countertops and form seams to comply with manufacturer's written recommendations using adhesive in color to match countertop. Carefully dress joints smooth, remove surface scratches, and clean entire surface.
   2. Install countertops with no more than 1/8 inch in 96-inch (3 mm in 2400-mm) sag, bow, or other variation from a straight line.
   3. Secure backsplashes to walls with adhesive.
   4. Calk space between backsplash and wall with sealant specified in Division 07 Section "Joint Sealants."

H. Touch up finishing work specified in this Section after installation of woodwork. Fill nail holes with matching filler where exposed.

3.3 CABINETS

A. Install without distortion so 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 installation of hardware and accessory items as indicated.
   1. Install cabinets with no more than 1/8 inch in 96-inch (3 mm in 2400-mm) sag, bow, or other variation from a straight line.
   2. Fasten wall cabinets through back, near top and bottom, at ends and not more than 16 inches (400 mm) o.c. with toggle bolts through metal backing or metal framing behind wall finish.

3.4 COUNTERTOPS

A. Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.
   1. Align adjacent solid-surfacing-material countertops and form seams to comply with manufacturer's written recommendations using adhesive in color to match countertop. Carefully dress joints smooth, remove surface scratches, and clean entire surface.
   2. Install countertops with no more than 1/8 inch in 96-inch (3 mm in 2400-mm) sag, bow, or other variation from a straight line.
   3. Secure backsplashes to tops with concealed metal brackets at 16 inches (400 mm) o.c. and to walls with adhesive.
   4. Caulk space between backsplash and wall with sealant specified in Division 07 Section "Joint Sealants."

B. Touch up finishing work specified in this Section after installation of woodwork. Fill nail holes with matching filler where exposed.

3.5 ADJUSTING AND CLEANING

A. Repair damaged and defective woodwork, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.

B. Clean, lubricate, and adjust hardware.

C. Clean woodwork on exposed and semiexposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

END OF SECTION 064023

SECTION 042223 - ARCHITECTURAL CONCRETE UNIT MASONRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Pre-faced concrete masonry units.
2. Mortar and grout.
3. Ties and anchors.
4. Embedded flashing.
5. Miscellaneous masonry accessories.

1.2 SUBMITTALS

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

B. LEED Submittals:

1. Product Data for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content.
2. Product Certificates for Credit MR 5.1: For products and materials required to comply with requirements for regional materials indicating location and distance from Project of material manufacturer and point of extraction, harvest, or recovery for each raw material. Include statement indicating cost for each regional material and the fraction by weight that is considered regional.

C. Samples for Verification: For each type and color of the following:

1. Pre-faced CMUs.
2. Colored mortar.
3. Weep holes/vents.

1.3 QUALITY ASSURANCE

A. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.

B. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.

C. Sample Panels: Build sample panels to verify selections made under sample submittals and to demonstrate aesthetic effects. Comply with requirements in Division 01 Section "Quality Requirements" for mockups.

1. Build sample panels for typical exterior wall in sizes approximately 48 inches long by 48 inches high.
2. Protect approved sample panels from the elements with weather-resistant membrane.
3. Approval of sample panels is for color, texture, and blending of masonry units; relationship of mortar and sealant colors to masonry unit colors; tooling of joints; aesthetic qualities of workmanship; and other material and construction qualities specifically approved by Architect in writing.

    a. Approval of sample panels does not constitute approval of deviations from the Contract Documents contained in sample panels unless such deviations are specifically approved by Architect in writing.

D. Preinstallation Conference: Conduct conference at Project site.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.

B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

D. Deliver preblended, dry mortar mix in moisture-resistant containers designed for use with dispensing silos. Store preblended, dry mortar mix in delivery containers on elevated platforms, under cover, and in a dry location or in covered weatherproof dispensing silos.

E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.5 PROJECT CONDITIONS

A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.

1. Extend cover a minimum of 24 inches down both sides of walls and hold cover securely in place.

B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least three days after building masonry walls or columns.

C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.

1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
2. Protect sills, ledges, and projections from mortar droppings.

3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.

D. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and higher and will remain so until masonry has dried, but not less than 7 days after completing cleaning.

E. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

PART 2 - PRODUCTS

2.1 MASONRY UNITS, GENERAL

A. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated in the standard. Do not use units where such defects will be exposed in the completed Work.

B. Recycled Content of CMU: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

2.2 CONCRETE MASONRY UNITS

A. Regional Materials: Provide CMUs that have been manufactured within 500 miles of Project site from aggregates and cement that have been extracted, harvested, or recovered, as well as manufactured, within 500 miles of Project site.

B. Pre-faced CMUs: Lightweight hollow concrete units complying with ASTM C 90, with manufacturer's standard smooth resinous facing complying with ASTM C 744.

1. Products: Provide one of the following:

   a. "Spectra Glaze II"; The Spectra Group.
   b. "Astra-Glaze-SW+"; Trenwyth Industries.

2. Size: Manufactured to indicated CMU dimensions, but with pre-faced surfaces having 1/16 inch wide returns of facing to create 1/4 inch wide mortar joints with modular coursing.
3. Color: As indicated on Drawings.

2.3 MORTAR MATERIALS

A. Regional Materials: Provide aggregate for mortar and grout that have been extracted, harvested, or recovered, as well as manufactured, within 500 miles of Project site.

B. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.

C. Hydrated Lime: ASTM C 207, Type S.

D. Colored Cement Product: Packaged blend made from portland cement and hydrated lime and mortar pigments, all complying with specified requirements, and containing no other ingredients.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Colored Portland Cement-Lime Mix:

1) Capital Materials Corporation; Riverton Portland Cement Lime Custom Color.
2) Holcim (US), Inc.; Rainbow Mortamix Custom Color Cement/Lime.
3) Lafarge North America Inc.; Eaglebond Portland & Lime.
4) Lehigh Cement Company; Lehigh Custom Color Portland/Lime Cement.

2. Color: To be selected by the Architect from manufacturer's full line.

E. Aggregate for Mortar: ASTM C 144.

1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.

F. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C 494/C 494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Euclid Chemical Company; Accelguard 80.
b. Grace Construction Products, W. R. Grace & Co. - Conn.; Morset.
c. Sonneborn Products, BASF Aktiengesellschaft; Trimix-NCA.

G. Water: Potable.

2.4 TIES AND ANCHORS

A. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated.

1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A 82; with ASTM A 153, Class B-2 coating.
2. Steel Sheet, Galvanized after Fabrication: ASTM A 1008, Commercial Steel, with ASTM A 153, Class B coating.
3. Steel Plates, Shapes, and Bars: ASTM A 36.

B. Seismic Masonry-Veneer Anchors: Units consisting of a metal anchor section and a connector section designed to engage a continuous wire embedded in the veneer mortar joint.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

    a. Dayton Superior Corporation, Dur-O-Wal Division; D/A 213S.
    b. Hohmann & Barnard, Inc.; DW-10-X-Seismiclip.
    c. Wire-Bond; RJ-711 with Wire-Bond clip.

2.5 MISCELLANEOUS ANCHORS

A. Anchor Bolts: Headed or L-shaped steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers; hot-dip galvanized to comply with ASTM A 153, Class C; of dimensions indicated.

B. Postinstalled Anchors: Torque-controlled expansion anchors.

1. Load Capacity: Capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.

2.6 EMBEDDED FLASHING MATERIALS

A. Metal Flashing: Provide metal flashing complying with SMACNA's "Architectural Sheet Metal Manual" and as follows:

1. Stainless Steel: ASTM A 240, Type 304, 26 gauge.
2. Fabricate continuous flashings in sections 96 inches long minimum, but not exceeding 12 feet. Provide splice plates at joints of formed, smooth metal flashing.

3. Fabricate through-wall metal flashing embedded in masonry from stainless steel, with ribs at 3-inch intervals along length of flashing to provide an integral mortar bond.

    a. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

        1) Cheney Flashing Company; Smooth Thru Wall
        2) Hohmann & Barnard, Inc.; MFL Metal Flashing

B. Sealants for Sheet Metal Flashings:

1. Elastomeric Sealant: ASTM C 920, chemically curing silicone sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

C. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.

2.7 MISCELLANEOUS MASONRY ACCESSORIES

A. Cavity Drainage Material: Free-draining mesh, made from polymer strands that will not degrade within the wall cavity.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

    a. Mortar Net USA, Ltd.; Mortar Net.

B. Mesh Weep/Vent: Free-draining mesh; made from polyethylene strands, full height and width of head joint and depth 1/8 inch less than depth of outer wythe; in color selected from manufacturer's standard.

1. Product and Manufacturer – Basis of Design: Mortar Net Weep Vents; Mortar Net USA, Ltd.

C. Compressible Filler: Premolded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene urethane or PVC.

2.8 MORTAR AND GROUT MIXES

A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.

1. Do not use calcium chloride in mortar or grout.
2. Use portland cement-lime mortar.
3. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.

B. Mortar for Unit Masonry: Comply with ASTM C 270, Proportion Specification. Provide the following types of mortar for applications stated unless another type is indicated or needed to provide required compressive strength of masonry.

1. For exterior, above-grade, load-bearing and non-load-bearing walls and parapet walls; for interior load-bearing walls; for interior non-load-bearing partitions; and for other applications where another type is not indicated, use Type N.

C. Mortar: Use colored cement product.

1. Color: Mix to match Architect's selection.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.
2. Verify that foundations are within tolerances specified.
3. Verify that reinforcing dowels are properly placed.

B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

D. Reject all defective units.

3.2 INSTALLATION, GENERAL

A. Build chases and recesses to accommodate items specified in this and other Sections.

B. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to opening.

C. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

3.3 TOLERANCES

A. Dimensions and Locations of Elements:

1. For dimensions in cross section or elevation do not vary by more than plus 1/2 inch or minus 1/4 inch.
2. For location of elements in plan do not vary from that indicated by more than plus or minus 1/2 inch.
3. For location of elements in elevation do not vary from that indicated by more than plus or minus 1/4 inch in a story height or 1/2 inch total.

B. Lines and Levels:

1. For bed joints and top surfaces of bearing walls do not vary from level by more than 1/4 inch in 10 feet, or 1/2 inch maximum.
2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.
3. For vertical lines and surfaces do not vary from plumb by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2 inch maximum.
4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.
5. For lines and surfaces do not vary from straight by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2 inch maximum.
6. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet, or 1/2 inch maximum.

C. Joints: Units shall have uniform, 3/8-inch wide joints both horizontally and vertically on the finished side of the wall.

3.4 LAYING MASONRY WALLS

A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.

B. Bond Pattern for Exposed Masonry: As indicated.

C. Stopping and Resuming Work: Stop work by racking back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar before laying fresh masonry.

D. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.

3.5 MORTAR BEDDING AND JOINTING

A. Lay solid masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.

B. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.

3.6 ANCHORING MASONRY

A. Anchor masonry to comply with the following:

1. Space anchors not more than 24 inches o.c. vertically and 36 inches o.c. horizontally.

3.7 CONTROL AND EXPANSION JOINTS

A. General: Install control and expansion joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.

B. Form control joints in concrete masonry as indicated on the Drawings.

3.8 LINTELS

A. Provide concrete lintels where shown and where openings of more than 12 inches for brick-size units and 24 inches for block-size units are shown without structural steel or other supporting lintels.

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

3.9 FLASHING, WEEPS, AND CAVITY DRAINAGE MATERIAL

A. Flashing: Install embedded flashing in masonry at lintels, ledges, other obstructions to downward flow of water in wall, and where indicated.

B. Weeps: Install weep material in head joints in exterior wythes of first course of masonry immediately above embedded flashing, at water stops over windows, doors, and beams, and as follows:

1. Space weep holes at proper intervals (32 inches o.c. maximum).

C. Cavity Drainage Material: Place cavity drainage material in cavities to comply with configuration requirements as follows:

1. Provide the following configuration:

a. Strips, full-depth of cavity and 10 inches high, with dovetail shaped notches 7 inches deep that prevent clogging with mortar droppings.

3.10 REPAIRING, POINTING, AND CLEANING

A. General: Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, 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 joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.

C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.

D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:

1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
3. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
5. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2A applicable to type of stain on exposed surfaces.

3.11 MASONRY WASTE DISPOSAL

A. Salvageable Materials: Excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site and comply with Section 017419 Construction Waste Management and Disposal.

END OF SECTION 042223

SECTION 323119 - SECURITY GATE SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Aluminum gate panels.
2. Horizontal-slide gates.
3. Gate operators, including controls.

1.3 PERFORMANCE REQUIREMENTS

A. Lightning-Protection System: Maximum grounding-resistance value of 25 ohms under normal dry conditions.

1.4 SUBMITTALS

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

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

1. Wiring Diagrams: For power, signal, and control wiring.

C. Samples: For each gate material and for each color specified.

1. Provide Samples 12 inches in length for linear materials.
2. Provide Samples 12 inches square for infill material and sheet or plate materials.

D. Welding certificates.

E. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for decorative metallic-coated steel tubular picket fences, including finish, indicating compliance with referenced standard.

F. Maintenance Data: For gate operators to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Fabricator of products.

B. Gate Conformance Standard: ASTM F 2200.

C. Welding Qualifications: Qualify procedures and personnel according to AWS D1.2/D1.2M, "Structural Welding Code - Aluminum."

D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

E. UL Standard: Provide gate operators that comply with UL 325.

F. Emergency Access Requirements: Comply with requirements of authorities having jurisdiction for automatic gate operators on gates that must provide emergency access.

G. Preinstallation Conference: Conduct conference at Project site.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design: “TIGER Security Gate System”; Tymetal Corp. An equivalent system by AutoGate, Inc. or Jerith Manufacturing Co. is also acceptable.

2.2 ALUMINUM

A. Aluminum, General: Provide alloys and tempers with not less than the strength and durability properties of alloy and temper designated in paragraphs below for each aluminum form required.

B. Extrusions: ASTM B 221, Alloy 6063-T5.

C. Tubing: ASTM B 429, Alloy 6063-T6.

D. Plate and Sheet: ASTM B 209, Alloy 6061-T6.

E. Die and Hand Forgings: ASTM B 247, Alloy 6061-T6.

F. Castings: ASTM B 26/B 26M, Alloy A356.0-T6.

2.3 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

1. For aluminum, provide type and alloy as recommended by producer of metal to be welded and as required for strength and compatibility in fabricated items.

2.4 HORIZONTAL-SLIDE GATES

A. Gate Configuration: Single leaf.

1. Type: Cantilever slide, with manufacturer's standard roller assemblies.

B. Gate Frame Height: As indicated.

C. Gate Opening Width: As indicated.

D. Aluminum Frames and Bracing: Fabricate members from square tubing; manufacturer's standard sizes and wall thicknesses.

1. Frame Members: Extruded-aluminum tubes.
2. Bracing Members: Extruded-aluminum tubes.

E. Frame Corner Construction:

1. Welded frame.
2. Overhead Slide Gates: Welded or assembled with corner fittings.

F. Additional Rails: Provide as indicated, complying with requirements for fence rails.

G. Infill: Manufacturer's standard.

H. Picket Size, Configuration, and Spacing: Manufacturer's standard.

I. Overhead Track Assembly: Manufacturer's standard track, with overhead framing supports, bracing, and accessories, engineered to support size, weight, width, operation, and design of gate and roller assemblies.

J. Hardware: Latches permitting operation from both sides of gate, locking devices, hangers, roller assemblies and stops.

K. Finish exposed welds to comply with NOMMA Guideline 1, Finish #2 - completely sanded joint, some undercutting and pinholes okay.

L. Aluminum Finish: Powder coating.

2.5 GATE OPERATORS

A. General: Provide factory-assembled automatic operating system designed for gate size, type, weight, and operation frequency. Provide operation control system with characteristics suitable for Project conditions, with remote-control stations, safety devices, and weatherproof enclosures; coordinate electrical requirements with building electrical system.

1. Provide operator designed so motor may be removed without disturbing limit-switch adjustment and without affecting auxiliary emergency operator.
2. Provide operator with UL approval.
3. Provide electronic components with built-in troubleshooting diagnostic feature.
4. Provide unit designed and wired for both right-hand/left-hand opening, permitting universal installation.
5. Provide controllers, electrical devices, and wiring.

B. Motors: Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements for motors specified in Section 110513 "Common Motor Requirements for Equipment."

1. Motor Sizes: Minimum size as indicated. If not indicated, large enough so driven load will not require motor to operate in service factor range above 1.0.
2. Horsepower: Not less than 1 HP.
3. Enclosure: Manufacturer's standard.
4. Duty: Continuous duty at ambient temperature of 105 deg F.
5. Controllers, Electrical Devices, and Wiring: Comply with requirements for electrical devices and connections.

C. Gate Operators:

1. Mechanical Slide Gate Operators:

a. Duty: Heavy duty, commercial/industrial.
b. Gate Speed: Variable with maximum 2.2 feet per second.
c. Frequency of Use: Continuous duty.
d. Operating Type: Roller chain.
e. Drive Type: Enclosed worm gear reducers, roller-chain drive.

D. Remote Controls: Electric controls separated from gate and motor and drive mechanism, with NEMA ICS 6, Type 1 enclosure for pedestal mounting, and with space for additional optional equipment. Provide the following remote-control device(s):

1. Card Reader: Functions only when authorized card is presented. Programmable, multiple-code system.

a. Reader Type: Proximity.
b. Features: Timed antipassback. Capable of monitoring and auditing gate activity.

2. Vehicle Loop Detector: System including automatic closing timer with adjustable time delay before closing and loop detector designed to open and close gate. Provide electronic detector with adjustable detection patterns, adjustable sensitivity and frequency settings, and panel indicator light designed to detect presence or transit of a vehicle over an embedded loop of wire and to emit a signal activating the gate operator. Provide number of loops consisting of multiple strands of wire, number of turns, loop size, and method of placement at location shown on Drawings, as recommended in writing by detection system manufacturer for function indicated.

a. Loop: Wire, in size indicated for field assembly, for embedment in pavement.

3. Vehicle Presence Detector: System including automatic closing timer with adjustable time delay before closing and presence detector designed to open and close gate. Provide detector with adjustable detection zone pattern and sensitivity, designed to detect the presence or transit of a vehicle in gate pathway when infrared beam in zone pattern is interrupted, and to emit a signal activating the gate operator.

E. Obstruction Detection Devices: Provide each motorized gate with automatic safety sensor(s). Activation of sensor(s) causes operator to immediately function as follows:

1. Action: Reverse gate in both opening and closing cycles and hold until clear of obstruction.

2. Sensor Edge: Contact-pressure-sensitive safety edge, profile, and sensitivity designed for type of gate and component indicated, in locations as follows. Connect to control circuit as standard with manufacturer.

    a. Along entire gate leaf leading edge.
    b. Along entire gate leaf trailing edge.
    c. Along entire length of gate guide posts.

3. Photoelectric/Infrared Sensor System: Designed to detect an obstruction in gate's path when infrared beam in the zone pattern is interrupted.

F. Limit Switches: Adjustable switches, interlocked with motor controls and set to automatically stop gate at fully retracted and fully extended positions.

G. Emergency Release Mechanism: Quick-disconnect release of operator drive system of the following type of mechanism, permitting manual operation if operator fails. Design system so control-circuit power is disconnected during manual operation.

1. Type: Mechanical device, key, or crank-activated release.

H. Operating Features:

1. Digital Microprocessor Control: Electronic programmable means for setting, changing, and adjusting control features with capability for monitoring and auditing gate activity. Provide unit that is isolated from voltage spikes and surges.
2. System Integration: With controlling circuit board capable of accepting any type of input from external devices.
3. Automatic Closing Timer: With adjustable time delay before closing.
4. Open Override Circuit: Designed to override closing commands.
5. Reversal Time Delay: Designed to protect gate system from shock load on reversal in both directions.
6. Maximum Run Timer: Designed to prevent damage to gate system by shutting down system if normal time to open gate is exceeded.
7. Clock Timer: Programmable for regular events pursuant to Owner requirements.

I. Accessories:

1. Warning Module: Audio, ADA/ABA-compliant, light alarm sounding three to five seconds in advance of gate operation and continuing until gate stops moving.

2. External electric-powered lock with delay timer allowing time for lock to release before gate operates.
3. Instructional, Safety, and Warning Labels and Signs: According to UL 325.

2.6 ALUMINUM FINISHES

A. Powder-Coat Finish: AAMA 2603 except with a minimum dry film thickness of 2 mils. Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

1. Color and Gloss: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for site clearing, earthwork, pavement work, construction layout, and other conditions affecting performance of the Work.

B. Do not begin installation before final grading is completed unless otherwise permitted by Architect.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 GATE INSTALLATION

A. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

3.3 GATE OPERATOR INSTALLATION

A. General: Install gate operators according to manufacturer's written instructions, aligned and true to fence line and grade.

B. Vehicle Loop Detector System: Embed and seal wire loop according to manufacturer's written instructions. Connect to equipment operated by detector.

C. Comply with NFPA 70 and manufacturer's written instructions for grounding of electric-powered motors, controls, and other devices.

3.4 ADJUSTING

A. Gates: Adjust gates to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.

B. Automatic Gate Operators: Energize circuits to electrical equipment and devices. Adjust operators, controls, safety devices, alarms, and limit switches.

1. Hydraulic Operators: Purge operating system, adjust pressure and fluid levels, and check for leaks.
2. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
3. Test and adjust controls, alarms, and safeties. Replace damaged and malfunctioning controls and equipment.

C. Lubricate hardware, gate operators, and other moving parts.

3.5 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's personnel to adjust, operate, and maintain gates.

END OF SECTION 323119